SOLICITATION, OFFER AND AWARD

1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)	RATING	PAGE 1 OF PAGES 132

2. CONTRACT NO.	3. SOLICITATION NO.	4. TYPE OF SOLICITATION	5. DATE ISSUED	6. REQUISITION/PURCHASE NO.
	W911KB-04-R-0008	[ ] SEALED BID (IFB) [X] NEGOTIATED (RFP)	01 Sep 2004	

7. ISSUED BY	CODE	8. ADDRESS OFFER TO (If other than Item 7)	CODE
U.S. ARMY ENGINEER DISTRICT, AK CEPOA CT (W911KB) P. O. BOX 6898 ELMENDORF AFB AK 99506-6898 TEL: FAX: 907-753-2544	W911KB	**See Item 7** TEL: FAX:	

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and 2 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in _____ until 02:00 PM (Hour) local time 12 Oct 2004 (Date)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-1. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE (Include area code) (NO COLLECT CALLS)	C. E-MAIL ADDRESS
	CLAUDETTE M MCDONALD	907-753-2546	claudette.m.mcdonald@usace.army.mil

11. TABLE OF CONTENTS

(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
		PART I - THE SCHEDULE				**PART II - CONTRACT CLAUSES**	
X	A	SOLICITATION/ CONTRACT FORM	1	X	I	CONTRACT CLAUSES	88 - 97
X	B	SUPPLIES OR SERVICES AND PRICES/ COSTS	2 - 32			**PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS**	
X	C	DESCRIPTION/ SPECS./ WORK STATEMENT	33 - 40	X	J	LIST OF ATTACHMENTS	98 - 113
	D	PACKAGING AND MARKING				**PART IV - REPRESENTATIONS AND INSTRUCTIONS**	
X	E	INSPECTION AND ACCEPTANCE	41	X	K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	114 - 121
	F	DELIVERIES OR PERFORMANCE					
X	G	CONTRACT ADMINISTRATION DATA	42 - 44	X	L	INSTRS., CONDS., AND NOTICES TO OFFERORS	122 - 129
X	H	SPECIAL CONTRACT REQUIREMENTS	45 - 87	X	M	EVALUATION FACTORS FOR AWARD	130 - 132

OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52.232-8)	

14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated):	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)

15B. TELEPHONE NO (Include area code)	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.	17. SIGNATURE	18. OFFER DATE
	[ ]		

AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION

22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: [ ] 10 U.S.C. 2304(c)( ) [ ] 41 U.S.C. 253(c)( )	23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)	ITEM

24. ADMINISTERED BY (If other than Item 7) CODE	25. PAYMENT WILL BE MADE BY CODE

26. NAME OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	27. UNITED STATES OF AMERICA (Signature of Contracting Officer)	28. AWARD DATE

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

Section B - Supplies or Services and Prices

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001			Lump Sum		

PREMISES DISTRIBUTION SYSTEM (PDS)
FFP
PREMISES DISTRIBUTION SYSTEM (PDS) - PROVIDES THE BACKBONE AND HORIZONTAL WIRING FOR THE TELECOMMUNICATIONS SYSTEM, DATA COMMUNICATIONS DEVICES, COMPUTERS, INSTRUMENTS, AND TERMINALS.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16710 PREMISES DISTRIBUTION SYSTEM.

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AA			Lump Sum		

SYSTEM SUBMITTALS
FFP
SYSTEM SUBMITTALS.

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AB			Lump Sum		
	SYSTEM INSTALLATION FFP SYSTEM INSTALLATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AC			Lump Sum		
	SYSTEM CONFIGURATION FFP SYSTEM CONFIGURATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AD			Lump Sum		
	SYSTEM TESTING & COMMISSIONING FFP SYSTEM TESTING & COMMISSIONING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AE			Lump Sum		
	SYSTEM TRAINING FFP SYSTEM TRAINING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001AF			Lump Sum		
	AS-BUILTS FFP AS-BUILTS				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002			Lump Sum		

EMS RECORDER
FFP
EMS RECORDER - PROVIDES A LOGGING RECORDER FOR THE EMERGENCY COMMUNICATIONS SYSTEMS IN THE FACILITY.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16786 EMS RECORDER

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AA			Lump Sum		

SYSTEMS SUBMITTALS
FFP
SYSTEMS SUBMITTALS

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AB	SYSTEM INSTALLATIONS FFP SYSTEM INSTALLATIONS		Lump Sum		

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AC	SYSTEM CONFIGURATION FFP SYSTEM CONFIGURATION		Lump Sum		

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AD	SYSTEM TESTING & COMMISSIONING FFP SYSTEM TESTING & COMMISSIONING		Lump Sum		

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AE			Lump Sum		
	SYSTEM TRAINING FFP SYSTEM TRAINING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002AF			Lump Sum		
	AS-BUILTS FFP AS-BUILTS				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003			Lump Sum		

RADIO PAGE (RP) SYSTEM
FFP
RADIO PAGE (RP) SYSTEM - PROVIDES A RADIO PAGE CAPABILITY IN THE FACILITY.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16755 RADIO PAGE (RP) SYSTEM

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AA			Lump Sum		

SYSTEM SUBMITTALS
FFP
SYSTEM SUBMITTALS

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AB			Lump Sum		
	SYSTEM INSTALLATION FFP SYSTEM INSTALLATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AC			Lump Sum		
	SYSTEM CONFIGURATION FFP SYSTEM CONFIGURATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AD			Lump Sum		
	SYSTEM TESTING & COMMISSIONING FFP SYSTEM TESTING & COMMISSIONING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AE			Lump Sum		
	SYSTEM TRAINING FFP SYSTEM TRAINING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003AF			Lump Sum		
	AS-BUILTS FFP AS-BUILTS				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004			Lump Sum		

PUBLIC ADDRESS (PA) SYSTEM
FFP
PUBLIC ADDRESS (PA) SYSTEM - PROVIDES FOR ZONED LOUD SPEAKER PAGING ANG BACKGROUND MUSIC PROGRAM DISTRIBUTION THROUGHOUT THE PROJECT FACILITY.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16770 PUBLIC ADDRESS (PA) SYSTEM

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004AA			Lump Sum		

SYSTEM SUBMITTALS
FFP
SYSTEM SUBMITTALS

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004AB			Lump Sum		
	SYSTEM INSTALLATION FFP SYSTEM INSTALLATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004AC			Lump Sum		
	SYSTEM CONFIGURATION FFP SYSTEM CONFIGURATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004AD			Lump Sum		
	SYSTEM TESTING AND COMMISSIONING FFP SYSTEM TESTING AND COMMISSIONING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004AE			Lump Sum		
	SYSTEM TRAINING FFP SYSTEM TRAINING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004AF			Lump Sum		
	AS-BUILT FFP AS-BUILT				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005			Lump Sum		

SOUND RE-ENFORCEMENT (SR) SYSTEM
FFP
SOUND RE-ENFORCEMENT (SR) SYSTEM - PROVIDES FOR SOUND REINFORCEMENT OF SPEECH AND DISTRIBUTION OF AUDIO-VISUAL PROGRAM MATERIAL IN THE CONFERENCE CENTER.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16771 SOUND REINFORCEMENT (SR) SYSTEM

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005AA			Lump Sum		

SYSTEM SUBMITTALS
FFP
SYSTEM SUBMITTALS

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005AB			Lump Sum		
	SYSTEM INSTALLATION FFP SYSTEM INSTALLATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005AC			Lump Sum		
	SYSTEM CONFIGURATION FFP SYSTEM CONFIGURATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005AD			Lump Sum		
	SYSTEM TESTING & COMMISSIONING FFP SYSTEM TESTING & COMMISSIONING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005AE			Lump Sum		
	SYSTEM TRAINING FFP SYSTEM TRAINING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005AF			Lump Sum		
	AS-BUILT FFP AS-BUILT				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006			Lump Sum		

NURSE CALL TONE VISUAL (NCTV) SYSTEM
FFP
NURSE CALL TONE VISUAL (NCTV) SYSTEM - PROVIDES FOR SIGNALING OF PATIENT AND STAFF CALLS FOR ASSISTANCE FROM PATIENT CARE SPACES IN CLINICS AND ANCILLARY SERVICES THROUGH COMBINATION OF ALERT TONES AND VISUAL INDICATOR SIGNALS, AND ALPHANUMERIC RADIO PAGE.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16730 NURSE CALL TONE - VISUAL (NCTV) SYSTEM

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006AA			Lump Sum		

SYSTEM SUBMITTALS
FFP
SYSTEM SUBMITTALS

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006AB			Lump Sum		
	SYSTEM INSTALLATION FFP SYSTEM INSTALLATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006AC			Lump Sum		
	SYSTEM CONFIGURATION FFP SYSTEM CONFIGURATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006AD			Lump Sum		
	SYSTEM TESTING & COMMISSIONING FFP SYSTEM TESTING & COMMISSIONING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006AE			Lump Sum		
	SYSTEM TRAINING FFP SYSTEM TRAINING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006AF			Lump Sum		
	AS-BUILT FFP AS-BUILT				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0007			Lump Sum		

NURSE CALL AUDIO-VISUAL (NCAV) SYSTEM
FFP
NURSE CALL AUDIO-VISUAL (NCAV) SYSTEM - PROVIDES FOR COMMUNICATION OF PATIENT AND STAFF CALLS FOR ASSISTANCE FROM PATIENT CARE AREAS THROUGH COMBINATIONS OF TONE AND LIGHT SIGNALS, VOICE INTERCOM, DIGITAL DISPLAY, AND ALPHANUMERIC RADIO PAGE.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16731 NURSE CALL AUDIO-VISUAL (NCAV) SYSTEM

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0007AA			Lump Sum		

SYSTEM SUBMITTALS
FFP
SYSTEM SUBMITTALS

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0007AB			Lump Sum		
	SYSTEM INSTALLATION FFP SYSTEM INSTALLATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0007AC			Lump Sum		
	SYSTEM CONFIGURATION FFP SYSTEM CONFIGURATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0007AD			Lump Sum		
	SYSTEM TESTING & COMMISSIONING FFP SYSTEM TESTING & COMMISSIONING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0007AE			Lump Sum		
	SYSTEM TRAINING FFP SYSTEM TRAINING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0007AF			Lump Sum		
	AS-BUILTS FFP AS-BUILTS				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0008			Lump Sum		

TELEVISION (TV) SYSTEM
FFP
TELEVISION (TV) SYSTEM - HEADEND, CABLE PLANT, CONTROL EQUIPMENT, DATA NETWORK, MINC EQUIPMENT EXCEPT FOR VIDEO EQUIPMENT, TV MOUNTING

BRACKETS.FOLLOW GUIDANCE IN ACCORDANCE WITH 16781 TELEVISION (TV) SYSTEM

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0008AA			Lump Sum		

TV SYSTEM - HEADEND, CABLE PLANT,
FFP
TELEVISION (TV) SYSTEM - CABLE PLANT, CONTROL EQUIPMENT, DATA NETWORK, MINC EQUIPMENT EXCEPT FOR VIDEO EQUIPMENT, TV MOUNTING BRACKETS

THIS PRICE INCLUDES

0008AA			LUMP SUM	AMOUNT
000801	SYSTEM SUBMITTALS	1		$_____
000802	SYSTEM INSTALLATIONS		1	$_____
000803	SYSTEM CONFIGURATION		1	$_____
000804	SYSTEM TESTING & COMMISSIONING	1		$_____
000805	SYSTEM TRAINING		1	$_____
000806	AS-BUILTS	1		$_____

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0008AB			Lump Sum		

TV SYSTEM - TV SETS AND ACCESSORIES
FFP
TV SETS AND ACCESSORIES, VIDEO EQUIPMENT, SOFTWARE AND THE CONFERENCE CENTER CCTV SUBSYSTEM

THIS PRICE INCLUDES

0008AB	LUMP SUM	AMOUNT
000801 SYSTEM SUBMITTALS	1	$_____
000802 SYSTEM INSTALLATIONS	1	$_____
000803 SYSTEM CONFIGURATION	1	$_____
000804 SYSTEM TESTING & COMMISSIONING	1	$_____
000805 SYSTEM TRAINING	1	$_____
000806 AS-BUILTS	1	$_____

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0009			Lump Sum		

FACILITY SECURITY SYSTEMS
FFP
FACILITY SECURITY SYSTEMS - THE ONLY ACCEPTABLE SYSTEM IS HONEYWELL. PROVIDES A TOTALLY INTEGRATED FACILITY SECURITY SYSTEM (FSS) FOR THE NEW FACILITY AND SITE AND INCLUDES THE INTEGRATOR NETWORK, THE ACCESS CONTROL AND ALARM (ACA) SUBSYSTEM, AND THE CCTV SURVEILLANCE SUBSYSTEM.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16788 FACILITY SECURITY SYSTEM.

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0009AA			Lump Sum		

INTEGRATOR NETWORK
FFP
INTEGRATOR NETWORK - LOCAL AREA NETWORK (LAN) AND INFRASCRUTCTURE, DATA BASE SERVERS, DIGITAL VIDEO SERVERS, SYSTEM OPERATOR WORKSTATIONS, MANAGEMENT AND PHOTO BADGING WORKSTATION, MAINTENANCE WORKSTATION, AND SYSTEM SOFTWARE.

ACCESS CONTROL & ALARM (ACA) SUBSYSTEM - ACCESS CONTROL DEVICES GROUPS FOR HARDWIRED ACCESS CONTROL OF DOORS, MOTION DETECTORS, AREA CONTROL UNITS, NETWORK ADAPTERS, AND INTERFACES.

INFANT PROTECTION ALARM SUBSYSTEM - INFANT PROTECTION WORKSTATIONS, DOOR EXIT LF READER, TAG/STRAP TAMPER RF READERS, TAGS AND STRAPS, PROXIMITY CARD READERS, ELECTROMAGNETIC LOCKS, RELAY BOXES AND DOME LIGHTS, NETWORK ADAPTERS, IP INTERFACES AND REMOTE DISPLAY UNITS.

THIS PRICE INCLUDES

0009AA		LUMP SUM	
000901	SYSTEM SUBMITTALS	1	$_____
000902	SYSTEM INSTALLATIONS	1	$_____
000903	SYSTEM CONFIGURATION	1	$_____
000904	SYSTEM TESTING & COMMISSIONING	1	$_____
000905	SYSTEM TRAINING	1	$_____
000906	AS-BUILTS	1	$_____

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0009AB			Lump Sum		

INTRUSION DETECTION EQUIPMENT
FFP
INTRUSION DETECTION EQUIPMENT - DURESS ALARM DEVICES, DOOR POSITION SENSORS, MOTION DETECTORS, EQUIPMENT PANELS, AND CABLING.

THIS PRICE INCLUDES

0009AB	LUMP SUM	AMOUNT
000901 SYSTEM SUBMITTALS	1	$_____
000902 SYSTEM INSTALLATIONS	1	$_____
000903 SYSTEM CONFIGURATION	1	$_____
000904 SYSTEM TESTING & COMMISSIONING	1	$_____
000905 SYSTEM TRAINING	1	$_____
000906 AS-BUILTS	1	$_____

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0009AC			Lump Sum		

CCTV SURVEILLANCE SUBSYSTEM
FFP
CCTV SURVEILLANCE SUBSYSTEM - INDOOR AND OUTDOOR VIDEO CAMERA ASSEMBLIES, CAMERA POLES, VIDEO CAMERA POWER SUPPLIES, VIDEO CAMERA SERVERS, AND NETWORK ADAPTERS.

0009AC			LUMP SUM	
000901	SYSTEM SUBMITTALS	1		$_____
000902	SYSTEM INSTALLATIONS	1		$_____
000903	SYSTEM CONFIGURATION	1		$_____
000904	SYSTEM TESTING & COMMISSIONING	1		$_____
000905	SYSTEM TRAINING	1		$_____
000906	AS-BUILTS	1		$_____

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010			Lump Sum		

RFTRANSPONDER SYSTEM
FFP
RF TRANSPONDER SYSTEM - PROVIDES THE CAPABILITY FOR CERTAIN IDENTIFIED RADIO SYSTEMS, WHICH OPERATE OUTSIDE THE HOSPITAL TO FUNCTION WITHIN THE FACILITY.

FOLLOW GUIDANCE IN ACCORDANCE WITH 16756 RF TRANSPONDER SYSTEM.

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010AA			Lump Sum		

SYSTEM SUBMITTALS
FFP
SYSTEM SUBMITTALS

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010AB			Lump Sum		
	SYSTEM INSTALLATION FFP SYSTEM INSTALLATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010AC			Lump Sum		
	SYSTEM CONFIGURATION FFP SYSTEM CONFIGURATION				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010AD			Lump Sum		
	SYSTEM TESTING & COMMISSIONING FFP SYSTEM TESTING & COMMISSIONING				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010AE			Lump Sum		
	SYSTEM TRAINING FFP SYSTEM TRAINING				
					_____
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010AF			Lump Sum		
	AS-BUILTS FFP AS-BUILTS				
					_____
				NET AMT	

FOB: Destination

TOTAL ITEMS 0001 THROUGH 0010 **$_____**

Section C - Descriptions and Specifications

STATEMENT OF WORK

Section C – Specifications and Drawings

1. Volume 2 Specifications dated August 2004 as attached

2. Drawings

   a. Comm Follow-on Drawings in accordance with below index attached as separate .zip files
   Note: Due to size limitations, the Comm Follow-On Drawings have been split into two files, "Comm Follow-On Dwgs File 1.zip" and "Comm Follow-On Dwgs File 2.zip".

   b. As-Built Cable Tray Layout Bldg Drawings in accordance with below index attached as file, As-Built Cable Tray Layout Bldg.zip

   c. As-Built Cable Tray Layout Comm Room Drawings in accordance with below index attached as file, As-Built Cable Tray Layout Comm Room.zip

   d. As-Built Cross Reference Drawings in accordance with below index attached as file, As-Built Cross Ref Dwgs.zip

   e. Electrical and Fire Protection Drawings (Information Only) attached as file, Ele and Fire Prot Dwgs Info Only.zip

COMM FOLLOW-ON INDEX OF DRAWINGS INDEX OF DRAWINGS

COVER
G0.01 PROJECT TEAM
G0.02 INDEX OF DRAWINGS
G1.01 GRAPHICS LEGEND & ABBREVIATIONS
G1.02 PROJECT LOCATION PLAN

TC1.01 SYMBOL LEGEND
TC1.02 GENERAL NOTES, LEGEND NOTES & ABBREV.

TC2.01 NOT USED IN THIS PROJECT
TC2.02 NOT USED IN THIS PROJECT
TC2.03 SITE PLAN
TC2.04 NOT USED IN THIS PROJECT

TC3.001 COMMUNICATIONS ZONE PLAN - CRAWL SPACE - AREA 1
TC3.002 COMMUNICATIONS ZONE PLAN - CRAWL SPACE - AREA 2
TC3.101 COMMUNICATIONS ZONE PLAN - LEVEL 1 - AREA 1
TC3.102 COMMUNICATIONS ZONE PLAN - LEVEL 1 - AREA 2
TC3.201 COMMUNICATIONS ZONE PLAN - LEVEL 2
TC3.301 COMMUNICATIONS ZONE PLAN - LEVEL 3
TC3.401 COMMUNICATIONS ZONE PLAN - LEVEL 4

TC4.003 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.004 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.005 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.006 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.009 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.010 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.018 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.021 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.024 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.025 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.029 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.034 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.035 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.036 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.038 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.039 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.041 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.043 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.044 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.045 COMMUNICATIONS ZONE PLAN - CRAWL SPACE
TC4.046 COMMUNICATION ZONE PLAN - CRAWL SPACE
TC4.101 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.102 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.103 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.104 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.105 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.106 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.107 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.108 COMMUNICATIONS FLOOR PLAN - LEVEL 1

TC4.109 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.110 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.111 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.112 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.113 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.114 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.115 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.116 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.117 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.118 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.119 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.120 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.121 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.122 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.123 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.124 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.125 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.126 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.127 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.128 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.129 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.130 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.131 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.132 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.133 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.134 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.135 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.136 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.137 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.138 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.139 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.140 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.141 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.142 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.143 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.144 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.145 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.146 COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.135M COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.146M COMMUNICATIONS FLOOR PLAN - LEVEL 1
TC4.203 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.204 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.205 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.206 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.207 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.208 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.209 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.210 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.211 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.212 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.213 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.214 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.215 COMMUNICATIONS FLOOR PLAN - LEVEL 2

TC4.216 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.217 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.218 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.219 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.220 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.221 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.222 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.223 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.224 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.225 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.227 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.228 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.229 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.237 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.238 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.239 COMMUNICATIONS FLOOR PLAN - LEVEL 2
TC4.314 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.315 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.316 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.317 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.319 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.321 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.322 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.323 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.324 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.325 COMMUNICATIONS FLOOR PLAN - LEVEL 3
TC4.326 COMPUTER ROOM FLOOR PLAN - LEVEL 3
TC4.424 COMMUNICATIONS FLOOR PLAN - LEVEL 4
TC4.425 COMMUNICATIONS FLOOR PLAN - LEVEL 4

TC5.01 EQUIPMENT PLANS - COMMUNICATION ROOMS
TC5.02 EQUIPMENT PLANS - COMMUNICATION ROOMS
TC5.03 EQUIPMENT PLANS - COMMUNICATION ROOMS
TC5.04 EQUIPMENT PLANS - COMMUNICATION ROOMS
TC5.05 EQUIPMENT PLANS - TELEPHONE SWITCH
TC5.06 EQUIPMENT PLANS - MAIN COMPUTER ROOM
TC5.07 EQUIPMENT PLANS - COMM EQUIP ROOM
TC5.08 EQUIPMENT PLANS - VAULT & COMM SHAFTS
TC5.09 EQUIPMENT PLANS - COMM CHASES
TC5.10 EQUIPMENT PLANS - TV & SR EQUIPMENT ROOM

TC6.01 RACEWAY RISER
TC6.001 SCHEMATIC RACEWAY PLAN - CRAWL SPACE - AREA 1
TC6.002 SCHEMATIC RACEWAY PLAN - CRAWL SPACE - AREA 2
TC6.101 SCHEMATIC RACEWAY PLAN - LEVEL 1 - AREA 1
TC6.102 SCHEMATIC RACEWAY PLAN - LEVEL 1 - AREA 2
TC6.201 SCHEMATIC RACEWAY PLAN - LEVEL 2
TC6.301 SCHEMATIC RACEWAY PLAN - LEVEL 3 - AREA 1
TC6.302 SCHEMATIC RACEWAY PLAN - LEVEL 3 - AREA 2
TC6.401 SCHEMATIC RACEWAY PLAN - LEVEL 4
TC6.50 SCHEMATIC RACEWAY PLAN - COMM ROOMS
TC6.51 SCHEMATIC RACEWAYS - DETAILS
TC6.52 SCHEMATIC RACEWAYS - DETAILS

TC6.53 SCHEMATIC RACEWAYS - COMPUTER ROOM

TC7.01 CONDUIT CIRCUITING - TYPICAL ROOMS
TC7.02 CONDUIT CIRCUITING DIAGRAMS - TV SYSTEM
TC7.03 CONDUIT CIRCUITING DIAGRAMS - NCAV
TC7.04 CONDUIT CIRCUITING DIAGRAMS - NCAV
TC7.05 CONDUIT CIRCUITING DIAGRAMS - NCAV
TC7.06 CONDUIT CIRCUITING DIAGRAMS - NCTV
TC7.07 CONDUIT CIRCUITING DIAGRAMS - NCTV
TC7.08 CONDUIT CIRCUITING DIAGRAMS - NCTV
TC7.09 CONDUIT CIRCUITING DIAGRAMS - ACA
TC7.10 CONDUIT CIRCUITING DIAGRAMS - ACA
TC7.11 CONDUIT CIRCUITING DIAGRAMS - PA & SR
TC7.12 CONDUIT CIRCUITING DIAGRAMS - GFGI MOD FURN

TC8.01 PUBLIC ADDRESS DETAILS
TC8.02 PUBLIC ADDRESS DETAILS
TC8.03 PDS OUTLET DETAILS
TC8.04 PDS DETAILS
TC8.05 CCTV POLE MOUNTING DETAILS
TC8.06 ANTENNA MOUNTING DETAILS

TC9.01 INTERCONNECTION DIAGRAM
TC9.02 RISER DIAGRAM - COAX NETWORK - TV SYSTEM
TC9.03 RISER DIAGRAM - DATA NETWORK - TV SYSTEM
TC9.04 BLOCK DIAGRAMS - TV SYSTEM
TC9.05 RISER DIAGRAMS - NCAV & NCTV DATA NETWORK
TC9.06 BLOCK DIAGRAM – FSS
TC9.07 PDS BLOCK DIAGRAMS
TC9.08 EMS - RADIO PAGE - BDA BLOCK DIAGRAMS
TC9.09 PDS RACK ELEVATIONS
TC9.10 PDS RACK ELEVATIONS
TC9.11 RISER DIAGRAM - PA SYSTEM
TC9.12 HORIZONTAL DISTRIBUTION - PA SYSTEM
TC9.13 BLOCK DIAGRAM - PA SYSTEM
TC9.14 BLOCK DIAGRAM - SOUND REINFORCEMENT SYSTEM

AS-BUILT CABLE TRAY LAYOUT BLDG
INDEX OF DRAWINGS

Cable Tray Callouts.cal
AE-000comm-1 of 5.cal
AE-000comm-2 of 5.cal
AE-000comm-3 of 5.cal
AE-000comm-4 of 5.cal
AE-000comm-5 of 5.cal
AE-100comm-1 of 5.cal
AE-100comm-2 of 5.cal
AE-100comm-3 of 5.cal
AE-100comm-4 of 5.cal
AE-100comm-5 of 5.cal
AE-200comm-1 of 3.cal
AE-200comm-2 of 3.cal
AE-200comm-3 of 3.cal
AE-300comm.cal
AE-400comm.cal

AS-BUILT CABLE TRAY LAYOUT COMM ROOM
INDEX OF DRAWINGS

AE-100commroom-AE-100commroom.cal
AE-200commroom-AE-200commrooms.cal
AE-300commroom-AE-300commroom.cal

AS-BUILT CROSS REFERENCE
INDEX OF DRAWINGS

CD-000arch.cal
CD-grids.cal
AE-100SD-04CommTray.cal
AE-200SD-04CommTray.cal
AE-300SD-04CommTray.cal
CD-100arch-Layout1.cal
CD-100arch-Layout2.cal
CD-100struct.cal
CD-200arch-Layout1.cal
CD-200arch-Layout2 (2).cal
CD-200arch-Layout2.cal
CD-200arch-Layout3.cal
CD-300arch.cal
CD-400arch.cal
CD-400struct.cal
CD-500struct.cal
AE-000SD-04CommTray.cal

Section E - Inspection and Acceptance

CLAUSES INCORPORATED BY REFERENCE

52.246-2	Inspection Of Supplies--Fixed Price	AUG 1996
52.246-4	Inspection Of Services--Fixed Price	AUG 1996
52.246-16	Responsibility For Supplies	APR 1984

SECTION G

SECTION G

1. CONTRACT AWARD: A written award or acceptance of offer mailed or otherwise furnished to the Contractor shall result in a binding contract without further action by either party.

2. COMMENCEMENT OF WORK: The Contractor shall commence work upon receipt of a properly executed contract and complete the elements of work within the time specified in accordance with Section H of the contract.

3. PERIOD OF SERVICE: The contract period shall begin upon the date of contract award and shall, unless terminated sooner in accordance with the terms and conditions of this contract, continue for the period specified within the contract.

4. CONTRACT ADMINISTRATION INFORMATION: The U.S. Army Corps of Engineers, Alaska District, Contracting Division, Military Branch (CEPOA-CT-M), will conduct Administration of the contract. All contract correspondence shall be addressed to:

   U.S. Army Engineer District, Alaska
   CEPOA-CT-M
   PO Box 6898
   Elmendorf AFB, AK 99506-6898

5. CHANGES: The **Contracting Officer is the only person authorized to approve changes in any of the requirements under this contract** and notwithstanding any provisions contained elsewhere in this contract, the said authority remains solely with the Contracting Officer. In the event the Contractor effects any such change at the direction of any person other than the Contracting Officer, the change will be considered to have been made without authority and no readjustment will be made in the contract price to cover any increase in costs incurred as a result thereof.

6. UNAUTHORIZED INSTRUCTIONS FROM GOVERNMENT OR OTHER PERSONNEL: The contractor shall not accept instructions issued by any person employed by the U.S. Government or otherwise other than the Contracting Officer, or the authorized representative of the Contracting Officer acting within the limits of his authority as defined in Section G of this contract.

7. DESIGNATION OF QUALITY ASSURANCE REPRESENTATIVE (QAR): Designation will be made upon contract award and a copy of the designation letters will be furnished to the Contractor. Limits of authority are described in each designation letter.

8. DESIGNATION OF AUTHORIZED REPRESENTATIVE OF THE CONTRACTOR: The Contractor shall assign a member or employee who will act as project manager during the course of this contract. The official shall be responsible for affording liaison between the contract forces and the contracting offices. This designation shall be submitted in writing to the Contracting Officer.

9. METHOD OF PAYMENT:

   a. Payment will be made as set forth in Contract clause 52.232-1. Payments.

      Original Invoice To:
      US Army Engineer District, AK

Attn: Mary Kouzes, CEPOA-RM-F-AM
P.O. Box 6898
Elmendorf AFB, Alaska 99506-6898

Invoice Copies To:
1. US Army Engineer District, Alaska
Attn: Ms. Sharon Skelton, CEPOA-CT-M
P.O. Box 6898
Elmendorf AFB, Alaska 99506-6898

2. US Army Engineer District, Alaska
Attn: Mr. Rolf Ness, CEPOA-CO-BRO
P.O. Box 6898
Elmendorf AFB, Alaska 99506-6898

Payment will be made by:

U.S. Army Engineer District, Alaska
C/O USACE Finance Center
5720 Integrity Drive
Millington TN 38054-5005

b. No partial payment will be made for any contract line item.

c. Final payment for the contract will be made only after receipt of a fully executed Release of Claims and all deliverables.

d. Computer generated forms may be used to request payment. A copy of the Release of Claims form will be provided at time of award.

10. VISITORS TO AIR FORCE AND ARMY BASES:

a. All vehicle operators are required to wear seatbelts. Vehicle operators caught not wearing seatbelts will lose their driving privileges on base for 10 days on the first offense, 30 days on the second offense and 6 months or longer on the third offense.

b. If a firm does not have a current pass to obtain entry to Elmendorf AFB, the firm may request a day pass using the following procedures:

Forty-eight hours (48) prior to your meeting or delivery of offer, the firm must contact Sharon Skelton at email address sharon.a.skelton@usace.army.mil and request a day pass. The firm must provide: a) the solicitation or contract number; b) the names of all persons in the vehicle; c) the name of their employer(s). State that it is a request for a day pass.

On the day of entry, the driver must go to the Boniface Gate and provide: a) a valid driver's license; b) proof of current insurance; c) proof of current IM certificate; d) current vehicle registration. Be sure to inform security police that you are on the list for a day pass.

c. . If a firm does not have a current pass to obtain entry to Fort Wainwright, the firm may request a day pass using the following procedures:

Forty-eight hours (48) prior to your meeting or work site, the firm must contact Sharon Skelton at email address sharon.a.skelton@usace.army.mil and request a day pass. The firm must provide: a) the solicitation or contract number; b) the names of all persons in the vehicle; c) the name of their employer(s). State that it is a request for a day pass.

On the day of entry, the driver must go to the Main Gate and provide: a) a valid driver's license; b) proof of current insurance; c) proof of current IM certificate; d) current vehicle registration. Be sure to inform security police that you are on the list for a day pass.

11. HEALTH AND SAFETY STANDARDS: The systems and equipment designed under this contract shall comply with the Occupational Safety and Health Act (OSHA), Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926. Any problems in incorporating these standards due to conflicts with other technical criteria will be submitted to the Contracting Officer for resolution.

12. SEQUENCE OF DESIGN:

(a) After contract award, the Contractor shall initiate design, comply with all design submission requirements as covered under these specifications, and obtain Government review of each submission. No installation may be started until the Government has reviewed the Final Design submission and determined it satisfactory for purposes of beginning installation. The Contracting Officer will notify the Contractor when the design is cleared for installation. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the Contracting Officer, the initial submission failed to meet the minimum quality requirements as set forth in the contract.

(b) If the Government allows the Contractor to proceed with limited installation pending minor revisions to the reviewed Final Design Submission, no payment will be made for any in-place installation related to the pending revisions until they are completed, resubmitted and are satisfactory to the Government.

13. RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN:

(a) The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and any other services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiency in Contractor provided designs, drawings, specifications, and other services.

(b) Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contract shall be construed to operate as a waiver of any rights under this contract, or of any cause or action arising out of the performance of this contract, and the Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of the services described herein.

(c) The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

END OF SECTION G

TABLE OF CONTENTS
SECTION H

PARAGRAPH	TITLE
1	SPECIAL ITEMS
2	COORDINATION
3	METRIC MEASUREMENTS
4	TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS
5	OPERATION AND MAINTENANCE MANUALS
6	CLOSEOUT SUBMITTALS
7	ENVIRONMENT PROTECTION
8	TEMPORARY FACILITIES
9	NOT USED
10	CONTRACTOR QUALITY CONTROL
11	SUBMITTAL PROCEDURES
12	OPERATIONS & MAINTENANCE TRAINING
13	PROJECT SCHEDULE

SECTION H

SPECIAL CONTRACT REQUIREMENTS

1. SPECIAL ITEMS

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

ALASKA ADMINISTRATIVE CODE (AAC)

12 AAC 32 Electrical Administrators

12 AAC 32.195	Scope of An Electrical Administrator License in the Inside Communications
12 AAC 32.165	Scope of An Electrical Administrator License in the Unlimited Commercial Wiring Category
12 AAC 32.075	Scope of An Electrical Administrator License in the Unlimited Line work Category

b. ACCIDENT PREVENTION PLAN: The Contractor shall obtain the Contracting Officer's approval of the Accident Prevention Plan required by the latest version of the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1 prior to start of any work at the project site. This manual can be viewed at http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/toc.htm. Alternatively, the manual can be ordered from the Superintendent of Documents, Government Printing Office, Washington D.C., phone 202-512-1800, Fax 202-512-2250. The Contractor shall participate in weekly and monthly safety meetings led by Dick Pacific/Ghemm JV, prime Contractor for the current construction contract.

c. FIRE SAFETY: The Contractor shall obtain a permit for any welding or open flame work. Permit shall be obtained from the Fort Wainwright Fire Prevention Office (907) 353-9166 or from the Fort Wainwright Fire Department Dispatch Office at (907) 353-7470.

d. COMPLIANCE WITH ALASKA STATE LABOR LAWS ON OCCUPATIONAL LICENSING: The Contractor shall comply with the current provisions of Alaska Statutes AS Title 08 and Alaska Administrative Code 12 AAC 32 and 12 AAC 39 requiring licensed electrical and mechanical administrators to supervise and be responsible for the performance of all regulated categories of electrical l work performed on-site as part of this contract. The following is a partial list of areas covered by the Alaska State Regulations:

(1) Inside Communications 12 AAC 32.195.

(2) Commercial Wiring 12 AAC 32.165.

The Contractor shall also be required to comply with State of Alaska requirements for occupational licensing of electrical journeymen and apprentice craftsmen performing any work on-site as part of this contract. The ratio of individuals holding trainee certificates may not be more than two electrician trainees for every certified electrical journeyman as applicable on a job site, or two power linemen trainees for every certified power lineman on the job site. The Contractor shall be prepared to demonstrate on demand, the licensing of the Contractor's or subcontractors' employees engaged in the work.

e. WORK CLEARANCE AND UTILITY OUTAGES: The Contractor shall submit, in writing, a request for a utility outage to the Distribution Foreman (by FAX @ 907-353-6159 or hand delivered to Building 3022) with as much lead time as possible, but not less than five (5) working days prior to the requested utility outage date. All utility outage requests shall be coordinated 30 days in advance with Dick Pacific/GHEMM, JV if the outage will affect any utility service to the new Bassett Hospital facility or the construction site. The Contractor shall be responsible for verification of facsimile transmission to the Distribution Foreman by calling 907-353-7139. A copy of the latest version of the request form can be obtained from the Distribution Foreman. All outages are to be scheduled to occur between 0800 and 1500 hours Tuesdays through Thursdays, but in no case shall the duration of the outage exceed four (4) hours. The Contractor shall identify utilities affected (water, sewer, steam, condensate, electricity), the facilities affected, the exact locations, the duration of the outage, and a brief explanation of the work to be performed. The Contractor may request utility outages outside of the normal accepted time frames and duration's listed above; however, the acceptance of the request will be at the discretion of the Director of Public Works. At the discretion of the Director of Public Works, and when deemed necessary for safety, efficiency, and mission impact, the Director of Public Works may direct the outage to occur during a specific day, or time of day, to minimize the impact to the affected buildings.

(1) Telephone and Cable Outages: For commercial telephone and cable outages, the Contractor shall make those requests directly to the provider. No excavation shall be allowed until the provider has located and marked the utility line.

(2). Notification and Posting of Outage Notices: Notification and posting of scheduled outage notices will be conducted as follows: For Contractor initiated outage requests, the Contractor is responsible for posting outage notices on all affected buildings a minimum of 24 hours before the outage. The Contractor is responsible for posting notices at all building entrances and by notifying the designated building manager either in person or telephonically. The DPW customer service office will provide the DPW Project Manager and the Contractor a listing of the names and phone numbers of the building managers for the affected buildings. If the work cannot be completed within the outage time requested, and another outage is necessary, a new request shall be submitted and approval obtained in advance for the additional time required. When the work cannot be completed within the outage time requested and the DPW shop personnel are required to stay beyond their normal duty day, the Contractor will be held responsible for all overtime costs associated with the outage. Valve operations on active utilities will be performed by post personnel.

f. DISPOSITION OF MATERIALS: Any combustible and noncombustible waste material shall be disposed of in the Fort Wainwright Landfill. No burning of materials will be permitted. The landfill will be open by appointment only during the following hours (excluding Federal holidays): Monday - Thursday 0800 to 1600 hours and Friday 0800 to 1500 hours subject to the conditions listed below: A landfill Authorization Card will be required for each Contractor. The Contractor shall obtain the Authorization Cards from the Fort Wainwright Environmental Office, Building 3023 phone 353-6249. Load sheets will be required for each load at the landfill gate per current practice. Questions concerning disposal of solid waste at the Fort Wainwright Landfill can be addressed to the Fort Wainwright Environmental Office at 353-6249.

(1) Waste Materials and Debris:

(a) Access must be coordinated at least one day in advance with DPW Grounds Maintenance Shop at 353-7192.

(b) Contents of the load must not include mixed garbage such as food containers or other household type refuse. Mixed loads will be refused.

(2) Prohibitions and Special Restrictions:

(a) Scavenging and Salvaging is prohibited.

(b) Disposal of hazardous wastes, as defined by 40 CFR part 261 is prohibited. Ensure waste meeting this definition is disposed of in accordance with 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste.

(c) Disposal of raw sewage, liquids, radioactive material, explosives, oil, solvents, strong acids, untreated sewage sludge, septage, untreated pathogenic, and other waste defined under 18 AAC 60.990 (28) is prohibited at this facility.

(d) Disposal of lead-acid vehicle batteries is prohibited.

(e) Disposal of polluted soil as defined by 18 AAC 60.025 & 18 AAC 330 is prohibited.

(f) Disposal of trash other than excess materials, packaging, etc. is prohibited.

(g) Drums must be empty and cleaned of fluids prior to crushing. All drums must be crushed and flattened prior to disposal.

(h) Fort Wainwright does not accept Mixed Solid Waste (MSW).

(3) The Contractor shall provide the necessary safeguards for the prevention of POL spills, containment and cleanup, and for dust suppression. All efforts and safeguards employed shall be in accordance with this section, paragraph 7, Environmental Protection.

g. USE OF INSTALLED FEATURES: The Contractor shall not use any installed feature of this project for its own benefit except as specified herein. The Contractor shall not use any part of the existing building for offices or material storage unless approved in writing by the contracting Officer.

h. RECORD KEEPING: During the life of this contract meetings may be requested by the Government, prime Contractor, a subcontractor, or suppliers. The Prime Contractor will be responsible for preparing the minutes of all such meetings. A written draft of the minutes shall be submitted within two working days after the meeting to the Resident Engineer for review. Upon agreement on the text, the Contractor shall transmit the minutes of the meeting to the Resident Engineer by serial letter. This document will become the official record of the meeting. The minutes shall include as a minimum the names of attendees, firm(s) represented, date and place of meeting and subjects discussed.

i. CONTRACTOR'S REQUEST FOR INFORMATION. When the work details are not understood following a thorough perusal of the contract drawings and specifications, the Contractor shall use a serial letter to request additional information from the Contracting Officer. Based on the Contractor's understanding and first hand knowledge of the contract documents, the Contractor shall recommend solutions to the issue based on its experience and first hand knowledge of the contract documents. The Contractor shall recognize that a project of this nature may involve many circumstances, which will require clarification and interpretation by the Contracting Officer. The administrative cost of identifying and processing requests for information shall therefore be anticipated and shall not be considered additional cost to the contract. This procedure is not intended to include those types of clarifications, which can and shall be addressed during the shop drawing submittal process.

j. TESTS. The Contractor shall provide testing, except where specifically noted to be performed by the Government, in accordance with Section H, Paragraph 10, CONTRACTOR QUALITY CONTROL.

k. WARRANTY. The contractor warrants and implies that the items delivered hereunder are merchantable and fit for use for the particular purpose described in this contract. The warranty shall apply to both the individual components and entire integrated system.

l. PARTNERING. The Communication Prime Contractor and all subcontractors will be required to participate in Bassett Hospital partnering sessions between the prime construction contractor, Dick/Pacific GHEMM, JV (and its subcontractors) and Government representatives. The Contractor shall have representation of key project personnel at the weekly project status meetings as well as monthly and quarterly partnering meetings. Quarterly partnering meetings are held during the months of January, April, July, and October. All partnering meetings are conducted onsite or at a conference center location in the Fairbanks area.

m. OPERATION AND MAINTENANCE (O&M) MANUALS. Operation and Maintenance Manuals shall be provided in accordance with Section H, Paragraph 5, entitled OPERATION & MAINTENANCE MANUALS and all its requirements. Submit quantities and items as required in Section H, Paragraph 11, entitled SUBMITTAL PROCEDURES to the Contracting Officer. Failure to submit manuals by the required date will be considered cause to withhold any payments due the Contractor. Construction, arrangement and content of these O&M Manuals shall be in accordance with Section H, Paragraph 5. Approval of manuals shall be obtained prior to scheduling operating tests and field training courses.

n. VIDEO RECORDING OF TESTS AND O&M TRAINING. The Contractor shall video record tests and operation and maintenance training sessions required in the technical specifications for mechanical and electrical features. Video recordings shall be produced in CD-ROM/DVD format and of professional quality. As an alternative: Manufacturer's standard pre-prepared training CD-ROM/DVD(s) may be submitted in lieu of the on-site video recording of tests and maintenance training. The manufacturers' standard training must contain all the information for the specific systems and configurations provided under this contract. The content of all training media must be approved by the CO. Approval of applicable O & M manuals shall be obtained and manuals provided on site at least 5 days prior to tests and training as specified. Each system or piece of equipment shall be covered in a single CD-ROM/DVD or set of CD-ROM/DVD(s) which shall be correlated with the approved O & M manuals. Videos shall be categorized and indexed by equipment and item of repair, with a typed or printed label showing the project, equipment or system and contract number; this same information shall be provided as an introduction on each video. One copy of the video recorded material shall be submitted to the Contracting Officer, for review and approval, within ten (10) days after completion of the video recorded training session. Coverage shall include, as applicable:

(1) Testing, trouble-shooting, and repair.

(2) Demonstration of common maintenance items, i.e., system tests (efficiency and operability), cleaning, adjustment, replacement of high failure items, scheduled maintenance, tear down and repair of specific items, etc.

(3) Resetting of systems after activation. Trouble-shooting, actual maintenance and repair of specific components, etc.

How to verify system performance and operating parameters (i.e., frequency bandwidth, sound pressure levels, resolution, etc.)

o. ACCESS: The Contractor will be provided access to rooms and areas no earlier than shown in the following table. Room numbers are for clarity only - they shall not be used for identification because the room numbers may change during construction. The number of days indicated in the column titled, "Calendar Days," is the number of days prior to "beneficial occupancy date" of the Bassett Army Hospital construction contract held by Dick Pacific/Ghemm, JV, in which the Communications Contractor may expect access to the areas indicated.

Room No. / Site	Room Name	Calendar Days Prior to 1 Dec 05 BOD
022-01	Communications Vault	180
024-24	Communications Shaft	180
103-03	Emergency Reception	180
117-23	Communications Room	180
118-16	Communications Room	180
124-10	Communications Shaft	180
125-05	Reception/Security	180
129-09	Communications Room	180
141-10	Communications Room	180
134-02	Communications Room	180
217-29	Communications Room	180
219-04	Communications Room	180
224-06	Communications Shaft	180
229-07	Communications Room	180
316-06	Telephone Switch Room	180
316-03	Computer Room	180
317-04	Communications Room	180
322-01	Security Office	180
324-10	Communications Shaft	180
424-01	Main Comm Equip Room	180
	All IBS Spaces & Mechanical Pods	180
	All Other Rooms	120

p. DUST CONTROL. This project is located immediately adjacent to an existing hospital facility, housing areas, and a school. The Contractor shall employ aggressive and continuous monitoring and control measures and conduct its operations to prevent any dust hazard or nuisance, either on or off the project site.

q. QUIET HOURS. Fort Wainwright has established, and will be enforcing, a quiet period from 10 p.m. to 6 a.m. (22:00 to 06:00 hours military time). The Contractor and its agents shall avoid activities that would impact upon this period.

r. ELECTRONIC AND HARD COPIES OF CORRESPONDENCE. All correspondence to the Administrative Contracting Officer shall be provided concurrently in hard copy and electronic copy. Correspondence in this sense includes serial letters, requests for information (RFI's), catalogue cuts, calculations, submittals, and any other items that can be submitted on paper. The hard copy will be the Government's record copy. Electronic copies shall be submitted in Adobe Acrobat Portable Document Format (.pdf) except where noted otherwise.

s. TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS. The purpose of the Telecommunications Systems' Commissioning process is to ensure proper coordination, monitoring, recording and documenting of all individual telecommunication systems. This includes verification that their associated submittals, inspection, testing, O&M manuals, records, warranty provisions, spares provision, operator and maintainer training, etc. is accomplished/provided as required throughout these Contract Specifications. Additionally, Commissioning requires the Contractor to identify, plan, implement and record any additional performance testing and other requirements not covered in the Specifications which, nevertheless, are required to demonstrate to the Contractor and the Government that all necessary performance interoperability of the telecommunications systems with each other, with other building systems (e.g. emergency power, fire alarm), and with other systems outside the facility/off-site (e.g. Post-wide LANs) are identified, tested, demonstrated, recorded, and documented.

(1) The Contractor's QC organization shall develop a commissioning plan (CP) which shall incorporate and coordinate the individual telecommunication systems' inspection, pre-testing, final functional performance testing, O&M manuals development and delivery, operator and maintainer training planning, provision of spares etc. plus any additional telecommunications interoperability testing requirements, and interoperability requirements with other systems outside the building/off-site.

(a) The Contractor QC organization shall liaise with Dick Pacific/GHEMM (DP/G), and thereby with the DP/G Commissioning Agent (CA), to coordinate and develop the CP in respect of interoperability with other building systems.

(b) The Contractor QC organization shall liaise through the Contracting Officer to coordinate and develop the CP in respect of interoperability with systems outside the facility/off-site.

(2) The Contractor shall coordinate, schedule, and supervise the final functional performance testing (FPT) process.

(3) The Contractor shall request written confirmation of system readiness for final functional performance testing from the appropriate Sub-Contractor. It is anticipated the Contractor shall complete Pre-Functional Performance Checks to ensure systems are ready. Once the Contractor is provided with confirmation for all related systems completion, the actual start date for final functional performance testing of systems will be confirmed.

(4) Training and Instruction. Training and instruction for Government personnel are a part of the commissioning process and essential for the proper operation of the building. The Contractor shall ensure the commissioning plan incorporates and coordinates all requirements in the specifications for training and instruction, and development of operation and maintenance manuals. Approved operations and maintenance manuals are to be available prior to formal training.

(5) Deficiencies. Any deficiencies noted at any stage during commissioning shall be addressed by the Contractors own QC organization or by the COE to the appropriate General Contractor (Telecommunications or DP/G) for remedy.

(6) The Contractor shall ensure any approved design changes, all test results, deficiencies/remedial effort, and any other relevant documentation, is provided to the Government as a complete record of the contract activity and of the end-state performance of the systems. This shall be provided in the form of a Commissioning Manual.

t. MERCURY. All materials and products incorporated by this contract shall contain no mercury.

2. COORDINATION

a. SUBMITTALS. Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with paragraph 11, Submittal Procedures.

SD-04 Drawings

Coordination drawings; G.

Drawings showing the location and layout of critical elements of the various trades as enumerated in paragraph 2d, COORDINATION DRAWINGS below. Approval shall be required prior to the beginning of any work.

b. FINISH ITEMS. The Contractor shall coordinate location with Dick Pacific/Ghemm (DP/G) and Corps of Engineers (COE) for items placed in or on finished surfaces that require ready access, such as the following examples: equipment mounted on counters, such as nurse call master stations, facility security operator work stations, and duress alarm switches; equipment surface mounted on doors, such as electromagnetic locks and door positions switches; equipment mounted in communications rooms, and antennas mounted on the roof mounting rail.

c. COORDINATION DRAWINGS. The Contractor shall be responsible for the coordination of all the work of all trades, subcontractors, and material suppliers. The Contractor shall, in advance of the work, prepare coordination drawings showing the location and layout of all electrical and communication systems which require coordination. The principal purpose of these drawings, which are to include plans, elevations, and sections as appropriate, is to provide a detailed plan for installing the required components, equipment, systems, etc., in such an organized manner as to assure interference-free and maintainable positioning within the spaces permitted. Drawings shall be of appropriate scale to satisfy the purpose, except floor plan drawings shall be 1:50 scale to match the construction drawings whenever possible. These drawings shall include appropriate views, plans, elevations, and sections as required, to show the rooms, or other space arrangements the Contractor proposes for all pieces of equipment and appurtenances thereto. Hard copy prints of drawings may be composite (with distinctive colors for the various trades) or may be separate but fully coordinated drawings. Electronic drawings, compatible with AutoCAD Version 2000, shall also be provided with each hard copy print. Electronic files shall be provided on CD-ROM/DVD. Each drawing file shall have all trades included for the particular building area, each trade assigned to a unique "layer". Drawings for a given area of the project shall show the work of all trades involved in that particular area which will allow carefully planned work sequencing and proper trade coordination and assure the expeditious solutions of problems and the installation of service lines and equipment as contemplated by the contract drawings. In the event the Contractor, in coordinating the various installations and in planning the method of installation, finds a conflict in routing, location or elevation between existing elements such as utilities, structural or other construction items, the Contractor shall bring the conflict to the attention of the Contracting Officer immediately. Based on the Contractors understanding and firsthand knowledge of the contract documents, the Contractor shall explain and document his proposed method of resolving any conflicts or problems identified. Installation of work will not proceed in any area prior to the completion of the coordination drawings submission

to the Contracting Officer, and joint review and acceptance by the Contractor and all subcontractor trades involved in each particular area, nor in any area in which conflicts are disclosed by the coordination drawings and the identified conflicts have been corrected to the satisfaction of the Contracting Officer. The Contractor shall certify to the Contracting Officer that the joint review and acceptance of the coordination drawings by the Contractor and his subcontractors has been completed and that all conflicts have been resolved. The Government will not be responsible for any impacts for lack of coordination between systems or systems components, that were not resolved in the coordination process prior to installation by any trade. The Contractor shall submit three sets of all coordination drawings to the Contracting Officer for information at least 30 calendar days prior to the actual start of any work in the area illustrated by the drawings. Equipment rooms shown on the drawings are adequate size to accommodate equipment of the required capacities as available from several manufacturers. Equipment items installed shall be of such dimension and configuration to accommodate full access for operation, servicing and removal. The preparation of coordination drawings and the coordination effort required by this section shall be coordinated with the requirements of Section 13080, entitled Seismic Protection for Nonstructural Building Equipment and Systems located in the technical specifications of this contract.

d. COORDINATION AND CONTROL PROCESS. At least 30 days prior to the submittal of coordination drawings, the Contractor shall meet in conference with personnel from the Corps of Engineers, MEDDAC, and HFPO to discuss the process, procedures, contents, and scheduling requirements for the preparation of Coordination Drawings. This meeting shall be scheduled as a line item activity on the Network Analysis System to precede the first submittal of a coordination drawing. At the conclusion of the meeting, the process that is developed and agreed to will be submitted in Report format for Government Approval and will constitute the outline to be followed by the Contractor for the submittal of all future coordination drawings.

e. COORDINATION WITH OTHER CONTRACTORS.

(1) The Communications Contractor is required to use close coordination of work with other contractors concurrently performing work at the site. Dick Pacific/Ghemm, JV (DPC/G), is the prime construction contractor responsible to the Government for the construction of Bassett Hospital. Work required by this Communications Contract will require extensive coordination with the ongoing Bassett Hospital contract. Scheduling and performance of work shall be coordinated in advance with DPC/G and their subcontractors so that work can continue without delays or interruptions. Participation in the on-site safety meetings, work coordination meetings, and partnering meetings conducted by DPC/G shall be required.

(2) The Premises Distribution System (PDS) and the Facility Security System (FSS) must be completed by Dick Pacific/Ghemm JV (DPC/G) beneficial occupancy date (BOD) specified in Section H, para 1.o. All other systems under this contract must be completed by 11 April 2006. Additionally, the Communications Follow-On Contractor is responsible for coordinating with DPC/G and its subcontractors to accomplish joint commissioning of the FSS with the Building Fire Alarm System. (At proposal due date DPC/Gs planned commissioning date for the Building Fire Alarm System is 30 September 2005). All work associated with the commissioning of the FSS shall be the responsibility of the Communications Follow-on Contractor.

3. metric measurements

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 380 (1993) Practice for Use of the International System of Units (SI)

ASTM E 621 (1994) Practice for Use of Metric (SI) Units in Building Design and Construction

b. GENERAL. This project includes metric units of measurements. The metric units used are the International System of Units (SI) developed and maintained by the General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by the 11th CGPM in 1960. A number of circumstances require that both metric SI units and English inch-pound (I-P) units be included in a section of the specifications. When both metric and I-P measurements are included, the section may contain measurements for products that are manufactured to I-P dimensions and then expressed in mathematically converted metric value (soft metric) or, it may contain measurements for products that are manufactured to an industry recognized rounded metric (hard metric) dimensions but are allowed to be substituted by I-P products to comply with the law. Dual measurements are also included to indicate industry and/or Government standards, test values or other controlling factors, such as the code requirements where I-P values are needed for clarity or to trace back to the referenced standards, test values or codes.

c. USE OF MEASUREMENTS. Measurements shall be either in SI or I-P units as indicated, except for soft metric measurements or as otherwise authorized. When only SI or I-P measurements are specified for a product, the product shall be procured in the specified units (SI or I-P) unless otherwise authorized by the Contracting Officer. The Contractor shall be responsible for all associated labor and materials when authorized to substitute one system of units for another and for the final assembly and performance of the specified work and/or products.

(1) Hard Metric. A hard metric measurement is indicated by an SI value with no expressed correlation to an I-P value, i.e., where an SI value is not an exact mathematical conversion of an I-P value, such as the use of 100 mm in lieu of 4 inches. Hard metric measurements are often used for field data such as distance from one point to another or distance above the floor. Products are considered to be hard metric when they are manufactured to metric dimensions or have an industry recognized metric designation.

(2) Soft Metric

(a) A soft metric measurement is indicated by an SI value which is a mathematical conversion of the I-P value shown in parentheses (e.g. 38.1 mm (1-1/2 inches)). Soft metric measurements are used for measurements pertaining to products, test values, and other situations where the I-P units are the standard for manufacture, verification, or other controlling factor. The I-P value shall govern while the metric measurement is provided for information.

(b) A soft metric measurement is also indicated for products that are manufactured in industry designated metric dimensions but are required by law to allow substitute I-P products. These measurements are indicated by a manufacturing hard metric product dimension followed by the substitute I-P equivalent value in parentheses (e.g., 190 x 190 x 390 mm (7-5/8 x 7-5/8 x 15-5/8 inches)).

(3) Neutral. A neutral measurement is indicated by an identifier which has no expressed relation to either an SI or an I-P value (e.g., American Wire Gage (AWG) which indicates thickness but in itself is neither SI nor I-P).

d. COORDINATION. Discrepancies, such as mismatches or product unavailability, arising from use of both metric and non-metric measurements and discrepancies between the measurements in the specifications and the measurements in the drawings shall be brought to the attention of the Contracting Officer for resolution.

e. RELATIONSHIP TO SUBMITTALS. Submittals for Government approval or for information only shall cover the SI or I-P products actually being furnished for the project. The Contractor shall submit the required drawings and calculations in the same units used in the contract documents describing the product or requirement unless otherwise instructed or approved. The Contractor shall use ASTM E 380 and ASTM E 621 as the basis for establishing metric measurements required to be used in submittals.

4. TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS -

a. SUBMITTALS. The following shall be submitted in accordance with Section H, paragraph 11, entitled SUBMITTAL PROCEDURES.

SD-01 Data

SD-07 Schedules

List of Tests; G: No later than 30 calendar days after award of the contract, the Contractor shall provide a complete list of all testing requirements for equipment and systems as specified in the technical provisions for review by the Contracting Officer. This list shall be maintained current during the Contract period utilizing data base software. Omission of test requirements from this listing shall not excuse the Contractor from performance of the tests for Government acceptance of the system. The submittal shall identify each test as follows:

- Type of test.
- Item being tested.
- Specification reference and requirement.
- Other requirements and references.
- Location.
- Source of testing services and qualifications
- Equipment or system test.
- End item or component item.

SD-08 Statements

Test Procedures; G.

(1) The Contractor shall submit to the Contracting Officer for approval the test procedures to be used no later than sixty (60) calendar days prior to scheduled test date. The test procedures shall provide a step-by-step description of:

- Contract requirements.
- Code or manufacturer's requirements.
- Test methodology.
- Availability of testing equipment.
- Calibration of testing equipment versus standards.
- Documentation format.
- Expertise of personnel.

Preparatory Inspection; G.

(2) The Contractor CQC shall conduct a preparatory inspection prior to each test, see paragraph 10, Contractor Quality Control for requirements.

Deficiency Tracking System; G

(3) The Contractor shall submit for approval its proposed tracking system to identify and maintain monthly status of deficiencies noted during testing procedures. The system shall provide a current status by sort of equipment tests and system tests as well as a separate sort by these categories of all presently noted deficiencies during the testing period. A final report listing all deficiencies for each equipment and system test shall be provided upon successful completion of the required test.

SD-14 Samples

Testing Documentation Format; G

(4) The Contractor shall submit to the Contracting Officer for approval sample forms and/or formats for documentation of equipment and system test no later than sixty (60) calendar days prior to the scheduled test date. The format for each test shall provide for sufficient data to ensure complete validation of the test results.

Standard Forms or Certificates; G

(5) In the event that a feature of work is tested according to a particular code and that code contains or recommends an example reporting form or certificate, the code shall be referenced and the data included in the submittal to the Contracting Officer, and if approved, it shall be properly executed upon performance of test. These formats do not replace the test documentation required under paragraph 4j TEST RESULTS DOCUMENTATION unless waived in writing by the Contracting Officer.

b. RESUBMITTAL REQUIREMENTS.

(1) The Government shall require thirty (30) calendar days to review and approve submittal data under this section. A requirement by the Government for resubmittal of an item shall require the Contractor to reschedule the test to a date at least thirty (30) calendar days from the date of the resubmittal. The Contracting Officer shall have final decision as to classification of items into equipment or systems status.

(2) Additional requirements. Once testing of an item of equipment or system has begun, if the Contracting Officer determines that a procedure or reporting form does not go into enough detail, the Contractor shall be required to resubmit the data for approval at no increase in contract price.

c. GENERAL REQUIREMENTS. The Contractor shall perform tests to validate the quality control measures for performance of the contract work were adequate, and that the finish product conforms to the contract requirements. This section shall be used in conjunction with the contract requirements for a Contractor quality control system and other sections of the specifications, which require specific testing. The Contractor shall inspect and test all equipment and systems, including interrelationships, whether or not required elsewhere in the specifications.

d. SCHEDULING. Testing of major items of equipment and systems shall be included as components of the Contractor's scheduling system. Each component or test shall be identified by specific area, specification section, or interrelated system and equipment identification, and shall be assigned a time frame or target date for performance. The test components shall be activities in the network analysis system interrelated with other work activities. Updated information shall be provided in the same manner as required for the scheduling system.

e. ELEMENTS. In addition to the testing specifically required by the various sections the Contractor shall also perform the following, except duplication of tests or data will not be required.

(1) Industry Practice. Where a particular test procedure for equipment or systems is not specified in the contract documents, that feature of work shall be tested based on standard industry practice and as necessary to determine the satisfactory operation of the equipment or system.

(2) Code or Manufacturer Tests. If a feature of work is specified to be constructed to meet a certain code (NFPA, ANSI, etc.), and that code contains an operational test procedure or a recommended one, or the manufacturer recommends a particular operational test, the equipment or system shall be additionally tested according to that test procedure whether or not it is specifically specified in the specifications, unless waived in writing by the Contracting Officer. This does not include tests performed by laboratories to obtain labels such as UL, NEMA, etc., or to meet factory certification.

f. OTHER SPECIFIED TESTS. These testing requirements do not supersede specific testing requirements as outlined under the various sections of the specifications. Where testing procedures and formats required under the specifications incorporate all of the requirements of this section, duplication of such data under these requirements will not be necessary.

g. TESTING EXPERTISE. The Contractor shall provide personnel with the necessary expertise to perform testing requirements. The Contractor shall obtain qualified technical personnel to inspect, check, adjust, calibrate, and operate the installed equipment or system personnel conducting testing shall be factory trained or certified for the specific model of system installed, and be completely knowledgeable regarding the system application design, installation, and operation for this project. This expertise shall be available to the Contractor Quality Control System Manager as necessary for performance of test procedures and subsequent evaluation. The Contracting Officer reserves the right to approve the system Contractor's choice of testing personnel, and, upon rejection of any testing personnel by the Contracting Officer at any time, the system contractor shall replace such testing personnel as soon as reasonably possible. Upon request, the system contractor shall provide the Contracting Officer the opportunity to interview and review the qualifications of each person proposed for testing work.

h. RECORDS. The Contractor shall maintain current and accurate records of all tests performed. These records shall be available for review by Government personnel.

i. DEFICIENCIES. The Contractor's deficiency tracking system shall be implemented under the Contracting Quality Control System. As deficiencies are corrected and after verification by the Contractor's Quality Control System Manager that the corrective measures are satisfactory, the Contractor shall update the test records to show this corrective action. The updating shall be accomplished by striking or lining out a deficiency in such a manner that it can still be read, with initials and date. The Contractor shall provide the updated test record to the Contracting Officer to indicate the status/progress of deficiency correction on a weekly basis. In addition the Contractor shall notify the Contracting Officer when all deficiencies for a particular item have been corrected and shall provide a final certified test record to the Contracting Officer within 10 calendar days of correcting all deficiencies for a particular test.

j. TEST RESULTS DOCUMENTATION. All test results shall be legibly recorded on the testing validation format as approved by the Contracting Officer. The test validation format shall provide for the following:

- Project title and contract number
- Applicable specification section and paragraphs. Submittal register number, if applicable.
- Network Analysis System (NAS) activity, if applicable.
- Interrelationship with other testing requirements.
- Test number. All tests are to be sequentially numbered for a particular test or discipline.
- Date and time of test.
- Location of project at which test was performed.
- Test results, numerical.
- Test results, pass/fail. Pass with qualifications (list)
- Corrective action if required; removal, repair, modification, etc.
- Name and signature of individuals performing test.
- Name and signature of Government Representative witnessing Test. (The signature of the Government Representative does not release the Contractor from meeting all contract requirements.)
- Additional specific equipment and system data specified.

The test record shall include as an attachment the approved test procedure. All test records shall be signed by the Contractor Quality Control System Manager and shall certify that the testing was performed in accordance with approved test procedures.

k. SYSTEM TESTING. The Contractor is responsible for conformance to the specifications for all construction. All Contractor furnished and installed equipment shall be thoroughly tested for compliance with the specifications and as necessary to demonstrate proper operation. Equipment testing shall include all operational features, safety features, mechanical and electrical limits, etc., and an inspection of finishes for scratches, dents, etc., as well as types of materials used and quality of installation.

(1) Test Procedure Data. The test procedure for equipment testing shall provide the following:

- Make and model number of equipment.
- Serial number and other nameplate data
- A listing of all operational features, safety features, and limits which are to be verified.
- Any variation to specified procedures.
- All test equipment shall be in current calibration and shall have a current calibration certification. (See Technical Specifications).

(2) Pre-Testing Checks. Contractor shall perform pre-testing checks and complete the associated checklists certifying that equipment and systems are ready for functional performance tests.

(3) Acceptance Tests. Contractor shall perform integrated systems acceptance tests. These tests shall demonstrate that the equipment and systems meet operational and functional requirements listed in the contract documents. This includes providing all modes of the sequences operation.

5. OPERATION & MAINTENANCE MANUALS

a. SUMMARY. Provide all operation and maintenance manuals for components and the entire integrated system/ systems.

b. PAYMENT. No separate payment will be made for the preparation and submittal of SOMM's, posted data or framed instructions. For payment purposes, preparation and submittal of O&M manuals shall be considered as a part of the price for the equipment and/or systems that is the subject of the SOMM, posted data and framed instructions.

c. SUBMITTALS. Contractor shall revise all submittals in accordance with government comments prior to final submittal. Government approval is required for submittals with a "G" designation. Submittals having no designation are for information only. The following shall be submitted in accordance with paragraph 11, Submittal Procedures.

d. DEFINITIONS.

(1) Systems Operation and Maintenance Manual (SOMM). SOMM's is an abbreviation of Systems Operation and Maintenance Manuals. These manuals are compilations of information, data and written procedures and instructions concerning the operation and/or maintenance of equipment elements, sub-systems and systems that are incorporated into the project.

(2) Technical Concept Narrative (TCN). Technical Concept Narratives describe each system and sub-system contained with the project.

(3) Vendor Data. Vendor data consists of one copy of technical information that must be submitted per the requirements of each technical Section of the Specifications. Vendor data includes, but is not limited to:

(a) Operator Manuals produced by equipment manufacturer (original documentation only, photocopies will not be accepted).

(b) Formulas, ingredients and other descriptive information regarding finishes.

(c) Users Manuals produced by equipment manufacturers.

(d) Applications Manuals provided by materials manufacturers.

(e) Maintenance materials provided by materials manufacturers.

(4) Volume. SOMM volumes are defined by the telecommunications system contained in that volume.

e. QUALITY CONTROL, DOCUMENT PREPARATION. Preparation of each SOMM shall be supervised by persons who are experienced in the operation and maintenance of equipment and systems described within the SOMM. A person skilled in technical writing shall write system literature.

f. FORMAT. Format will be consistent with SOMMs provided to other commercial customers (for example: hospitals).

g. CONTENT. Each Systems Operation & Maintenance Manual (SOMM) shall include a statement (or statements) describing each system, sub-system and equipment item covered by the SOMM.

(1) Volume Designations. SOMM's shall all be prepared in volumes according to the telecommunications systems.

6. CLOSEOUT SUBMITTALS

a. SUBMITTALS. Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are 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 paragraph 11, Submittal Procedures.

SD-02 Shop Drawings

As-Built Drawings; G

(1) Drawings showing final as-built conditions of the project. The final CADD as-built drawings shall consist of one set of electronic CADD drawing files in the specified format, one set of mylar drawings, 2 sets of blue-line prints of the mylars, and two sets of the approved working as-built drawings.

Warranty Documentation; G

(2) One set of the warranty documentation containing information relevant to the warranty of materials and equipment incorporated into the project, including the starting date of warranty.

Final Cleaning; G

(3) All areas of where work/installation occupied by said contractor shall be free of all work debris upon completion of the installation.

b. PROJECT RECORD DOCUMENTS.

(1) As-Built Drawings. This paragraph covers as-built drawings complete, as a requirement of the contract. The terms "drawings," "contract drawings," "drawing files," "working as-built drawings" and "final as-built drawings" refer to contract drawings which are revised to be used for final as-built drawings.

(a) Working As-Built and Final As-Built Drawings. The Contractor shall revise 2 sets of paper drawings by red-line process to show the as-built conditions during the prosecution of the project. These working as-built marked drawings shall be kept current on a weekly basis and at least one set shall be available on the jobsite at all times. Changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. Final as-built drawings shall be prepared after the completion of each definable feature of work as listed in the Contractor Quality Control Plan. The working as-built marked prints and final as-built drawings will be jointly reviewed for accuracy and completeness by the Contracting Officer and the Contractor.

(1) The location and dimensions of any changes within the building structure.

(2) Changes or modifications which result from the final inspection.

(3) Where contract drawings or specifications present options, only the option selected for construction shall be shown on the final as-built prints.

(b) Drawing Preparation. The as-built drawings shall be modified as may be necessary to correctly show the features of the project as it has been constructed by bringing the contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary. These working as-built marked prints shall be neat, legible and accurate. These drawings are part of the permanent records of this project and shall be returned to the Contracting Officer after approval by the Government. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at no expense to the Government.

(c) Computer Aided Design and Drafting (CADD) Drawings. Only personnel proficient in the preparation of CADD drawings shall be employed to modify the contract drawings or prepare additional new drawings. Additions and corrections to the contract drawings shall be equal in quality and detail to that of the originals. Line colors, line weights, lettering, layering conventions, and symbols shall be the same as the original line colors, line weights, lettering, layering conventions, and symbols. If additional drawings are required, they shall be prepared using the specified electronic file format applying the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final as-built drawings shall be identical to that used on the contract drawings. Additions and corrections to the contract drawings shall be accomplished using CADD files. The CADD drawings shall be provided in AutoCad Release 2000 in CD version. The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings. The Contracting Officer will review final as-built drawings for accuracy and the Contractor shall make required corrections, changes, additions, and deletions.

(3) Within 20 days after Government approval of all of the working as-built drawings for a phase of work, the Contractor shall prepare the final CADD as-built drawings for that phase of work and submit two sets of blue-lined prints of these drawings for Government review and approval. The Government will promptly return one set of prints annotated with any necessary corrections. Within 7 days the Contractor shall revise the CADD files accordingly at no additional cost and submit one set of final prints for the completed phase of work to the Government. Within 10 days of completion of all phases of work, the Contractor shall submit the final as-built drawing package for the entire project. The submittal shall consist of one set of electronic files on AutoCad Release 2000 CD disks, one set of mylars, two sets of full size prints and one set of the approved working as-built drawings. They shall be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any transactions or adjustments necessary to accomplish this are the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with the customer's CADD system. Paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

(4) The Contractor shall furnish a list for each system of installed equipment furnished under this contract. The list shall include all information usually listed on manufacturer's name plate. The "EQUIPMENT-IN-PLACE LIST" shall include, as applicable, the following for each piece of equipment installed: description of item, location (by room number), model number, serial number, capacity, name and address of manufacturer, name and address of equipment supplier, condition, spare parts list, manufacturer's catalog, and warranty. A draft list shall be furnished at time of transfer. The final list for each system shall be furnished in conjunction with System Commissioning.

c. WARRANTY MANAGEMENT

(1) Warranty Management Plan. The Contractor shall develop a warranty management plan. At least 30 days before the planned pre-warranty conference, the Contractor shall submit the warranty management plan for Government approval. The warranty management plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Warranty information made available during the performance of period of this contract shall be submitted to the Contracting Officer. Information contained in the warranty management plan shall include, but shall not be limited to, the following:

(a) Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

(b) Listing and status of delivery of all Certificates of Warranty for extended warranty items.

(c) A list for each warranted system indicating:

(1) Name of item.
(2) Model and serial numbers.
(3) Location where installed.
(4) Name and phone numbers of manufacturers or suppliers.
(5) Names, addresses and telephone numbers of sources of spare parts.
(6) Warranties and terms of warranty. This shall include one-year overall warranty. Items which have extended warranties shall be indicated with separate warranty expiration dates.
(7) Cross-reference to warranty certificates as applicable.
(8) Starting point and duration of warranty period.
(9) Summary of maintenance procedures required to continue the warranty in force.
(10) Cross-reference to specific pertinent Operation and Maintenance manuals.
(11) Organization, names and phone numbers of persons to call for warranty service.
(12) Typical response time and repair time expected for various warranted equipment.

(2) Pre-Warranty Conference. Prior to contract completion, and at a time designated by the Contracting Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be established and reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor shall furnish the name, telephone number and address of the company that is authorized to initiate and pursue warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the installed systems under this contract, shall be continuously available, and shall be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

(3) Contractor's Response to Warranty Service Requirements. Following oral or written notification by the Contracting Officer, the Contractor shall respond to warranty service requirements in accordance with the response times detailed in the technical specifications. The Contractor shall submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the warranty within the timeframes specified, the Government reserves the right to invoke the terms and conditions specified in the warranty clause included with this contract.

d. TESTING, ADJUSTING, AND COMMISSIONING. Prior to final inspection and transfer of the completed facility; all reports, statements, certificates, and completed checklists for testing, adjusting, and commissioning of communications systems shall be submitted to and approved by the Contracting Officer as specified in applicable technical specification sections and the Commissioning Plan developed by the Commissioning Agent (Refer to Section H, Paragraph 1.s.).

e. FINAL CLEANING. The premises shall be left broom clean. Stains, foreign substances, and temporary labels shall be removed from surfaces. Carpet and soft surfaces shall be vacuumed. Equipment and fixtures shall be cleaned to a sanitary condition. Debris shall be removed from indoor areas of work. Paved areas shall be swept and landscaped areas shall be raked clean. The site shall have waste, surplus materials, and rubbish removed. The project area shall have temporary structures, barricades, project signs, and construction facilities removed. A list of completed clean-up items shall be submitted on the day of final inspection.

7. ENVIRONMENT PROTECTION

The contractor shall comply to all Federal, State and EPA laws and regulations

8. TEMPORARY FACILITIES

a. GENERAL REQUIREMENTS.

(1) Identification of Employees. The Contractor shall be responsible for furnishing to each employee, and for requiring each employee engaged on the work to display, identification as approved and directed by the issuing office. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

(2) Employee Parking. Contractor employees shall park privately owned vehicles in the area designated on the contract drawings or as directed by the Contracting Officer. Parking shall not be permitted on the Hospital project site or adjacent areas without written permission of the Contracting Officer. Contractor employee parking shall not interfere with existing and established parking requirements of the military installation.

b. AVAILABILITY AND USE OF UTILITY SERVICES.

(1) Payment for Utility Services. The Government will make all reasonably required utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the Government or, where the utility is produced by the Government, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.

Utility	Maximum Amount	Cost
Water	Reasonable	$2.7114/kGAL
Electricity	Reasonable	$0.1032/kWH
Sewage	Reasonable	$4.2823/kGAL
Landfill Use	Reasonable	$7.0731/CY
Steam	Reasonable	$8.2490/kLB

(2) Meters and Temporary Connections. The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall provide and maintain necessary temporary connections, distribution lines, and meters required to measure the amount of each utility used for the purpose of determining charges. The Contractor shall notify the Contracting Officer, in writing, 5 working days before final electrical connection is desired so that a utilities contract can be established.

(3) Final Meter Reading. Before completion of the work and final acceptance of the work by the Government, the Contractor shall notify the Contracting Officer, in writing, 5 working days before termination is desired. The Government will take a final meter reading. The Contractor shall then remove all the temporary distribution lines, meters, and associated paraphernalia. The Contractor shall pay all outstanding utility bills before final acceptance of the work by the Government.

(4) Sanitation. The Contractor shall provide and maintain within the project site their own field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel. The permanent building toilet facilities installed by DickPacific/GHEMM shall not be used by any contractor or subcontractor personnel under this contract unless approval is received in writing from DickPacific/GHEMM.

(5) Telephones. The Contractor shall make arrangements and pay all costs for telephone facilities desired.

c. NOT USED.

d. CONTRACTOR'S TEMPORARY FACILITIES

(1) Administrative Field Offices. If the Contractor provides and maintains administrative field office facilities at Fort Wainwright, they must be located as designated on the drawings. Government office and warehouse facilities will not be available to the Contractor's personnel.

(2) Storage, Office Trailer, and Employee Parking Area. The Govemment will provide a fenced area as shown on contract drawing G1.02 to the Contractor for location of office trailers, staging and storage of materials, and employee parking.

(a) Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the military boundaries. Upon Contractor's request, the Contracting Officer will designate another or supplemental area for the Contractor's use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but will be within the military boundaries. A temporary 1.8 meter high chain link with plastic strip inserts, colored green (for visibility obstruction) shall be provided by the Contractor for supplemental storage areas. Trailers, equipment, or materials shall not be open to public view with the exception of those items which are in support of ongoing work on any given day. Materials shall not be stockpiled outside the fence in preparation for the next day's work. Mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment, shall be parked within the fenced area at the end of each work day.

(b) Heated Warehouse Storage. The Contractor is responsible for the proper storage and handling of all materials requiring heated storage at his expense. There are no on-site or Government provided heated storage warehouses. Equipment and materials arriving to the project site that require heated storage shall be maintained at the required temperatures until time of installation. Materials shall not be stored in the Bassett Hospital building that are not installed within 2 work days upon arrival to the building.

(c) Appearance of Trailers. Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the military property.

(d) Maintenance of Storage Area. Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse, with construction equipment or other vehicles, grassed or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion. Grass located within the boundaries of the field office staging area site shall be mowed for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers shall be edged or trimmed neatly.

e. SNOW PLOWING. The Contractor shall provide snow plowing for his project office(s), storage area, access roads, and employee parking as required to maintain safe access to these areas through the winter months.

f. SECURITY PROVISIONS. Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment; in addition, the Contractor shall notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.

g. PLANT COMMUNICATION. Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. The devices shall be made available for use by Government personnel.

h. CLEANUP. Construction debris, waste materials, packaging material, lunch debris and the like shall be removed from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away. Materials resulting from demolition activities which are salvageable shall be stored within the fenced area described above or at the supplemental storage area. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.

i. RESTORATION OF PROJECT OFFICE AND STORAGE AREAS. Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, the existing fence shall be removed and will become the property of the Contractor. Upon completion of work, the areas shall be restored to the original or better condition. Roadways for access to the storage area shall also be removed. Gravel within the storage areas shall be removed and the areas restored to its original condition, including the placement of topsoil and seeding as necessary. The Contractor shall provide maintenance to seeded areas as necessary to re-establish the vegetation.

9. NOT USED

10. CONTRACTOR QUALITY CONTROL

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

b. PAYMENT. Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Proposal Schedule.

c. GENERAL REQUIREMENTS. The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all design and construction operations, both onsite and offsite, and shall be keyed to the construction sequence. The project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with quality requirements specified in the contract. The project superintendent in this context shall mean the individual with the responsibility for the overall management of the project including quality and production.

d. QUALITY CONTROL PLAN. The Contractor shall furnish for review by the Government, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

(1) Content of the CQC Plan. The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

(a) A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

(b) The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

(c) A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

(d) Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section H, Paragraph 11, , entitled, SUBMITTAL PROCEDURES.

(e) Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities will require approval by the Contracting Officer.)

(f) Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

(g) Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

(h) Reporting procedures, including proposed reporting formats.

(i) A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

(2) Acceptance of Plan. Acceptance of the Contractor's plan is required prior to the start of performance of work. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

(3) Notification of Changes. After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

e. COORDINATION MEETING. After the Post-Award Conference, before start of work, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 30 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

f. QUALITY CONTROL ORGANIZATION.

(1) Personnel Requirements. The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure contract compliance. The Contractor shall provide a CQC organization which shall be at the site at all times during progress of the work and with complete authority to take any action necessary to ensure compliance with the contract. All CQC staff members shall be subject to acceptance by the Contracting Officer.

(2) CQC System Manager

(a) The CQC System Manager shall have a bachelors degree in Electrical or Electronics Engineering with at least 5 years total experience in the medical Telecommunications Systems field. Have extensive (minimum of 5 years) in the design, installation, operation, testing and troubleshooting of Comm systems, with special emphasis on those for medical facilities. The CQC System Manager shall have knowledge of the types of systems included in the Bassett Army Community Hospital project. The CQC System Manager shall have previous experience as a QA or QC field representative on Communication systems for at least three medical projects of similar size and complexity. At least one of these projects shall have been within the past three years. The CQC System Manager shall be well versed on the content and use of EIA/TIA Standards on Comm systems. Other technical degrees and training plus past commissioning and field experience will be considered but are considered secondary to the primary requirements above.

(b) This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. Period of absence may not exceed 2 weeks at any one time, and not more than 24 work days during a calendar year. The CQC System Manager shall be assigned no other duties. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

(3) CQC Personnel. In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel whose primary responsibilities are to assist the CQC System Manager for the following areas:Premises Distribution System, EMS Recorder, Radio Page System, Nurse Call Systems, PA System, Sound Reinforcement System, TV system, Facility Security System, and RF Transponder System. . These individuals shall be employees of the prime Contractor; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility.

(4) Additional Requirements. In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered at the Associated General Contractors of Alaska offices in Anchorage and Fairbanks.

(5) Organizational Changes. The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

g. SUBMITTALS AND DELIVERABLES. Submittals, if needed, shall be made as specified in Section H, Paragraph 11, entitled, SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

h. CONTROL. Contractor Quality Control is the means by which the Contractor ensures that the systems installation, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of work as follows:

(1) Preparatory Phase. This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

(a) A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

(b) A review of the contract drawings.

(c) A check to assure that all materials and/or equipment have been tested, submitted, and approved.

(d) Review of provisions that have been made to provide required control inspection and testing.

(e) Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

(f) A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

(g) A review of the appropriate activity hazard analysis to assure safety requirements are met.

(h) Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

(i) A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

(j) Discussion of the initial control phase.

(k) The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

(2) Initial Phase. This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

(a) A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

(b) Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

(c) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards.

(d) Resolve all differences.

(e) Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

(f) The Government shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

(g) The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

(3) Follow-up Phase. Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

(4) Additional Preparatory and Initial Phases. Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

i. TESTS. Testing Procedure. The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Testing includes operation and/or acceptance tests when specified. A list of tests to be performed shall be furnished as part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site, as appropriate. The Contractor shall perform the following activities and record and provide the following data:

(a) Verify that testing procedures comply with contract requirements.

(b) Verify that facilities and testing equipment are available and comply with testing standards.

(c) Check test instrument calibration data against certified standards.

(d) Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

(e) Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

j. COMPLETION INSPECTION

(1) Punch-Out Inspection. Near the end of the work, or any increment of the work established by a time stated in the Special Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by Section H, paragraph 10.k., entitled DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

(2) Pre-Final Inspection. The Government will perform the pre-final inspection to verify that the telecommunications systems are complete and ready for use. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

(3) Final Acceptance Inspection. The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Post Director of Public Works user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost.

k. DOCUMENTATION. The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

(1) Contractor/subcontractor and their area of responsibility.

(2) Operating plant/equipment with hours worked, idle, or down for repair.

(3) Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

(4) Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

(5) Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

(6) Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

(7) Offsite surveillance activities, including actions taken.

(8) Job safety evaluations stating what was checked, results, and instructions or corrective actions.

(9) Instructions given/received and conflicts in plans and/or specifications.

(10) Contractor’s verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. Unless otherwise directed by the Contracting Officer, all combined QC/QA reports shall be electronically transmitted to the Contracting Officer via e-mail and a follow up hard copy with wet signatures shall be delivered daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. Electronic copies shall be submitted in Word Version 9.05 or later. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no-work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

l. SAMPLE FORMS. Sample forms enclosed at the end of this section.

m. NOTIFICATION OF NONCOMPLIANCE. The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

11. SUBMITTAL PROCEDURES

a. SUBMITTAL IDENTIFICATION. Submittals required are identified by SD numbers as follows:

SD-01 Data(including Equipment and Materials Manufacturers Price List Data)

SD-04 Drawings

SD-06 Instructions

SD-07 Schedules

SD-08 Statements

SD-09 Reports

SD-13 Certificates

SD-14 Samples

SD-18 Records

SD-19 Operation and Maintenance Manuals

b. SUBMITTAL CLASSIFICATION. Submittals are classified as follows:

(1) Government Approved. Government approval is required for submittals with a “G” designation for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer.

(2) Information Only. All submittals not having a “G” designation are for information only.

c. APPROVED SUBMITTALS. The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

d. DISAPPROVED SUBMITTALS. The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

e. WITHOLDING OF PAYMENT. Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

f. GENERAL. The Contractor shall make submittals as required by the specifications. All submittals shall be hard and electronic copies (see below for electronic deliverable requirements). The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Electronic copies shall be placed in the same order as they appear in the hard copy version. All drawings shall be submitted in .CAL format unless otherwise specified. Editable electronic copies shall be submitted as directed by the Contracting Officer. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals designated with a “G” requiring Government approval shall be scheduled and submitted prior to the acquisition of the material or equipment covered thereby. SOMM submittals shall be submitted 30 days prior to beginning of training. Submittals listed which require Contractor approvals shall be scheduled and submitted at least thirty (30) calendar days prior to scheduling the Quality Control Preparatory Phase as described in Section H, Paragraph 10, entitled Contractor Quality Control. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

g. SUBMITTAL REGISTER (ENG FORM 4288). At the end of this section is a DRAFT set of ENG Form 4288 listing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required, therefore the Contractor shall be responsible for a thorough inspection of all specification sections for additional submittal items. The Contractor will also be given the submittal register files, containing the computerized ENG Form 4288 and instructions on the use of the files. These submittal register files will be furnished on a separate diskette. Columns "d" through "r" have been completed by the Government; the Contractor shall complete columns "a" and "s" through "u" and submit the

forms (hard copy plus associated electronic file) to the Contracting Officer for approval within 30 calendar days after Notice to Proceed. The Contractor shall keep this diskette up-to-date and shall submit it to the Government together with the monthly payment request. The approved submittal register will become the scheduling document and will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated.

h. SCHEDULING.

(1.) Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval of both G and submittals for information only. No delay damages or time extensions will be allowed for time lost in late submittals.

(2.) Submittals:

(a.) Submittals SD-1 Data, Qualifications; System Description; Materials and Equipment; Design Analysis and Calculations; and SD-04 Drawings, Detail Drawings; and Coordination Drawings as required in each of sections 16710; 16730; 16731; 16755; 16756; 16770; 16771; 16781; 16786; and 16788 shall be submitted as three part design submittals. The Contractor shall provide 10 hard copy sets and 2 compact disk copies of 35% and 65% design submittals for review by the Government. After receipt of the 35% and 65% submittals the Government shall have fifteen (15) calendar days for review and comment. A 35% review conference shall be scheduled on-site at Ft. Wainwright, Alaska during the first week after that period. The review will be for conformance with the requirements of the solicitation and the Contractors proposal. A 65% review conference will be conducted telephonically within one week after the review period. The review will be for conformance with the requirements of the solicitation and the Contractors proposal.

(b.) At the review conferences, or just prior to the conferences, the Government will furnish the Contractor comments from the various design sections and from other concerned agencies involved in the review process. The Contractor shall bring key design personnel for each section to the review conferences. During the conferences, the Contractor will either accept the comments, with or without provision, or have comments withdrawn if generally agreed upon.

(c.) Review Conferences: Review comments provided to the Contractor will not necessarily show coordination requirements with other parts of the submittal. The Contractor shall incorporate and coordinate the review comments into each part of the next submittal.

(d.) The following defines the minimum requirements for the 35% and 65% submittals:

The 35% design submittal shall include for each system:

1) Block diagram of system proposed including all functional components.
2) Narrative on how the system operates to help the hospital staff (what value this system brings to the hospital).
3) Narrative on system theory of operation, and how the system will interface with other systems if required.
4) Selection of all major components including Manufacturer, Make, Model, quantities.
5) Cut sheets or manufacturers manuals of major components if available.
6) Preliminary space, power, and cooling requirements.

The 65% design submittal shall include for each system. (The design should be essentially complete at this point, and the documentation of the design should be formalized.):

1) All plans and drawings necessary to place equipment in its final configuration.
2) Schematic Diagrams
3) Wiring / Terminal Block lists
4) Complete Material lists
5) Design Analysis/Calculations
6) Preliminary documentation (Q/A, Q/C, final adjustments, FCO)

(e.) Conference Records: The Contractor shall, within seven (7) working days after the conferences prepare a written record of the meetings and furnish two hard copies to the project manager. The written report shall include the project name, contract discussions, recommendations, and conclusions. The reports shall also be provided electronically in MS Word 2000 format.

The contractors final design submittals shall be submitted as required in h (1) above with adequate time (a minimum of twenty (20) calendar days exclusive of mailing time) allowed for review and approval.

i. TRANSMITTAL FORM (ENG FORM 4025). The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

j. Submittals shall be made as follows:

(1) Procedures

(a) Government approved and Information only submittals shall be listed on separate ENG Form 4025's.

(b) Samples for testing shall be delivered in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL. All other submittals shall be delivered to the Contracting Officer.

(2) Deviations. For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

k. CONTROL OF SUBMITTALS. The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

l. GOVERNMENT APPROVED SUBMITTALS. Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Five (5) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Contractor.

m. INFORMATION ONLY SUBMITTALS. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. Submittals must be submitted thirty (30) days prior to scheduled associated preparatory meetings.

n. STAMPS. Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR

(Firm Name)

_____Approved

_____Approved with corrections as noted on submittal data and/or attached sheet(s).

SIGNATURE: _____

TITLE: _____

DATE: _____

o. ATTACHMENTS. ENG Form 4288 Submittal Registers and ENG Form 4025.

12. OPERATION & MAINTENANCE TRAINING

The following table outlines the requirements for training. Contractor shall provide four (4) copies, in CD-ROM/DVD format, of all video recorded training sessions. In addition, the Contractor shall provide fifteen (15) copies of all training media.

TRAINING COURSES AND SESSIONS						
SYSTEM	TRAINING COURSES	TRAINING SESSIONS (Note 1)				NOTES
		SHIFTS	SESSIONS PER SHIFT	LOCATION (Note 2)	HOURS PER SESSION	
PDS	Technician	1	1	Classroom & Field	4	3
NCTV	User/Operator	3	5	Classroom & Field	2	4
	Refresher - User/Operator	3	5	Field	1	4
	Technician	1	1	Classroom & Field	12	
				Manufacturer Facility	Ref Notes	5
	Refresher - Technician	1	1	Classroom & Field	4	
NCAV	User/Operator	3	4	Classroom & Field	4	4
	Refresher - User/Operator	3	4	Field	2	4
	Technician	1	1	Classroom & Field	16	
				Manufacturer Facility	Ref Notes	5
	Refresher - Technician	1	1	Classroom & Field	8	
RADIO PAGE	Operator	1	1	Operator Station	6	
	Refresher - Operator	1	1	Operator Station	2	
	User	3	3	Classroom	1	
	Technician	1	1	Classroom & Field	8	
				Manufacturer Facility	Ref Notes	5, 6
	Refresher - Technician	1	1	Classroom & Field	3	

TRAINING COURSES AND SESSIONS						
SYSTEM	TRAINING COURSES	TRAINING SESSIONS (Note 1)				NOTES
		SHIFTS	SESSIONS PER SHIFT	LOCATION (Note 2)	HOURS PER SESSION	
RF TRANSPONDER	Technician	1	1	Classroom & Field	6	
	Refresher - Technician	1	1	Classroom & Field	2	
PUBLIC ADDRESS	User	3	8	Field	0.5	
	Refresher - User	3	8	Field	0.5	
	Technician	1	1	Classroom & Field	8	
	Refresher - Technician	1	1	Classroom & Field	4	
SOUND REINFORCEMENT	User/Operator	1	1	Field	3	
	Refresher - User	1	1	Field	1	
	Technician	1	1	Field	3	
	Refresher - Technician	1	1	Field	2	
TV	User	3	3	Classroom & Field	2	
	Operator	1	1	Field	8	
	Refresher - Operator	1	1	Field	4	
	Technician	1	1	Field	8	
				Manufacturer Facility	Ref Notes	5
	Refresher - Technician	1	1	Field	4	

TRAINING COURSES AND SESSIONS						
SYSTEM	TRAINING COURSES	TRAINING SESSIONS (Note 1)				NOTES
		SHIFTS	SESSIONS PER SHIFT	LOCATION (Note 2)	HOURS PER SESSION	
EMS RECORDER	Operator	3	1	Recorder	2	
	Refresher - Operator	3	1	Recorder	1	
	Technician	1	1	Field	2	
	Refresher - Technician	1	1	Field	1	
FACILITY SECURITY SYSTEM	Operator	3	2	Classroom & Operator Workstations	8	
		3	2	Inpatient and L&D Nursing Units	4	7
		1	1	Management Workstation	8	
	Refresher - Operator	1	3	Workstations	8	
	User	3	8	Classroom	1	8
	Technician	1	1	Classroom & Field	16	
				Manufacturer Facility	Ref Notes	5
	Refresher - Technician	1	1	Classroom & Field	8	

GENERAL NOTES:

1. Training session data are minimum requirements. System contractor shall add training sessions and time as required by the system application design.

REFERENCED NOTES:

1. The number of trainees per session shall be as coordinated with the Contracting Officer during development of the Training Plan.

2. Classroom training sessions shall be held in on-site classrooms as coordinated with the Contracting Officer.

Field training sessions shall be held in facility locations where subject components of the system/subsystem are installed.

3. Includes installers of GFGI equipment that interconnects with the PDS.

4. One training session for each nurse call subsystem per shift.

5. Factory training and certification for maintenance staff. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training for certification as a maintenance technician.

6. Factory training for CPU/Encoder only.

7. One training session per nursing unit per shift.

8. Access card users and duress alarm station users.

13. PROJECT SCHEDULE

a. GENERAL REQUIREMENTS. The scheduling of performance of work shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all payments.

b. NOT USED.

c. PROJECT SCHEDULE. The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this specification. Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Contracting Officer.

(1) Use of the Critical Path Method. The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in the Precedence Diagram Method (PDM).

(2) Level of Detail Required. The Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule or provide data to the Contracting Officer at the appropriate level of detail, as specified by the Contracting Officer, shall result in the disapproval of the schedule. The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule:

(a) Activity Durations. Contractor submissions shall follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of all non-procurement activities' Original Durations are greater than 20 days).

(b) Procurement Activities. Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. Long lead materials and equipment are those materials that have a procurement cycle of over 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, and delivery.

(c) Government Activities. Government and other agency activities that could impact progress shall be shown. These activities include, but are not limited to: approvals, inspections, utility tie-in, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements.

(d) Responsibility. All activities shall be identified in the project schedule by the party responsible to perform the work. Responsibility includes, but is not limited to, the subcontracting firm, Contractor work force, or government agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

(e) Work Areas. All activities shall be identified in the project schedule by the work area in which the activity occurs. Activities shall not be allowed to cover more than one work area. The work area of each activity shall be identified by the Work Area Code.

(f) Modification or Claim Number. Any activity that is added or changed by contract modification or used to justify claimed time shall be identified by a mod or claim code that changed the activity.

(g) Proposal Item. All activities shall be identified in the project schedule by the proposal Item to which the activity belongs.

(h) Phase of Work. All activities shall be identified in the project schedule by the phases of work in which the activity occurs.

(i) Category of Work. All Activities shall be identified in the project schedule according to the category of work which best describes the activity. Category of work refers, but is not limited, to the procurement chain of activities including such items as submittals, approvals, procurement, fabrication, delivery, installation, start-up, and testing. The category of work for each activity shall be identified by the Category of Work Code.

(j) Feature of Work. All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to, a work breakdown structure for the project. The feature of work for each activity shall be identified by the Feature of Work Code.

(3) Scheduled Project Completion. The schedule interval shall extend from award to the contract completion date.

(a) Project Start Date. The schedule shall start no earlier than the date of award. The Contractor shall include as the first activity in the project schedule an activity called "Start Project". The "Start Project" activity shall have an "ES" constraint date equal to the date of award and a zero day duration.

(b) Constraint of Last Activity. Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. The Contractor shall include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

(c) Early Project Completion. In the event the project schedule shows completion of the project prior to the contract completion date, the Contractor shall identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Contractor shall specifically address each of the activities noted in the narrative report at every project schedule update period to assist the Contracting Officer in evaluating the Contractor's ability to actually complete prior to the contract period.

(4) Interim Completion Dates. Contractually specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

(a) Start Phase. The Contractor shall include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date of award and a zero day duration.

(b) End Phase. The Contractor shall include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

(c) Phase X. The Contractor shall include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity shall be logically tied to the earliest and latest activities in the phase.

(5) Default Progress Data Disallowed. Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports.

(6) Out-of-Sequence Progress. Activities that have posted progress without all preceding logic being satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case approval of the Contracting Officer. The Contractor shall propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule.

(7) Negative Lags. Lag durations contained in the project schedule shall not have a negative value.

d. PROJECT SCHEDULE SUBMISSIONS. The Contractor shall provide the submissions as described below. The data disk, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

(1) Preliminary Project Schedule Submission. The Preliminary Project Schedule, defining the Contractor's planned operations for the first 60 calendar days shall be submitted for approval within 20 calendar days after contract award.

(2) Initial Project Schedule Submission. The Initial Project Schedule shall be submitted for approval within 40 calendar days after award. The schedule shall provide a reasonable sequence of activities which represent work through the entire project and shall be at a reasonable level of detail.

(3) Periodic Schedule Updates. Based on the result of progress meetings, specified in "Periodic Progress Meetings," the Contractor shall submit periodic schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress.

(4) Standard Activity Coding Dictionary. The Contractor shall use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used.

e. SUBMISSION REQUIREMENTS. The following items shall be submitted by the Contractor for the preliminary submission, initial submission, and every periodic project schedule update throughout the life of the project:

(1) Data Disks. Two data disks containing the project schedule shall be provided.

(a) NOT USED.

(b) Disk Label. A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Preliminary, Initial, Update, or Change), full contract number, project name, project location, data date, name and telephone number or person responsible for the schedule.

(c) File Name. Each file submitted shall have a name related to either the schedule data date, project name, or contract number.

(2) Narrative Report. A Narrative Report shall be provided with the preliminary, initial, and each update of the project schedule.

(3) Approved Changes Verification. Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the schedule submission.

(4) Schedule Reports. The format for each activity for the schedule reports listed below shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.

(a) Activity Report. A list of all activities sorted according to activity number.

(b) Logic Report. A list of Preceding and Succeeding activities for every activity in ascending order by activity number. Preceding and succeeding activities shall include all information listed above in paragraph Schedule Reports. A blank line shall be left between each activity grouping.

(c) Total Float Report. A list of all incomplete activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates. Completed activities shall not be shown on this report.

(d) NOT USED.

(5) Network Diagram. The network diagram shall be required on the initial schedule submission and on monthly schedule update submissions. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

(a) Continuous Flow. Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity number, description, duration, and estimated earned value shall be shown on the diagram.

(b) Project Milestone Dates. Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

(c) Critical Path. The critical path shall be clearly shown.

(d) Banding. Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

(e) S-Curves. Earnings curves showing projected early and late earnings and earnings to date.

f. NOT USED.

g. REQUESTS FOR TIME EXTENSIONS. In the event the Contractor requests an extension of the contract completion date, or any interim milestone date, the Contractor shall furnish the following for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals.

(1) Justification of Delay. The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be a cause for a time extension to the contract completion date.

(2) Submission Requirements. The Contractor shall submit a justification for each request for a change in the contract completion date of under 2 weeks based upon the most recent schedule update at the time of award or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

- A list of affected activities, with their associated project schedule activity number.
- A brief explanation of the causes of the change.
- An analysis of the overall impact of the changes proposed.
- A sub-network of the affected area.
- Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

(3) Additional Submission Requirements. For any requested time extension of over 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request.

h. DIRECTED CHANGES. If the NTP is issued for changes prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule.

i. OWNERSHIP OF FLOAT. Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

END OF SECTION H

Section I - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	JUL 1995
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	JUN 2003
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	JUL 1995
52.215-2	Audit and Records--Negotiation	JUN 1999
52.215-8	Order of Precedence--Uniform Contract Format	OCT 1997
52.215-14	Integrity of Unit Prices	OCT 1997
52.219-4	Notice of Price Evaluation Preference for HUBZone Small Business Concerns	JAN 1999
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.219-9 Alt II	Small Business Subcontracting Plan (Jan 2002) Alternate II	OCT 2001
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.222-3	Convict Labor	JUN 2003
52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation	SEP 2000
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	APR 2002
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	DEC 2001
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	DEC 2001
52.222-41	Service Contract Act Of 1965, As Amended	MAY 1989
52.222-44	Fair Labor Standards And Service Contract Act - Price Adjustment	FEB 2002
52.223-3	Hazardous Material Identification And Material Safety Data	JAN 1997
52.223-5	Pollution Prevention and Right-to-Know Information	AUG 2003
52.223-6	Drug-Free Workplace	MAY 2001
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.224-1	Privacy Act Notification	APR 1984
52.224-2	Privacy Act	APR 1984
52.225-1	Buy American Act--Supplies	JUN 2003
52.225-13	Restrictions on Certain Foreign Purchases	DEC 2003
52.227-1	Authorization and Consent	JUL 1995
52.227-18	Rights in Data--Existing Works	JUN 1987
52.227-19	Commercial Computer Software- Restricted Rights	JUN 1987
52.228-5	Insurance - Work On A Government Installation	JAN 1997
52.229-3	Federal, State And Local Taxes	APR 2003

52.232-1	Payments	APR 1984
52.232-8	Discounts For Prompt Payment	FEB 2002
52.232-11	Extras	APR 1984
52.232-17	Interest	JUN 1996
52.232-23	Assignment Of Claims	JAN 1986
52.232-25	Prompt Payment	OCT 2003
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3	Protest After Award	AUG 1996
52.237-2	Protection Of Government Buildings, Equipment, And Vegetation	APR 1984
52.239-1	Privacy or Security Safeguards	AUG 1996
52.242-13	Bankruptcy	JUL 1995
52.243-1 Alt II	Changes--Fixed-Price (Aug 1987) - Alternate II	APR 1984
52.245-2	Government Property (Fixed Price Contracts)	MAY 2004
52.249-8	Default (Fixed-Price Supply & Service)	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.225-7012	Preference For Certain Domestic Commodities	JUN 2004
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

CLAUSES INCORPORATED BY FULL TEXT

52.222-42 STATEMENT OF EQUIVALENT RATES FOR FEDERAL HIRES (MAY 1989)

In compliance with the Service Contract Act of 1965, as amended, and the regulations of the Secretary of Labor (29 CFR Part 4), this clause identifies the classes of service employees expected to be employed under the contract and states the wages and fringe benefits payable to each if they were employed by the contracting agency subject to the provisions of 5 U.S.C. 5341 or 5332.

THIS STATEMENT IS FOR INFORMATION ONLY: IT IS NOT A WAGE DETERMINATION
Employee Class Monetary Wage-Fringe Benefits

System Project Mgr	GS-12/05	$28.73
QCSystem Manger	GS-12/05	$28.73
Project Manger – Prime	GS-13/05	$34.16
Scheduler, Miantenance	GS-11/05	$23.97

Site: http://www.cpms.osd.mil/wage/wage.html

(End of clause)

52.228-1 BID GUARANTEE (SEP 1996)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, e.g., bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.-

(c) The amount of the bid guarantee shall be 20 percent of the bid price or $3,000,000.00, whichever is less.-

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.-

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

(End of clause)

52.228-16 PERFORMANCE AND PAYMENT BONDS--OTHER THAN CONSTRUCTION (JUL 2000)

(a) Definitions. As used in this clause--

Original contract price means the award price of the contract or, for requirements contracts, the price payable for the estimated quantity; or, for indefinite-quantity contracts, the price payable for the specified minimum quantity. Original contract price does not include the price of any options, except those options exercised at the time of contract award.

(b) The Contractor shall furnish a performance bond (Standard Form 1418) for the protection of the Government in an amount equal to 100 percent of the original contract price and a payment bond (Standard Form 1416) in an amount equal to 100 percent of the original contract price.

(c) The Contractor shall furnish all executed bonds, including any necessary reinsurance agreements, to the Contracting Officer, within 10 days, but in any event, before starting work.

(d) The Government may require additional performance and payment bond protection if the contract price is increased. The Government may secure the additional protection by directing the Contractor to increase the penal amount of the existing bonds or to obtain additional bonds.

(e) The bonds shall be in the form of firm commitment, supported by corporate sureties whose names appear on the list contained in Treasury Department Circular 570, individual sureties, or by other acceptable security such as postal money order, certified check, cashier's check, irrevocable letter of credit, or, in accordance with Treasury Department regulations, certain bonds or notes of the United States. Treasury Circular 570 is published in the Federal Register, or may be obtained from the U.S. Department of Treasury, Financial Management Service, Surety Bond Branch, 401 14th Street, NW., 2nd Floor, West Wing, Washington, DC 20227.

(End of clause)

52.244-6 SUBCONTRACTS FOR COMMERCIAL ITEMS (UL 2004)

(a) Definitions.

"Commercial item", has the meaning contained in Federal Acquistion Regulation 2.101, Definitions.

"Subcontract", includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c) (1) The Contractor shall insert the following clauses in subcontracts for commercial items:

(i) 52.219-8, Utilization of Small Business Concerns (MAY 2004) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds $500,000 ($1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (Apr 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212(a)).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).

(v) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (APR 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631) (flow down required in accordance with paragraph (d) of FAR clause 52.247-64).

(2) While not required, the Contractor may flow down to subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

(End of clause)

52.248-1 VALUE ENGINEERING (FEB 2000)

(a) General. The Contractor is encouraged to develop, prepare, and submit value engineering change proposals (VECP's) voluntarily. The Contractor shall share in any net acquisition savings realized from accepted VECP's, in accordance with the incentive sharing rates in paragraph (f) below.

(b) Definitions. "Acquisition savings," as used in this clause, means savings resulting from the application of a VECP to contracts awarded by the same contracting office or its successor for essentially the same unit. Acquisition savings include--

(1) Instant contract savings, which are the net cost reductions on this, the instant contract, and which are equal to the instant unit cost reduction multiplied by the number of instant contract units affected by the VECP, less the Contractor's allowable development and implementation costs;

(2) Concurrent contract savings, which are net reductions in the prices of other contracts that are definitized and ongoing at the time the VECP is accepted; and

(3) Future contract savings, which are the product of the future unit cost reduction multiplied by the number of future contract units in the sharing base. On an instant contract, future contract savings include savings on increases in quantities after VECP acceptance that are due to contract modifications, exercise of options, additional orders, and funding of subsequent year requirements on a multiyear contract.

"Collateral costs," as used in this clause, means agency cost of operation, maintenance, logistic support, or Government-furnished property.

"Collateral savings," as used in this clause, means those measurable net reductions resulting from a VECP in the agency's overall projected collateral costs, exclusive of acquisition savings, whether or not the acquisition cost changes.

"Contracting office" includes any contracting office that the acquisition is transferred to, such as another branch of the agency or another agency's office that is performing a joint acquisition action.

"Contractor's development and implementation costs," as used in this clause, means those costs the Contractor incurs on a VECP specifically in developing, testing, preparing, and submitting the VECP, as well as those costs the Contractor incurs to make the contractual changes required by Government acceptance of a VECP.

"Future unit cost reduction," as used in this clause, means the instant unit cost reduction adjusted as the Contracting Officer considers necessary for projected learning or changes in quantity during the sharing period. It is calculated at the time the VECP is accepted and applies either (1) throughout the sharing period, unless the Contracting Officer decides that recalculation is necessary because conditions are significantly different from those previously anticipated or (2) to the calculation of a lump-sum payment, which cannot later be revised.

"Government costs," as used in this clause, means those agency costs that result directly from developing and implementing the VECP, such as any net increases in the cost of testing, operations, maintenance, and logistics support. The term does not include the normal administrative costs of processing the VECP or any increase in this contract's cost or price resulting from negative instant contract savings.

"Instant contract," as used in this clause, means this contract, under which the VECP is submitted. It does not include increases in quantities after acceptance of the VECP that are due to contract modifications, exercise of options, or additional orders. If this is a multiyear contract, the term does not include quantities funded after VECP acceptance. If this contract is a fixed-price contract with prospective price redetermination, the term refers to the period for which firm prices have been established.

"Instant unit cost reduction" means the amount of the decrease in unit cost of performance (without deducting any Contractor's development or implementation costs) resulting from using the VECP on this, the instant contract. If this is a service contract, the instant unit cost reduction is normally equal to the number of hours per line-item task saved by using the VECP on this contract, multiplied by the appropriate contract labor rate.

"Negative instant contract savings" means the increase in the cost or price of this contract when the acceptance of a VECP results in an excess of the Contractor's allowable development and implementation costs over the product of the instant unit cost reduction multiplied by the number of instant contract units affected.

"Net acquisition savings" means total acquisition savings, including instant, concurrent, and future contract savings, less Government costs.

"Sharing base," as used in this clause, means the number of affected end items on contracts of the contracting office accepting the VECP.

Sharing period, as used in this clause, means the period beginning with acceptance of the first unit incorporating the VECP and ending at a calendar date or event determined by the contracting officer for each VECP.

"Unit," as used in this clause, means the item or task to which the Contracting Officer and the Contractor agree the VECP applies.

"Value engineering change proposal (VECP)" means a proposal that--

(1) Requires a change to this, the instant contract, to implement; and

(2) Results in reducing the overall projected cost to the agency without impairing essential functions or characteristics; provided, that it does not involve a change--

(i) In deliverable end item quantities only;

(ii) In research and development (R&D) end items or R&D test quantities that is due solely to results of previous testing under this contract; or

(iii) To the contract type only.

(c) VECP preparation. As a minimum, the Contractor shall include in each VECP the information described in subparagraphs (1) through (8) below. If the proposed change is affected by contractually required configuration management or similar procedures, the instructions in those procedures relating to format, identification, and priority assignment shall govern VECP preparation. The VECP shall include the following:

(1) A description of the difference between the existing contract requirement and the proposed requirement, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, the effect of the change on the end item's performance, and any pertinent objective test data.

(2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revisions.

(3) Identification of the unit to which the VECP applies.

(4) A separate, detailed cost estimate for (i) the affected portions of the existing contract requirement and (ii) the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amo unt attributable to subcontracts under the Subcontracts paragraph of this clause, below.

(5) A description and estimate of costs the Government may incur in implementing the VECP, such as test and evaluation and operating and support costs.

(6) A prediction of any effects the proposed change would have on collateral costs to the agency.

(7) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.

(8) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved, and previous Government actions, if known.

(d) Submission. The Contractor shall submit VECP's to the Contracting Officer, unless this contract states otherwise. If this contract is administered by other than the contracting office, the Contractor shall submit a copy of the VECP simultaneously to the Contracting Officer and to the Administrative Contracting Officer.

(e) Government action. (1) The Contracting Officer will notify the Contractor of the status of the VECP within 45 calendar days after the contracting office receives it. If additional time is required, the Contracting Officer will notify the Contractor within the 45-day period and provide the reason for the delay and the expected date of the decision. The Government will process VECP's expeditiously; however, it shall not be liable for any delay in acting upon a VECP.

(2) If the VECP is not accepted, the Contracting Officer will notify the Contractor in writing, explaining the reasons for rejection. The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Government. The Contracting Officer may require that the Contractor provide written notification before undertaking significant expenditures for VECP effort.

(3) Any VECP may be accepted, in whole or in part, by the Contracting Officer's award of a modification to this contract citing this clause and made either before or within a reasonable time after contract performance is completed. Until such a contract modification applies a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The decision to accept or reject all or part of any VECP is a unilateral decision made solely at the discretion of the Contracting Officer.

(f) Sharing rates. If a VECP is accepted, the Contractor shall share in net acquisition savings according to the percentages shown in the table below. The percentage paid the Contractor depends upon (1) this contract's type (fixed-price, incentive, or cost-reimbursement), (2) the sharing arrangement specified in paragraph (a) above (incentive, program requirement, or a combination as delineated in the Schedule), and (3) the source of the savings (the instant contract, or concurrent and future contracts), as follows:

CONTRACTOR'S SHARE OF NET ACQUISITION SAVINGS

(Figures in percent)

Contract Type	Incentive (Voluntary)		Program Requirement (Mandatory)	
	Instant Contract Rate	Concurrent and Future Contract Rate	Instant Contract Rate	Concurrent and Future Contract Rate
Fixed-price (includes fixed-price-award-fee; excludes other fixed-price incentive contracts)	(1) 50	(1) 50	(1) 25	25
Incentive (fixed-price or cost) (other than	(2)	(1) 50	(1) 50	25

award fee)				
Cost-reimbursement (includes cost-plus-award-fee; excludes other cost-type incentive Contracts)	(3) 25	(3)	15	15

(1) The Contracting Officer may increase the Contractor's sharing rate to as high as 75 percent for each VECP.
(2) Same sharing arrangement as the contract's profit or fee adjustment formula.
(3) The Contracting Officer may increase the Contractor's sharing rate to as high as 50 percent for each VECP.

(g) Calculating net acquisition savings.

(1) Acquisition savings are realized when (i) the cost or price is reduced on the instant contract, (ii) reductions are negotiated in concurrent contracts, (iii) future contracts are awarded, or (iv) agreement is reached on a lump-sum payment for future contract savings (see subparagraph (i)(4) below). Net acquisition savings are first realized, and the Contractor shall be paid a share, when Government costs and any negative instant contract savings have been fully offset against acquisition savings.

(2) Except in incentive contracts, Government costs and any price or cost increases resulting from negative instant contract savings shall be offset against acquisition savings each time such savings are realized until they are fully offset. Then, the Contractor's share is calculated by multiplying net acquisition savings by the appropriate Contractor's percentage sharing rate (see paragraph (f) above). Additional Contractor shares of net acquisition savings shall be paid to the Contractor at the time realized.

(3) If this is an incentive contract, recovery of Government costs on the instant contract shall be deferred and offset against concurrent and future contract savings. The Contractor shall share through the contract incentive structure in savings on the instant contract items affected. Any negative instant contract savings shall be added to the target cost or to the target price and ceiling price, and the amount shall be offset against concurrent and future contract savings.

(4) If the Government does not receive and accept all items on which it paid the Contractor's share, the Contractor shall reimburse the Government for the proportionate share of these payments.

(h) Contract adjustment. The modification accepting the VECP (or a subsequent modification issued as soon as possible after any negotiations are completed) shall--

(1) Reduce the contract price or estimated cost by the amount of instant contract savings, unless this is an incentive contract;

(2) When the amount of instant contract savings is negative, increase the contract price, target price and ceiling price, target cost, or estimated cost by that amount;

(3) Specify the Contractor's dollar share per unit on future contracts, or provide the lump-sum payment;

(4) Specify the amount of any Government costs or negative instant contract savings to be offset in determining net acquisition savings realized from concurrent or future contract savings; and

(5) Provide the Contractor's share of any net acquisition savings under the instant contract in accordance with the following:

(i) Fixed-price contracts--add to contract price.

(ii) Cost-reimbursement contracts--add to contract fee.

(i) Concurrent and future contract savings.

(1) Payments of the Contractor's share of concurrent and future contract savings shall be made by a modification to the instant contract in accordance with subparagraph (h)(5) above. For incentive contracts, shares shall be added as a separate firm-fixed-price line item on the instant contract. The Contractor shall maintain records adequate to identify the first delivered unit for 3 years after final payment under this contract.

(2) The Contracting Officer shall calculate the Contractor's share of concurrent contract savings by (i) subtracting from the reduction in price negotiated on the concurrent contract any Government costs or negative instant contract savings not yet offset and (ii) multiplying the result by the Contractor's sharing rate.

(3) The Contracting Officer shall calculate the Contractor's share of future contract savings by (i) multiplying the future unit cost reduction by the number of future contract units scheduled for delivery during the sharing period, (ii) subtracting any Government costs or negative instant contract savings not yet offset, and (iii) multiplying the result by the Contractor's sharing rate.

(4) When the Government wishes and the Contractor agrees, the Contractor's share of future contract savings may be paid in a single lump sum rather than in a series of payments over time as future contracts are awarded. Under this alternate procedure, the future contract savings may be calculated when the VECP is accepted, on the basis of the Contracting Officer's forecast of the number of units that will be delivered during the sharing period. The Contractor's share shall be included in a modification to this contract (see subparagraph (h)(3) above) and shall not be subject to subsequent adjustment.

(5) Alternate no-cost settlement method. When, in accordance with subsection 48.104-4 of the Federal Acquisition Regulation, the Government and the Contractor mutually agree to use the no-cost settlement method, the following applies:

(i) The Contractor will keep all the savings on the instant contract and on its concurrent contracts only.

(ii) The Government will keep all the savings resulting from concurrent contracts placed on other sources, savings from all future contracts, and all collateral savings.

(j) Collateral savings. If a VECP is accepted, the Contracting Officer will increase the instant contract amount, as specified in paragraph (h)(5) of this clause, by a rate from 20 to 100 percent, as determined by the Contracting Officer, of any projected collateral savings determined to be realized in a typical year of use after subtracting any Government costs not previously offset. However, the Contractor's share of collateral savings will not exceed the contract's firm-fixed-price, target price, target cost, or estimated cost, at the time the VECP is accepted, or $100,000, whichever is greater. The Contracting Officer will be the sole determiner of the amount of collateral savings.

(k) Relationship to other incentives. Only those benefits of an accepted VECP not rewardable under performance, design-to-cost (production unit cost, operating and support costs, reliability and maintainability), or similar incentives shall be rewarded under this clause. However, the targets of such incentives affected by the VECP shall not be adjusted because of VECP acceptance. If this contract specifies targets but provides no incentive to surpass them, the value engineering sharing shall apply only to the amount of achievement better than target.

(l) Subcontracts. The Contractor shall include an appropriate value engineering clause in any subcontract of $100,000 or more and may include one in subcontracts of lesser value. In calculating any adjustment in this contract's price for instant contract savings (or negative instant contract savings), the Contractor's allowable development and

implementation costs shall include any subcontractor's allowable development and implementation costs, and any value engineering incentive payments to a subcontractor, clearly resulting from a VECP accepted by the Government under this contract. The Contractor may choose any arrangement for subcontractor value engineering incentive payments; provided, that the payments shall not reduce the Government's share of concurrent or future contract savings or collateral savings.

(m) Data. The Contractor may restrict the Government's right to use any part of a VECP or the supporting data by marking the following legend on the affected parts:

"These data, furnished under the Value Engineering clause of contract . IM-IT Communications and Information Management Systems, shall not be disclosed outside the Government or duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a value engineering change proposal submitted under the clause. This restriction does not limit the Government's right to use information contained in these data if it has been obtained or is otherwise available from the Contractor or from another source without limitations."

If a VECP is accepted, the Contractor hereby grants the Government unlimited rights in the VECP and supporting data, except that, with respect to data qualifying and submitted as limited rights technical data, the Government shall have the rights specified in the contract modification implementing the VECP and shall appropriately mark the data. (The terms "unlimited rights" and "limited rights" are defined in Part 27 of the Federal Acquisition Regulation.)

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

http://deskbook.dau.mil/jsp/default.jsp
http://www.arnet.gov/far/
http://farsite.hill.af.mil/
http://www.hq.usace.army.mil/cepr/asp/library/efar.asp

(End of clause)

Section J - List of Documents, Exhibits and Other Attachments

SECTION J

TABLE OF CONTENTS
SECTION J

1. ATTACHEMENT J-1	WAGE DETERMINATION
2. ATTACHMENT J-2	PRE-AWARD SURVEY
3. ATTACHMENT J-3	ENG FORM 4025-R TRANSMITTAL OF SHOP DRAWINGS (SEPARATE FILE)
4. ATTACHMENT J-4	SUBMITTAL REGISTER (SEPARATE FILE)

SECTION J

ATTACHMENT J-1

WAGE DETERMINATION NO: 94-2017 REV (31) AREA: AK,STATEWIDE

WAGE DETERMINATION NO: 94-2017 REV (31) AREA: AK,STATEWIDE
REGISTER OF WAGE DETERMINATIONS UNDER | U.S. DEPARTMENT OF LABOR
FOR OFFICIAL USE ONLY BY FEDERAL AGENCIES PARTICIPATING IN MOU WITH DOL
| WASHINGTON D.C. 20210
|
|
|
| Wage Determination No.: 1994-2017
William W.Gross Division of | Revision No.: 31
Director Wage Determinations| Date Of Last Revision: 08/10/2004
_____|_____
State: Alaska
Area: **Alaska** Statewide

_____

Fringe Benefits Required Follow the Occupational Listing

OCCUPATION CODE - TITLE	MINIMUM WAGE RATE	
01000 - Administrative Support and Clerical Occupations		
01011 - Accounting Clerk I	12.25	
01012 - Accounting Clerk II	13.46	
01013 - Accounting Clerk III	16.97	
01014 - Accounting Clerk IV	19.02	
01030 - Court Reporter		17.92
01050 - Dispatcher, Motor Vehicle	17.18	
01060 - Document Preparation Clerk	15.39	
01070 - Messenger (Courier)	13.11	
01090 - Duplicating Machine Operator		13.38
01110 - Film/Tape Librarian	15.27	
01115 - General Clerk I		12.14
01116 - General Clerk II		14.64
01117 - General Clerk III		15.39
01118 - General Clerk IV		17.32
01120 - Housing Referral Assistant	18.57	
01131 - Key Entry Operator I	12.28	
01132 - Key Entry Operator II	17.14	
01191 - Order Clerk I		13.94
01192 - Order Clerk II		15.73
01261 - Personnel Assistant (Employment) I		15.35
01262 - Personnel Assistant (Employment) II	17.25	
01263 - Personnel Assistant (Employment) III		19.28
01264 - Personnel Assistant (Employment) IV	22.38	
01270 - Production Control Clerk	21.31	
01290 - Rental Clerk		15.27
01300 - Scheduler, Maintenance	16.01	
01311 - Secretary I		16.01
01312 - Secretary II		17.92
01313 - Secretary III		18.57

01314 - Secretary IV		20.88
01315 - Secretary V		22.76
01320 - Service Order Dispatcher		15.37
01341 - Stenographer I		14.27
01342 - Stenographer II		16.03
01400 - Supply Technician	20.88	
01420 - Survey Worker (Interviewer)	17.07	
01460 - Switchboard Operator-Receptionist	12.54	
01510 - Test Examiner		17.92
01520 - Test Proctor		17.92
01531 - Travel Clerk I		12.68
01532 - Travel Clerk II		14.00
01533 - Travel Clerk III		15.47
01611 - Word Processor I	13.66	
01612 - Word Processor II	15.44	
01613 - Word Processor III	16.71	
03000 - Automatic Data Processing Occupations		
03010 - Computer Data Librarian	16.45	
03041 - Computer Operator I	16.09	
03042 - Computer Operator II	17.14	
03043 - Computer Operator III	24.42	
03044 - Computer Operator IV	25.98	
03045 - Computer Operator V	27.62	
03071 - Computer Programmer I (1)	20.07	
03072 - Computer Programmer II (1)	24.82	
03073 - Computer Programmer III (1)	27.62	
03074 - Computer Programmer IV (1)	27.62	
03101 - Computer Systems Analyst I (1)		27.62
03102 - Computer Systems Analyst II (1)		27.62
03103 - Computer Systems Analyst III (1)		27.62
03160 - Peripheral Equipment Operator	16.62	
05000 - Automotive Service Occupations		
05005 - Automotive Body Repairer, Fiberglass		22.47
05010 - Automotive Glass Installer	20.51	
05040 - Automotive Worker	20.51	
05070 - Electrician, Automotive	22.17	
05100 - Mobile Equipment Servicer	18.40	
05130 - Motor Equipment Metal Mechanic		22.47
05160 - Motor Equipment Metal Worker		20.51
05190 - Motor Vehicle Mechanic		22.47
05220 - Motor Vehicle Mechanic Helper		17.38
05250 - Motor Vehicle Upholstery Worker		20.51
05280 - Motor Vehicle Wrecker	20.51	
05310 - Painter, Automotive		21.44
05340 - Radiator Repair Specialist	20.51	
05370 - Tire Repairer		17.78
05400 - Transmission Repair Specialist	22.47	
07000 - Food Preparation and Service Occupations		
(not set) - Food Service Worker	10.30	
07010 - Baker		14.50
07041 - Cook I		12.82
07042 - Cook II		14.72
07070 - Dishwasher		10.99

07130 - Meat Cutter			16.05
07250 - Waiter/Waitress			10.83
09000 - Furniture Maintenance and Repair Occupations			
09010 - Electrostatic Spray Painter		21.44	
09040 - Furniture Handler		15.78	
09070 - Furniture Refinisher		21.44	
09100 - Furniture Refinisher Helper		17.38	
09110 - Furniture Repairer, Minor		19.42	
09130 - Upholsterer			21.44
11030 - General Services and Support Occupations			
11030 - Cleaner, Vehicles		9.80	
11060 - Elevator Operator		11.07	
11090 - Gardener			15.93
11121 - House Keeping Aid I		10.69	
11122 - House Keeping Aid II		11.99	
11150 - Janitor			12.18
11210 - Laborer, Grounds Maintenance		13.26	
11240 - Maid or Houseman		10.69	
11270 - Pest Controller			16.93
11300 - Refuse Collector			15.69
11330 - Tractor Operator			15.03
11360 - Window Cleaner		13.45	
12000 - Health Occupations			
12020 - Dental Assistant	1	5.88	
12040 - Emergency Medical Technician (EMT)/Paramedic/ Ambulance Driver			19.48
12071 - Licensed Practical Nurse I		13.89	
12072 - Licensed Practical Nurse II		15.61	
12073 - Licensed Practical Nurse III		17.47	
12100 - Medical Assistant		14.93	
12130 - Medical Laboratory Technician			17.17
12160 - Medical Record Clerk		14.45	
12190 - Medical Record Technician		15.14	
12221 - Nursing Assistant I		9.56	
12222 - Nursing Assistant II		10.76	
12223 - Nursing Assistant III		11.72	
12224 - Nursing Assistant IV		13.18	
12250 - Pharmacy Technician		14.54	
12280 - Phlebotomist			15.94
12311 - Registered Nurse I		21.59	
12312 - Registered Nurse II		26.42	
12313 - Registered Nurse II, Specialist			26.42
12314 - Registered Nurse III		31.96	
12315 - Registered Nurse III, Anesthetist			31.96
12316 - Registered Nurse IV		38.32	
13000 - Information and Arts Occupations			
13002 - Audiovisual Librarian		23.84	
13011 - Exhibits Specialist I			21.09
13012 - Exhibits Specialist II			25.29
13013 - Exhibits Specialist III			30.90
13041 - Illustrator I			21.09
13042 - Illustrator II			25.29
13043 - Illustrator III			30.90

13047 - Librarian		22.95
13050 - Library Technician	19.63	
13071 - Photographer I		16.79
13072 - Photographer II		21.09
13073 - Photographer III		21.99
13074 - Photographer IV	26.87	
13075 - Photographer V	28.25	
15000 - Laundry, Dry Cleaning, Pressing and Related Occupations		
15010 - Assembler		9.27
15030 - Counter Attendant	9.27	
15040 - Dry Cleaner		11.82
15070 - Finisher, Flatwork, Machine		9.27
15090 - Presser, Hand	9.27	
15100 - Presser, Machine, Drycleaning		9.27
15130 - Presser, Machine, Shirts	9.27	
15160 - Presser, Machine, Wearing Apparel, Laundry		9.27
15190 - Sewing Machine Operator	13.01	
15220 - Tailor		14.50
15250 - Washer, Machine	10.12	
19000 - Machine Tool Operation and Repair Occupations		
19010 - Machine-Tool Operator (Toolroom)		22.55
19040 - Tool and Die Maker	28.08	
21000 - Material Handling and Packing Occupations		
21010 - Fuel Distribution System Operator		24.18
21020 - Material Coordinator	21.31	
21030 - Material Expediter	21.31	
21040 - Material Handling Laborer	16.29	
21050 - Order Filler		13.82
21071 - Forklift Operator		17.80
21080 - Production Line Worker (Food Processing)		17.80
21100 - Shipping/Receiving Clerk	17.20	
21130 - Shipping Packer	17.20	
21140 - Store Worker I		13.66
21150 - Stock Clerk (Shelf Stocker; Store Worker II)		18.50
21210 - Tools and Parts Attendant	17.67	
21400 - Warehouse Specialist	17.80	
23000 - Mechanics and Maintenance and Repair Occupations		
23010 - Aircraft Mechanic	22.18	
23040 - Aircraft Mechanic Helper	17.38	
23050 - Aircraft Quality Control Inspector	23.48	
23060 - Aircraft Servicer		19.42
23070 - Aircraft Worker		20.43
23100 - Appliance Mechanic		21.45
23120 - Bicycle Repairer		17.78
23125 - Cable Splicer		30.48
23130 - Carpenter, Maintenance		22.54
23140 - Carpet Layer		20.79
23160 - Electrician, Maintenance		28.07
23181 - Electronics Technician, Maintenance I		21.21
23182 - Electronics Technician, Maintenance II		30.22
23183 - Electronics Technician, Maintenance III		32.77
23260 - Fabric Worker		19.83
23290 - Fire Alarm System Mechanic	23.52	

23310 - Fire Extinguisher Repairer	19.16	
23340 - Fuel Distribution System Mechanic		28.42
23370 - General Maintenance Worker	20.43	
23400 - Heating, Refrigeration and Air Conditioning Mechanic		22.66
23430 - Heavy Equipment Mechanic	25.13	
23440 - Heavy Equipment Operator		27.85
23460 - Instrument Mechanic	24.04	
23470 - Laborer		13.51
23500 - Locksmith		22.55
23530 - Machinery Maintenance Mechanic		26.53
23550 - Machinist, Maintenance		23.08
23580 - Maintenance Trades Helper		17.38
23640 - Millwright		23.95
23700 - Office Appliance Repairer		22.55
23740 - Painter, Aircraft		24.52
23760 - Painter, Maintenance		21.45
23790 - Pipefitter, Maintenance		29.11
23800 - Plumber, Maintenance		27.79
23820 - Pneudraulic Systems Mechanic		23.95
23850 - Rigger		23.95
23870 - Scale Mechanic	21.20	
23890 - Sheet-Metal Worker, Maintenance	25.83	
23910 - Small Engine Mechanic	21.54	
23930 - Telecommunication Mechanic I	23.64	
23931 - Telecommunication Mechanic II	27.01	
23950 - Telephone Lineman	23.64	
23960 - Welder, Combination, Maintenance	22.55	
23965 - Well Driller		24.34
23970 - Woodcraft Worker	23.95	
23980 - Woodworker		20.12
24000 - Personal Needs Occupations		
24570 - Child Care Attendant	12.47	
24580 - Child Care Center Clerk	15.54	
24600 - Chore Aid		11.74
24630 - Homemaker		18.94
25000 - Plant and System Operation Occupations		
25010 - Boiler Tender		26.53
25040 - Sewage Plant Operator	22.25	
25070 - Stationary Engineer	26.53	
25190 - Ventilation Equipment Tender	17.38	
25210 - Water Treatment Plant Operator	21.94	
27000 - Protective Service Occupations		
(not set) - Police Officer		29.17
27004 - Alarm Monitor		17.94
27006 - Corrections Officer	24.74	
27010 - Court Security Officer	23.89	
27040 - Detention Officer		24.74
27070 - Firefighter		20.42
27101 - Guard I		12.73
27102 - Guard II		15.61
28000 - Stevedoring/Longshoremen Occupations		
28010 - Blocker and Bracer	21.20	

28020 - Hatch Tender		21.20
28030 - Line Handler		21.20
28040 - Stevedore I		22.75
28050 - Stevedore II		25.19
29000 - Technical Occupations		
21150 - Graphic Artist		25.25
29010 - Air Traffic Control Specialist, Center (2)		29.73
29011 - Air Traffic Control Specialist, Station (2)	20.63	
29012 - Air Traffic Control Specialist, Terminal (2)	22.72	
29023 - Archeological Technician I	18.22	
29024 - Archeological Technician II	20.48	
29025 - Archeological Technician III	25.29	
29030 - Cartographic Technician	28.75	
29035 - Computer Based Training (CBT) Specialist/ Instructor		30.74
29040 - Civil Engineering Technician	24.20	
29061 - Drafter I		17.72
29062 - Drafter II		21.97
29063 - Drafter III		27.28
29064 - Drafter IV		28.75
29081 - Engineering Technician I	20.65	
29082 - Engineering Technician II	25.56	
29083 - Engineering Technician III	28.25	
29084 - Engineering Technician IV		29.45
29085 - Engineering Technician V	31.47	
29086 - Engineering Technician VI		37.83
29090 - Environmental Technician		19.18
29100 - Flight Simulator/Instructor (Pilot)		35.35
29160 - Instructor		24.39
29210 - Laboratory Technician	21.99	
29240 - Mathematical Technician	28.75	
29361 - Paralegal/Legal Assistant I	20.72	
29362 - Paralegal/Legal Assistant II	24.45	
29363 - Paralegal/Legal Assistant III	29.91	
29364 - Paralegal/Legal Assistant IV		36.66
29390 - Photooptics Technician	26.61	
29480 - Technical Writer		29.84
29491 - Unexploded Ordnance (UXO) Technician I		19.02
29492 - Unexploded Ordnance (UXO) Technician II		23.01
29493 - Unexploded Ordnance (UXO) Technician III		27.58
29494 - Unexploded (UXO) Safety Escort	19.02	
29495 - Unexploded (UXO) Sweep Personnel	19.02	
29620 - Weather Observer, Senior (3)	26.72	
29621 - Weather Observer, Combined Upper Air and Surface Programs (3)	19.09	
29622 - Weather Observer, Upper Air (3)		19.09
31000 - Transportation/ Mobile Equipment Operation Occupations		
31030 - Bus Driver		18.80
31260 - Parking and Lot Attendant	13.19	
31290 - Shuttle Bus Driver	17.68	
31300 - Taxi Driver		15.74
31361 - Truckdriver, Light Truck	17.30	
31362 - Truckdriver, Medium Truck	18.75	

31363 - Truckdriver, Heavy Truck	20.84	
31364 - Truckdriver, Tractor-Trailer	20.84	
99000 - Miscellaneous Occupations		
99020 - Animal Caretaker		11.22
99030 - Cashier		11.70
99041 - Carnival Equipment Operator	14.59	
99042 - Carnival Equipment Repairer	15.47	
99043 - Carnival Worker		11.99
99050 - Desk Clerk		14.09
99095 - Embalmer		19.02
99300 - Lifeguard		11.11
99310 - Mortician		19.02
99350 - Park Attendant (Aide)	13.94	
99400 - Photofinishing Worker (Photo Lab Tech., Darkroom Tech)	11.41	
99500 - Recreation Specialist	22.53	
99510 - Recycling Worker	22.30	
99610 - Sales Clerk		12.94
99620 - School Crossing Guard (Crosswalk Attendant)		14.06
99630 - Sport Official		11.11
99658 - Survey Party Chief (Chief of Party)		26.44
99659 - Surveying Technician (Instr. Person/Surveyor Asst./Instr.)		24.04
99660 - Surveying Aide		17.60
99690 - Swimming Pool Operator		16.45
99720 - Vending Machine Attendant		14.05
99730 - Vending Machine Repairer		16.45
99740 - Vending Machine Repairer Helper		14.05

ALL OCCUPATIONS LISTED ABOVE RECEIVE THE FOLLOWING BENEFITS: HEALTH & WELFARE: $2.59 an hour or $103.60 a week or $448.93 a month VACATION: 2 weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 5 years, and 4 weeks after 15 years. Length of service includes the whole span of continuous service with the present contractor or successor, wherever employed, and with the predecessor contractors in the performance of similar work at the same Federal facility. (Reg. 29 CFR 4.173) HOLIDAYS: A minimum of eleven paid holidays per year: New Year's Day, Martin Luther King Jr's Birthday, Washington's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day. A contractor may substitute for any of the named holidays another day off with pay in accordance with a plan communicated to the employees involved.) (See 29 CFR 4.174)

THE OCCUPATIONS WHICH HAVE PARENTHESES AFTER THEM RECEIVE THE FOLLOWING BENEFITS (as numbered):

1) Does not apply to employees employed in a bona fide executive, administrative, or professional capacity as defined and delineated in 29 CFR 541. (See CFR 4.156)

2) APPLICABLE TO AIR TRAFFIC CONTROLLERS ONLY - NIGHT DIFFERENTIAL: An employee is entitled to pay for all work performed between the hours of 6:00 P.M. and 6:00 A.M.
at the rate of basic pay plus a night pay differential amounting to 10 percent of
the rate of basic pay.

3) WEATHER OBSERVERS - NIGHT PAY & SUNDAY PAY: If you work at night as part of a regular tour of duty, you will earn a night differential and receive an additional 10% of basic pay for any hours worked between 6pm and 6am. If you are a full-time employed (40 hours a week) and Sunday is part of your regularly scheduled workweek, you are paid at your rate of basic pay plus a Sunday premium of 25% of your basic rate for each hour of Sunday work which is not overtime (i.e. occasional work on Sunday outside the normal tour of duty is considered overtime work).

HAZARDOUS PAY DIFFERENTIAL: An 8 percent differential is applicable to employees employed in a position that represents a high degree of hazard when working with or in close proximity to ordinance, explosives, and incendiary

materials. This includes work such as screening, blending, dying, mixing, and pressing of sensitive ordance, explosives, and pyrotechnic compositions such as lead azide, black powder and photoflash powder. All dry-house activities involving propellants or explosives. Demilitarization, modification, renovation, demolition, and maintenance operations on sensitive ordnance, explosives and incendiary materials. All operations involving regrading and cleaning of artillery ranges. A 4 percent differential is applicable to employees employed in a position that represents a low degree of hazard when working with, or in close proximity to ordance, (or employees possibly adjacent to) explosives and incendiary materials which involves potential injury such as laceration of hands, face, or arms of the employee engaged in the operation, irritation of the skin, minor burns and the like; minimal damage to immediate or adjacent work area or equipment being used. All operations involving, unloading, storage, and hauling of ordance, explosive, and incendiary ordnance material other than small arms ammunition. These differentials are only applicable to work that has been specifically designated by the agency for ordance, explosives, and incendiary material differential pay.

** UNIFORM ALLOWANCE **

If employees are required to wear uniforms in the performance of this contract (either by the terms of the Government contract, by the employer, by the state or local law, etc.), the cost of furnishing such uniforms and maintaining (by laundering or dry cleaning) such uniforms is an expense that may not be borne by an employee where such cost reduces the hourly rate below that required by the wage determination. The Department of Labor will accept payment in accordance with the following standards as compliance:

The contractor or subcontractor is required to furnish all employees with an adequate number of uniforms without cost or to reimburse employees for the actual cost of the uniforms. In addition, where uniform cleaning and maintenance is made the responsibility of the employee, all contractors and subcontractors subject to this wage determination shall (in the absence of a bona fide collective bargaining agreement providing for a different amount, or the furnishing of contrary affirmative proof as to the actual cost), reimburse all employees for such cleaning and maintenance at a rate of $3.35 per week (or $.67 cents per day). However, in those instances where the uniforms furnished are made of "wash and wear" materials, may be routinely washed and dried with other personal garments, and do not require any special treatment such as dry cleaning, daily washing, or commercial laundering in order to meet the cleanliness or appearance standards set by the terms of the Government contract, by the contractor, by law, or by the nature of the work, there is no requirement that employees be reimbursed for uniform maintenance costs.

** NOTES APPLYING TO THIS WAGE DETERMINATION **

Under the policy and guidance contained in All Agency Memorandum No. 159, the Wage and Hour Division does not recognize, for section 4(c) purposes, prospective wage rates and fringe benefit provisions that are effective only upon such contingencies as "approval of Wage and Hour, issuance of a wage determination, incorporation of the wage determination in the contract, adjusting the contract price, etc." (The relevant CBA section) in the collective bargaining agreement between (the parties) contains contingency language that Wage and Hour does not recognize as reflecting "arm's length negotiation" under section 4(c) of the Act and 29 C.F.R. 5.11(a) of the regulations. This wage determination therefore reflects the actual CBA wage rates and fringe benefits paid under the predecessor contract.

Source of Occupational Title and Descriptions:

The duties of employees under job titles listed are those described in the "Service Contract Act Directory of Occupations," Fourth Edition, January 1993, as amended by the Third Supplement, dated March 1997, unless otherwise indicated. This publication may be obtained from the Superintendent of Documents, at 202-783-3238, or by writing to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Copies of specific job descriptions may also be obtained from the appropriate contracting officer.

REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND WAGE RATE {Standard Form 1444 (SF 1444)}

Conformance Process:

The contracting officer shall require that any class of service employee which is not listed herein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination), be classified by the contractor so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed classes of employees shall be paid the monetary wages and furnished the fringe benefits as are determined. Such conforming process shall be initiated by the contractor prior to the performance of contract work

by such unlisted class(es) of employees. The conformed classification, wage rate, and/or fringe benefits shall be retroactive to the commencement date of the contract. {See Section 4.6 (C)(vi)} When multiple wage determinations are included in a contract, a separate SF 1444 should be prepared for each wage determination to which a class(es) is to be conformed.

The process for preparing a conformance request is as follows:

1) When preparing the bid, the contractor identifies the need for a conformed occupation) and computes a proposed rate).

2) After contract award, the contractor prepares a written report listing in order proposed classification title), a Federal grade equivalency (FGE) for each proposed classification), job description), and rationale for proposed wage rate), including information regarding the agreement or disagreement of the authorized representative of the employees involved, or where there is no authorized representative, the employees themselves. This report should be submitted to the contracting officer no later than 30 days after such unlisted class(es) of employees performs any contract work.

3) The contracting officer reviews the proposed action and promptly submits a report of the action, together with the agency's recommendations and pertinent information including the position of the contractor and the employees, to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, for review. (See section 4.6(b)(2) of Regulations 29 CFR Part 4).

4) Within 30 days of receipt, the Wage and Hour Division approves, modifies, or disapproves the action via transmittal to the agency contracting officer, or notifies the contracting officer that additional time will be required to process the request.

5) The contracting officer transmits the Wage and Hour decision to the contractor.

6) The contractor informs the affected employees.

Information required by the Regulations must be submitted on SF 1444 or bond paper. When preparing a conformance request, the "Service Contract Act Directory of Occupations" (the Directory) should be used to compare job definitions to insure that duties requested are not performed by a classification already listed in the wage determination. Remember, it is not the job title, but the required tasks that determine whether a class is included in an established wage determination. Conformances may not be used to artificially split, combine, or subdivide classifications listed in the wage determination.

ATTACHMENT J-2
PRE-AWARD SURVEY

PAST PERFORMANCE SURVEY

A. GENERAL INFORMATION. The U.S. Army, Corps of Engineers, is interested in your assessment of the named company's “past performance." The quoted term refers to the company's record of conforming to contract requirements and to standards of good workmanship; the firm's record of forecasting and controlling costs; the firm's adherence to contract schedules including the administrative aspects of performance; the firm's history of reasonable and cooperative behavior and commitment to customer satisfaction; and the firm's general business-like concern for the interest of the customer.

These questions relate to the work performed

by_____
(Name of Offeror)

NAME OF RESPONDENT: _____ TEL # _____

FAX # _____

TITLE: _____

COMPANY NAME: _____

TITLE OF CONTRACT: _____

DESCRIPTION OF SERVICES PROVIDED: _____

_____
Was Project a firm fixed price contract (Y/N)?_____If No, what type was it_____

Contract Amount at Award: _____

Final Contract Amount or Estimated Cost at Completion: _____

Explanation of any Cost Growth
_____
_____
_____

Original Contract Completion Date: _____Final Contract Completion Date: _____

Actual Completion Date : _____

Explanation of any Late Finish:
_____
_____

_____
_____

Was the project terminated early or were cure/show cause letters received? ___Yes___No

What were the Small Disadvantaged Business (SDB), Woman-Owned Business (WOB) and small business percent goals in the original contract?

SDB:_____ WOB:_____ Small Business:_____ HBCU:_____HUBZONE:_____MI:_____

What was the actual percent achieved at contract completion?

SDB:_____ WOB:_____ Small Business:_____ HBCU:_____HUBZONE:_____MI:_____

Extent and Types of Work Subcontracted.

_____
_____

Was the project owner an agency of the federal government?_____Yes_____No

Name, address, FAX and telephone number of the owner:

_____

Names and telephone numbers of other representatives of your firm who are knowledgeable of this project and can readily be contacted:

_____
_____

Name, address, FAX and telephone number of a representative of the owner who is knowledgeable of this project and can be readily contacted:

_____
_____

Name, address, FAX and telephone number of the Contracting Officer if project was for federal government:

_____
_____

CONTRACTOR PAST PERFORMANCE SURVEY, (CONT'D)

1. QUALITY OF PRODUCT/SERVICES:

a. Overall, to what extent did the contract meet specified quality standards?

( ) Consistently Above Average/ Consistently Exceeded Expectations
( ) Routinely Above Average/ Sometimes Exceeded Expectations
( ) Average/Met Expectations
( ) Below Average/Rarely Met Expectations
( ) Unacceptable/Did Not Meet Expectations
Comments_____

_____

b. To what extent did the contractor meet all contract performance requirements?

( ) Consistently exceeded all contract requirements
( ) Occasionally exceeded all contract requirements
( ) Met all contract requirements
( ) Did not meet one or more contract requirements
Comments_____

_____

c. Was the contractor effective in resolving performance problems?

( ) Corrective actions were ineffective
( ) Corrective actions were marginally effective or not fully implemented
( ) Corrective actions were effective
( ) Corrective actions were highly effective
Comments_____

_____

2. MANAGEMENT OF PERSONNEL:

a. Did the contractor use personnel with appropriate skills and expertise?

( ) Personnel clearly demonstrated appropriate skills and expertise
( ) Minor deficiencies were noted in the skills and expertise of personnel
( ) Significant deficiencies were noted in the skills and expertise of personnel
Comments_____

_____

b. To what extent did the contractor cooperate in solving problems?

( ) Very cooperative
( ) Cooperative
( ) Uncooperative

Comments_____

_____

3. SCHEDULE/TIMELINESS OF PERFORMANCE:

a. To what extent was the contractor's invoices current and accurate?

( ) Always current and accurate
( ) Minor tardiness and inaccuracies
( ) Frequent late invoices with numerous billing errors
Comments_____

_____

b. How responsive was the contractor to unanticipated or emergency work requests?

( ) Responsive
( ) Somewhat responsive
( ) Unresponsive
Comments_____

_____

c. To what extent did the contractor provide timely performance as it relates to contract completion.

( ) Above Average/Exceeded Expectations
( ) Average/Met Expectations
( ) Unacceptable/Did Not Meet Expectations
Comments_____

_____

4. CUSTOMER SATISFACTION:

a. To what extent was the end-user satisfied with the services performed?

( ) Extremely satisfied
( ) Satisfied
( ) Somewhat satisfied
( ) Dissatisfied
Comments_____

_____

b. Would you recommend awarding future similar contracts of this contractor?

( ) Definitely
( ) Only under the right conditions
( ) Never again
Comments_____

_____

c. Did you require Contractor provided training? _____

If yes, what type of training?:_____

How often does/did the Contractor provide training? _____

Did the training meet your requirements?_____

d. Please describe the contractor's responsiveness to warranty call-backs. Was Contractor's timely? Responsive? Did the Contractor correct the failure satisfactorily? _____

Please provide any additional comments about the Contractor's warranty responsiveness:

_____

_____

5. BUSINESS PRACTICES:

a. To what extent did the contractor share a good relationship with subcontractors (fair practices and prompt payment)?

( ) Very good relationship
( ) Good relationship most of the time
( ) Tense relationship, with frequent complaints
Comments_____

_____

b. Did the contractor's data reports serve as a reliable information source?

( ) Very reliable, and submitted timely
( ) Reliable and submitted timely, most of the time
( ) Unreliable, for the most part, and frequently submitted late
Comments_____

_____

c. Were the contractor's equal opportunity, employee incentive, energy conservation, safety, security and upward mobility programs effective in retaining a highly qualified and motivated workforce?

( ) Very effective
( ) Somewhat effective
( ) Completely ineffective
Comments_____

6. OPEN COMMENTS:

Please describe the strong points or what you liked best when working with this contractor: _____

_____

_____

_____

NOTE: Has the contractor been advised of any problems that were indicated above?

( ) YES
( ) NO

If yes, what was the contractor's response? Please provide positive or negative responses that the contractor gave to the comments already stated: _____

_____

_____

Section K - Representations, Certifications and Other Statements of Offerors

CLAUSES INCORPORATED BY FULL TEXT

52.203-11 CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (APR 1991)

(a) The definitions and prohibitions contained in the clause, at FAR 52.203-12, Limitation on Payments to Influence Certain Federal Transactions, included in this solicitation, are hereby incorporated by reference in paragraph (b) of this Certification.

(b) The offeror, by signing its offer, hereby certifies to the best of his or her knowledge and belief that on or after December 23, 1989,--

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the offeror shall complete and submit, with its offer, OMB standard form LLL, Disclosure of Lobbying Activities, to the Contracting Officer; and

(3) He or she will include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of $100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision, shall be subject to a civil penalty of not less than $10,000, and not more than $100,000, for each such failure.

(End of provision)

52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) Definitions.

“Common parent,” as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

“Taxpayer Identification Number (TIN),” as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting

requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

___ TIN:._____

___ TIN has been applied for.

___ TIN is not required because:

___ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

___ Offeror is an agency or instrumentality of a foreign government;

___ Offeror is an agency or instrumentality of the Federal Government.

(e) Type of organization.

___ Sole proprietorship;

___ Partnership;

___ Corporate entity (not tax-exempt);

___ Corporate entity (tax-exempt);

___ Government entity (Federal, State, or local);

___ Foreign government;

___ International organization per 26 CFR 1.6049-4;

___ Other _____

(f) Common parent.

___ Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this provision.

___ Name and TIN of common parent:

Name _____

TIN _____

(End of provision)

52.204-5 WOMEN-OWNED BUSINESS (OTHER THAN SMALL BUSINESS) (MAY 1999)

(a) Definition. Women-owned business concern, as used in this provision, means a concern that is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of its stock is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

(b) Representation. [Complete only if the offeror is a women-owned business concern and has not represented itself as a small business concern in paragraph (b)(1) of FAR 52.219-1, Small Business Program Representations, of this solicitation.] The offeror represents that it ( ) is a women-owned business concern.

(End of provision)

52.209-5 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (DEC 2001)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that-

(i) The Offeror and/or any of its Principals -

(A) Are ( ) are not ( ) presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have ( ) have not ( ), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are ( ) are not ( ) presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision.

(ii) The Offeror has ( ) has not ( ), within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

This Certification Concerns a Matter Within the Jurisdiction of an Agency of the United States and the Making of a False, Fictitious, or Fraudulent Certification May Render the Maker Subject to Prosecution Under Section 1001, Title 18, United States Code.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a

determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of provision)

52.219-1 SMALL BUSINESS PROGRAM REPRESENTATIONS (MAY 2004)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is 334290.

(2) The small business size standard is 750 employees.

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) Representations. (1) The offeror represents as part of its offer that it ( ) is, ( ) is not a small business concern.

(2) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, for general statistical purposes, that it ( ) is, ( ) is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a women-owned small business concern.

(4) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a veteran-owned small business concern.

(5) (Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (b)(4) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a service-disabled veteran-owned small business concern.

(6) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, as part of its offer, that--

(i) It ( ) is, ( ) is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration, and no material change in ownership and control, principal office, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and

(ii) It ( ) is, ( ) is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (b)(6)(i) of this provision is accurate for the HUBZone small business concern or concerns that are

participating in the joint venture. (The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture:_____.) Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(c) Definitions. As used in this provision--

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

"Small business concern," means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern," means a small business concern --

(1) That is at least 51 percent owned by one or more women; in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice.

(1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small, HUBZone small, small disadvantaged, or women-owned small business concern in order to obtain a contract to be awarded under the preference programs established pursuant to section 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall--

(i) Be punished by imposition of fine, imprisonment, or both;

(ii) Be subject to administrative remedies, including suspension and debarment; and

(iii) Be ineligible for participation in programs conducted under the authority of the Act.

(End of provision)

52.222-22 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FEB 1999)

The offeror represents that --

(a) ( ) It has, ( ) has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation;

(b) ( ) It has, ( ) has not, filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

(End of provision)

52.222-25 AFFIRMATIVE ACTION COMPLIANCE (APR 1984)

The offeror represents that

(a) [ ] it has developed and has on file, [ ] has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or

(b) [ ] has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

(End of provision)

52.222-38 COMPLIANCE WITH VETERANS' EMPLOYMENT REPORTING REQUIREMENTS (DEC 2001)

By submission of its offer, the offeror represents that, if it is subject to the reporting requirements of 38 U.S.C. 4212(d) (i.e., if it has any contract containing Federal Acquisition Regulation clause 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans), it has submitted the most recent VETS-100 Report required by that clause.

(End of provision)

52.223-13 CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (AUG 2003)

(a) Executive Order 13148, of April 21, 2000, Greening the Government through Leadership in Environmental Management, requires submission of this certification as a prerequisite for contract award.

(b) By signing this offer, the offeror certifies that--

(1) As the owner or operator of facilities that will be used in the performance of this contract that are subject to the filing and reporting requirements described in section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023) and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106), the offeror will file and continue to file for such facilities for the life of the contract the Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of EPCRA and section 6607 of PPA; or

(2) None of its owned or operated facilities to be used in the performance of this contract is subject to the Form R filing and reporting requirements because each such facility is exempt for at least one of the following reasons: (Check each block that is applicable.)

( ) (i) The facility does not manufacture, process, or otherwise use any toxic chemicals listed in 40 CFR 372.65;

( ) (ii) The facility does not have 10 or more full-time employees as specified in section 313.(b)(1)(A) of EPCRA 42 U.S.C. 11023(b)(1)(A);

( ) (iii) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

( ) (iv) The facility does not fall within the following Standard Industrial Classification (SIC) codes or their corresponding North American Industry Classification System sectors:

(A) Major group code 10 (except 1011, 1081, and 1094.

(B) Major group code 12 (except 1241).

(C) Major group codes 20 through 39.

(D) Industry code 4911, 4931, or 4939 (limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce).

(E) Industry code 4953 (limited to facilities regulated under the Resource Conservation and Recovery Act, Subtitle C (42 U.S.C. 6921, et seq.), 5169, 5171, or 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis); or

( ) (v) The facility is not located within the United States or its outlying areas.

(End of clause)

52.225-2 BUY AMERICAN ACT CERTIFICATE (JUN 2003)

(a) The offeror certifies that each end product, except those listed in paragraph (b) of this provision, is a domestic end product and that the offeror has considered components of unknown origin to have been mined, produced, or manufactured outside the United States. The offeror shall list as foreign end products those end products manufactured in the United States that do not qualify as domestic end products. The terms ``component,'' ``domestic end product,'' ``end product,'' ``foreign end product,'' and ``United States'' are defined in the clause of this solicitation entitled ``Buy American Act--Supplies.''

(b) Foreign End Products:

Line Item No.:----------

Country of Origin:----------

(List as necessary)

(c) The Government will evaluate offers in accordance with the policies and procedures of Part 25 of the Federal Acquisition Regulation.

(End of provision)

Section L - Instructions, Conditions and Notices to Bidders

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52.204-6	Data Universal Numbering System (DUNS) Number	OCT 2003
52.211-7	Alternatives to Government-Unique Standards	NOV 1999
52.215-1 Alt II	Instructions to Offerors--Competitive Acquisition (Jan 2004) - Alternate II	OCT 1997

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52.211-3 AVAILABILITY OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (JUN 1988)

The specifications cited in this solicitation may be obtained from:

http://www.hnd.usace.army.mil/techinfo/index.asp

The request should identify the solicitation number and the specification requested by date, title, and number, as cited in the solicitation.

(End of clause)

SECTION L

SECTION L

1. IMPORTANT NOTE

The offeror's attention is invited to Federal Acquisition Regulation (FAR) Subpart 9.5. Offerors are advised that employees of the firm identified below may serve as technical advisors during the source selection process. These individuals will be authorized access to only those portions of the proposal data that are necessary to enable them to perform their respective duties. Such firm is expressly prohibited from competing on the subject acquisition and from scoring or ranking of proposals or recommending the selection of a source.

Broutman & Associates
Attn: Chuck Broutman
5610 Wisconsin Ave., Unit 406
Chevy Chase, MD 20815

In accomplishing their duties related to the source selection process, the aforementioned firm may require access to proprietary information contained in the offerors' proposals. Therefore, pursuant to FAR 9.505-4, this firm must execute an agreement with each offeror that states that they will (1) protect the offerors' information from unauthorized use or disclosure for as long as it remains proprietary and (2) refrain from using the information for any purpose other than that for which it was furnished. To expedite the evaluation process, each offeror must contact the above company to effect execution of such an agreement prior to submission of proposals. Each offeror shall submit a copy of the agreement with their proposal.

2. In accordance with 52.237-1, Site Visit, Offerors or quoters are urged and expected to inspect the site where services are to be performed (please see the entire provision included with this solicitation).

(a) An organized site visit has been scheduled for **September 16, 2004 at 10:00 a.m. Alaska Daylight Time (ADT).** Attendance is limited to two representatives from each offeror.
(b) Those offerors interested in attending the site visit shall contact Ms. Claudette McDonald by telephone at (907) 753-2525 or by email at sharon.a.skelton@usace.army.mil no later than September 8, 2004, 2:00 p.m. (ADT).
(c) Participants will meet at the Bassett Resident Office located in Bldg 4077 on Fort Wainwright in Alaska. Fort Wainwright is co-located with Fairbanks, Alaska. Participants must bring their own personal protective safety equipment, including hardhat, safety shoes, safety glasses, and orange safety vest. Participants will be denied access to the project site if this equipment is not worn.
(d) To gain access to Fort Wainwright visitors will be required to obtain a day pass at the Fort Wainwright main gate located on Gaffney Drive. Visitors are required to provide current vehicle registration, proof of insurance and photo identification.

3. Offerors are cautioned to thoroughly review all documentation provided prior to preparing their proposals.

(b) PROPOSAL PREPARATION INSTRUCTIONS.

(1) The U.S. Army Engineer District, Alaska, intends to solicit this requirement using the source selection procedures in accordance with the provisions set forth in this Request for Proposal (RFP). A firm fixed price contract will be awarded to the offeror who submits a proposal determined to be the best value and is most advantageous to the Government, with price and other factors considered. All contractors will receive written notice if they were or were not selected for contract award.

(2) These instructions are designed to ensure information required for evaluation of proposals is submitted. Offerors are cautioned to follow the detailed instructions provided below as the government reserves the right to make award based upon initial offers received without discussions. Limited exchanges with offerors may be conducted for clarifications. A competitive range may be established for conducting discussions.

(3) Proposals submitted shall be complete, comprehensive and clearly presented. Elaborate artwork, expensive paper/binding, and expensive visual aids are neither necessary nor desired. The technical proposal, except for an identifying coversheet, shall not include any information that identifies the offeror and shall make no reference to price. All pages of each part shall be numbered and identified with the Request for Proposal (RFP) number. The offeror shall provide any narrative or supporting material necessary for the government to fully understand the proposal.

(4) Submit your proposal in three volumes. Volume I contains your organization's management proposal to perform this work. Volume II contains your technical proposal, that is, the offeror's understanding of the requirement. Volume III contains pricing and subcontracting plan requirements. These parts shall be physically separate and detachable parts.

(5) Written portions shall be typewritten using not more than 6 vertical lines per inch in 8 ½" x 11" format with three holes punched, inserted in three ring binders. Schedules may be presented on 11" x 17" sheets folded to 8 ½" x 11." The offeror shall label and tab their proposal consistent with the solicitation format shown below in paragraph 8, Specific Proposal Requirements. Each page of the proposal shall be consecutively numbered, beginning with the first page and ending with the last.

(6) Page Limitations:

(i) Volume I is not expected to exceed 50 (fifty) single-sided pages. Performance evaluations located in Volume 1 are not counted in the page limits.

(ii) Volume II may contain as many pages as required. Use of original product information is highly encouraged for clarity.

(iii) Volume III has no page limit.

(7) Submit your proposal packages in original and three copies to the U.S. Army Corps of Engineers, Alaska District at the address shown in Block 9 of the Standard Form 33, Solicitation/Contract/Order for Commercial Items. The Government must receive your proposal no later than the time and date set forth in this solicitation.

(8) Specific Proposal Requirements.

(i) Volume I, Management Proposal. This volume is an opportunity for you to provide information on your team's past experience and performance, your capacity to perform work for this project and your management approach. Present the material sequentially under the following Tabs A through D to facilitate evaluation that demonstrates appropriate experience of the system contractor responsible for providing and installing each system as defined in Schedule B of this solicitation.

(a) TAB A, Contractor and Subcontractor Experience.

(i) Provide narrative that demonstrates contractor experience in coordinating and scheduling work with other contractors while performing concurrent work within the same physical area.

(ii) Provide narrative that demonstrates system contractor experience in coordinating and scheduling work with other contractors while performing concurrent work within the same physical area.

(iii) Provide a minimum of three (3) examples of projects with recent and relevant experience that demonstrates the contractor's and systems contractors' experience with projects of similar scope. Examples shall show that projects were completed within the last five years. Provide an explanation of how these projects are similar in scope to the work required in this RFP.

(iv) Provide information that demonstrates the contractor's and system contractors qualifications are in compliance with each system specification section.

(b) TAB B, Organization and Management. Fully describe your proposed organization, in terms of key personnel who will perform the work as specified. Provide an organizational chart that includes as a minimum all the required key personnel, as stated in TAB C.

(c) TAB C, Key Personnel

(i) Furnish resumes for all key personnel, including those listed below that will be assuming the noted roles and responsibilities. Each resume shall include the individuals' education and experience (to include at least 3 projects of similar systems, scope, cost and complexity). Key personnel are as listed below:

(ii) Key personnel shall include quality control system manager, contractor project manager, subcontractor project manager for each telecommunication system, contractor and system contractor installation supervisors, commissioning personnel for each system, and training personnel for each system.

(d) TAB D, Management Plan. Provide a narrative that describes management approach to project management, quality control and safety. As a minimum address the following questions:

(i) How you will ensure that subcontractor work is in compliance with contract requirements.

(ii) Will subcontractors have their own quality control staff that supplements the prime contractor's staff?

(iii) How you will manage coordination with other contractors (your subcontractors and other contractors concurrently performing work at the site) and changes, for example sequencing of work with availability of work areas?

(ii) Volume II, Technical Proposal – Understanding the Requirements. Provide the information itemized below for each system in the following format:

- Volume II-A, Premises Distribution System
- Volume II-B, EMS Recorder
- Volume II-C, Radio Page System
- Volume II-D, Public Address System
- Volume II-E, Sound Reinforcement System
- Volume II-F, Nurse Call Tone Visual
- Volume II-G, Nurse call Audio Visual

- ? Volume II-H, Television System (Headend, Cable Plant, and Control Equipment)
- ? Volume II-J, Television System (TV Sets, Video Equipment, Software)
- ? Volume II-K, Facility Security Systems
- ? Volume II-L, Access Control & Alarm System
- ? Volume II-M, Infant Abduction Alarm System
- ? Volume II-N, Photo Badging
- ? Volume II-O, Instrusion Detection Equipment
- ? Volume II-P, CCTV Surveillance System
- ? Volume II-Q, RF Transponder System

(a) TAB 1, System Descriptions (Proposed Equipment and Specifications). Furnish a complete description of the proposed system to be provided to satisfy the requirements. This shall include a comprehensive description of the operating characteristics and individual data sheets from the manufacturer for each component product item (equipment, cable, software programs, etc.) indicating descriptive functional and technical data. Diagrams and drawings that clearly indicate the architecture and configuration for this project shall be included. Other diagrams and drawings may be included as needed to clarify the proposal. The manufacturer(s) of the proposed system and component products shall be identified.

(b) TAB 2, Training of Government Personnel. This shall be demonstrated by a written description of the types of training required for the proposed system and a sample training plan of the type specified.

(c) TAB 3, Warranty Support. Furnish a description of the warranty period support to be provided and how this shall be executed for maintenance, repair and training.

(d) TAB 4, Exception Requests. List and define any and all proposed exceptions to the requirements, including any proposed substitutions. If exceptions are not presented in this tab the Government requires full compliance with all specifications and indicated requirements. State why exception should be considered and indicate any effect on any and all specified and indicated requirements. Each exception request item shall be referenced to the affected specified and/or indicated requirement, including the specification page and paragraph number and drawings sheet/detail number. Include any exceptions to the specifications that are applicable to the system.

(e) TAB 5, System Optional features or Alternates. Options and/or alternates to the requirements specified may be proposed provided that these options/alternates improve or enhance the required features and capabilities specified. Options/alternates that reduce or degrade the features or capabilities shall not be acceptable. List, explain, and justify any proposed options/voluntary alternates. Indicate any effect on specified requirements by reference to the affected item page and paragraph number of the specification and/or drawings. Indicate any other work the Government would have to provide to accommodate the proposed options/alternates.

(iii) Volume III, Price Proposal. The price proposal will not be rated; however it will be evaluated to determine reasonableness, affordability, and its relativity to the technical submission. The Government will perform a price analysis by comparing the proposed prices to that of other offerors and to the Government Estimate. Volume III Price Proposal should include:

(a) TAB A, Representations and Certifications
(b) TAB B, Pre-Award Survey

(c) TAB C, Price Information
(d) TAB D, Small Business Subcontracting Plan
(e) TAB E, Points of Contact for your firm to include firm name, address, primary point of contact, phone number, fax number, and email of point of contact, if available

(iv) VOLUME IV, Subcontracting Plan (cross referenced and provided in Volume III). The offerors subcontracting plan will be evaluated in accordance with AFARS Appendix DD, Subcontracting Plan Evaluation Guide. This guide can be viewed at the following web site: http://farsite.hill.af.mil/vfafara.htm.

(9) Relative Importance of the Evaluation Factors. Since an offeror's proposal must be compliant in order for it to be eligible for award, compliance of the offer is a mandatory solicitation requirement. The non-price factors of experience, organization and management, management plan, and past performance are in descending order of importance. All evaluation factors, other than cost or price, when combined, are approximately equal to cost or price.

(10) Determination of Best Overall Value. The Government's decision as to which offeror shall receive award will be based on best overall value to the Government. If the source selection authority determines that the better non-price value is worth the higher price, then the Government will consider the proposal with the better non-price value and the higher price to be better overall value. Conversely, if the source selection authority determines that the better non-price value is not worth the higher price, then the Government will consider the proposal with the lower non-price value and the lower price to be the better value.

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52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a Firm Fixed Price contract resulting from this solicitation.

(End of clause)

52.233-2 SERVICE OF PROTEST (AUG 1996)

(d) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from

U.S. Army Corps of Engineers, Alaska District
CEPOA-CT-SP
ATTN: Sandra J. Davidson
P.O. BOX 6898
Elmendorf AFB, AK 99506-0898

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

52.237-1 SITE VISIT (APR 1984)

(a) Offerors or quoters are urged and expected to inspect the site where services are to be performed and to satisfy themselves regarding all general and local conditions that may affect the cost of contract performance, to the extent that the information is reasonably obtainable. In no event shall failure to inspect the site constitute grounds for a claim after contract award.

(End of clause)

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

http://deskbook.dau.mil/jsp/default.jsp
http://www.arnet.gov/far/
http://farsite.hill.af.mil/
http://www.hq.usace.army.mil/cepr/asp/library/efar.asp

(End of provision)

52.214-5000
EFARS 52.214-5000 Apparent clerical mistakes.

As prescribed at 14.406-2 insert the following statement in solicitation and contracts.

ARITHMETIC DISCREPANCIES

(a) For the purpose of initial evaluations of bids, the following will be utilized in the resolving arithmetic discrepancies found on the face of bidding schedule as submitted by the bidder:

(1) Obviously misplaced decimal points will be corrected;

(2) Discrepancy between unit price and extended price, the unit price will govern;

(3) Apparent errors in extension of unit prices will be corrected;

(4) Apparent errors in addition of lump -sum and extended prices will be corrected.

(b) For the purpose of bid evaluation, the government will proceed on the assumption that the bidder intends his bid to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids.

(c) These correction procedures shall not be used to resolve any ambiguity concerning which bid is low.

(End of statement)

SECTION M

PART IV - REPRESENTATIONS AND INSTRUCTIONS
SECTION M
EVALUATION FACTORS FOR AWARD
(IAW FAR 13.106-2(b), 14.201-5(c), and 15.204-5(c))

1. ARITHMETIC DISCREPANCIES (EFARS 52.214-5000):

a) For the purpose of initial evaluation of proposals, the Following will be utilized in resolving arithmetic discrepancies Found on the face of the proposal schedule as submitted by offerors:

(a) Obviously misplaced decimal points will be corrected;
(b) In case of discrepancy between unit price and Extended price, the unit price will govern;
(c) Apparent errors in extension of unit price will be corrected;
(d) Apparent errors in addition of lump sum and extended Price will be corrected.

b) For the purpose of proposal evaluation, the government will proceed on assumption that the offeror intends his proposal to be evaluated on the basis of the unit prices, extensions, and totals arrived at by Resolution of arithmetic discrepancies as provided above and the Proposals will be so reflected on the abstract.

(e) **AWARD EVALUATIONS:**

The Government will award the contract to the offeror of the proposal that represents the best overall value to the Government. The Government will evaluate the proposals of each offeror: first, objectively on the compliance of its proposal and then, qualitatively on the following evaluation factors:

? Qualifications;
? Experience;
? Understanding of Requirements;
? Past performance; and
? Price

3. EVALUATION FACTORS:

a. **OFFER COMPLIANCE:**

The Government will evaluate the compliance of an offer on a pass or fail basis. No qualitative or scoring evaluation will be made, and offer compliance will not be considered in the price/technical tradeoff. The Government will consider an offer to be compliant if the offeror manifests its assent to the terms and conditions in RFP Sections A through K, without exception. The Government will consider an offer to be uncompliant if the offeror takes exception to any of the terms and conditions in RFP Sections A though K. The Government intends to award the contract without discussions, as provided in FAR 15.610(a) and FAR 52.215-16(ALT II). An offeror can eliminate a deficiency in its proposal only through discussions. Therefore, if the Government decides to award the contract without discussion, then any offeror that takes exception to any term and condition in RFP sections A through K will not receive the award. However, if the Government decides to conduct discussions with offerors in the competitive range, then any offeror that is in the competitive range will be given the opportunity to eliminate any deficiencies in its offer. Also, the Government reserves the right to change (amend) the RFP at any time prior to the award of the contract, as provided in FAR 15.606.

b. QUALIFICATIONS: The Government will evaluate the offeror's qualification based on the resumes submitted to ensure personnel meet the minimum requirements of the solicitation (Section L).

c. EXPERIENCE:

1) The Government defines experience as learning by doing. The Government will evaluate the depth and breadth of an offeror's experience on the basis of the number of times it has performed projects that were similar in nature, scope, and complexity to the work that will be required under the contract for which offers are solicited by this RFP.

2) The Government will assess experience of personnel assigned to this contract. The evaluation will be based on the professional capabilities, certification, relevant experience, and education levels of the personnel to be involved in this contract.

3) The information provided for the prime and subcontractors will be evaluated based on knowledge of locality; demonstrated capabilities; expertise related to in cold regions and remote locations; project type and complexity (describe the work); performance period (compliance with scheduled completion date); and contract value. Experience in Alaska will be rated higher than experience in other cold regions, which will be rated higher than experience in all other areas.

d. CAPABILITIES, UNDERSTANDING OF THE REQUIREMENTS:

The Government will evaluate each offeror's understanding of the requirements described in this RFP based on the proposed technical and cost data submitted. The Government will evaluate the offeror's technical capability from the submitted projects and management plan. The evaluation will be based on:

1) An organizational chart for this project, with roles, responsibilities, reporting lines, listing possible subcontractor(s) and team member(s). Include supporting narrative if appropriate.
2) The tasks to be subcontracted shall be clearly identified to include the subcontractor's name and key point of contact. For large businesses, the Government will also evaluate the extent to which offerors identify and commit to small business, small disadvantaged business, women-owned small business and HUBZone business performance of this project.
3) Documentation demonstrating the ability to coordinate with subcontractors.

e. PAST PERFORMANCE:

The Government will evaluate each offeror's past performance to determine how well it satisfied its customers. The Government will contact some of each offeror's customers, and others to determine whether the offeror: conforms to the terms and conditions of its contracts; obeys the law; is honest, reasonable, and cooperative; maintains good labor relations; manages its subcontractors effectively; performs work safely; and is committed to customer satisfaction. The Government may contact sources outside those listed in the proposal. If the offeror is a large business, the offeror's past performance in complying with subcontracting plan goals for small, small disadvantaged and women-owned small businesses shall be evaluated.

f. PRICE:

The Government will perform a price analysis and evaluate price as described under the heading, " The Determination of Best Overall Value." The total cost of doing business will be used in evaluating the price proposal. This approach includes multipliers for various overheads and administrative costs.

g. RELATIVE IMPORTANCE OF THE EVALUATION FACTORS:

Since an offeror's offer must be compliant in order for it to be eligible for award, offer compliance is a mandatory solicitation requirement. In general, the Government considers the non-price factors of qualifications, experience, understanding of the requirements, and past performance, to be more important to the achievement of its objectives than price. The Government considers an offeror's qualifications, experience and past performance to be of equal importance of this procurement to its capabilities, understanding of requirements.

h. THE DETERMINATION OF BEST OVERALL VALUE:

1) In order to determine which offer represents the best overall value, the Government will compare offerors to each other in a series of paired comparisons, trading off offeror's values based on their overall performances on the non-price factors excluding offer acceptability. In comparing two offerors, if one member of a pair has both the better overall non-price value and the lower price, then the Government will consider that offeror to be the better value.

2) If one member of a pair has the better overall non-price value, but a higher price than the other offeror, then the Government's source selection authority will determine if the difference in non-price value is worth the difference in price. If the source selection authority decides that the better non-price value is worth the higher price, then the Government will consider the offeror with the better non-price value and the higher price to be the better overall value.

3) If the source selection authority decides that the better value is not worth the higher price, then the Government will consider the offeror with the lower non-price value and the lower price to be the better value. The source selection authority will continue to make paired comparisons until he or she has identified the offeror that represents the better overall value.

END OF SECTION M

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE	TRANSMITTAL NO.

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITT/_____
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		CHECK ONE: THIS TRANSMITTAL IS FOR ☐ FIO ☐ GOV'T. APPROVAL

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type size, model number/etc.)* *b.*	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction no. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE *g.*	VARIATION *(See instruction No. 6)* *h.*	FOR CE USE CODE *i.*
				SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*			

REMARKS

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated.

_____

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED *(List by Item No.)*	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.

4. Submittals requiring expeditious handling will be submitted on a separate form.

5. Separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".

7. Form is self-transmittal, letter of transmittal is not required.

8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A	--	Approved as submitted.	E	--	Disapproved (See attached).
B	--	Approved, except as noted on drawings.	F	--	Receipt acknowledged.
C	--	Approved, except as noted on drawings. Refer to attached sheet resubmission required.	FX	--	Receipt acknowledged, does not comply as noted with contract requirements.
D	--	Will be returned by separate correspondence.	G	--	Other *(Specify)*

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

SUBMITTAL REGISTER

(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION

COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION

SECTION H

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			H-1.s.	Commissioning Plan	X											X										
			H-2.c.	Coordination Drawings		X										X										
			H-4.a.	Test Procedures				X								X										
			H-4.a.(1)	List of Tests					X							X										
			H-4.a.(2)	Preparatory Inspection					X							X										
			H-4.a.(3)	Deficiency Tracking System					X							X										
			H-4.a.(4)	Testing Documentation Format								X				X										
			H-4.a.(5)	Standard Forms or Certificates								X				X										
			H-5.c.(1)	Preliminary Format	X											X										
			H-5.c.(2)	Binder System	X											X										
			H-5.c.(3)	Complete SOMM's	X											X										
			H-5.c.(4)	Final SOMM's	X											X										
			H-5.c.(5)	Final Vendor Data	X											X										
			H-6.b.(1)	As-Built Drawings		X										X										
			H-6.c.(1)	Warranty Management Plan		X										X										
			H-6.e.	Final Cleaning		X										X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
07270

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	CLASSIFICATION: GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	CONTRACTOR SCHEDULE DATES: APPROVAL NEEDED BY t.	CONTRACTOR SCHEDULE DATES: MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	CONTRACTOR ACTION: DATE w.	CONTRACTOR ACTION: SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	GOVERNMENT ACTION: DATE z.	REMARKS aa.
			1.2	Firestopping Materials		X																				
			1.2	Firestopping Materials							X															
			1.5	Installer Qualifications							X															
			3.3	Inspection							X															

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
13080

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	CLASSIFICATION: GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.3	Manufacturer's catalog sheets	X																					
			1.3	Test data	X																					
			1.3	Material Specifications	X																					
			1.3	Seismic Protection		X																				
			1.3	Equipment Requirements		X																				
			1.3	Statement containing the plan for					X																	
				testing of expansion or chemically																						
				bonded anchors																						
			1.3	Statement of testing agency					X																	
				credentials																						
			1.3	Reports of field testing for expansion						X																
				and chemically bonded anchors																						
			1.3	Certificates of Compliance							X															

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16710

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Testing Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			1.3	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										
			1.3	Software Manuals										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16730

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.4	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Testing Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			3.11.9	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										
			3.11.5	Software Manuals										X		X										
			3.11.5	Backup Software										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16731

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.4	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Testing Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			3.11.10	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										
			3.11.5	Software Manuals										X		X										
			3.11.5	Backup Software										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16755

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.4	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Testing Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			1.3	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										
			3.11.5	Software Manuals										X		X										
			3.11.5	Backup Software										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16756

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.4	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Testing Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			1.3	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										
			1.3	Software Manuals										X		X										
			1.3	Backup Software										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16770

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	CLASSIFICATION: GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			3.7.1	Training Plan	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.8	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Testing Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			3.11.4	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16771

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.4	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Testing Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			3.11.3	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16781

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.4	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Coaxial Cable Factory Test Report						X																
			1.3	Test Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.6.1	Certificates of Compliance							X					X										
			3.11.5	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										
			3.11.4	Software Manuals										X		X										
			3.11.4	Backup Software										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16786

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.4	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			1.3	Testing Reports						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			1.3	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										
			3.11.5	Software Manuals										X		X										
			3.11.5	Backup Software										X		X										

SUBMITTAL REGISTER
(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION
COMMUNICATIONS FOLLOW-ON, Bassett Army Community Hospital

CONTRACTOR

SPECIFICATION SECTION
16788

ACTIVITY NO a.	TRANSMITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERNMENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.
			1.5.1	Qualifications	X											X										
			1.3	System Description	X											X										
			1.3	Material and Equipment	X											X										
			1.3	Design Analysis and Calculations	X											X										
			1.3	Test Plan	X											X										
			1.3	Training Plan and Materials	X											X										
			1.3	Warranty and Warranty Management	X											X										
				Plan																						
			1.3	Maintenance Service	X											X										
			1.4.7	Detail Drawings		X										X										
			1.3	Coordination Drawings		X										X										
			1.3	As-Built System Drawings		X										X										
			3.4	Installation			X									X										
			3.6.5.1	Acceptance Test Report						X						X										
			1.3	Post Acceptance Warranty						X						X										
				Inspections and Testing Report																						
			3.6.5.1	Certificates of Compliance							X					X										
			3.11.11	Product Samples								X				X										
			1.3	Closeout Submittals									X													
			1.3	Video Recordings									X													
			3.7.4	Operating and Maintenance Manuals										X		X										
			3.11.5	Software Manuals										X		X										
			3.11.5	Backup Software										X		X										

Volume 2
Specifications

U.S. Army Corps
of Engineers
ALASKA

IM-IT Communications and Information Management Systems

Task 6
100% Design Phase

W911KB-04-R-0008-0011
Revised August 2004

Bassett Army Community Hospital

Fort Wainwright
Alaska

HKS/WS

HKS, Inc. / Wingler & Sharp
Dallas / Wichita Falls
Texas

PROJECT TABLE OF CONTENTS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07270 FIRESTOPPING

DIVISION 13 - SPECIAL CONSTRUCTION

13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

DIVISION 16 - ELECTRICAL

16710 PREMISES DISTRIBUTION SYSTEM
16730 NURSE CALL TONE-VISUAL (NCTV) SYSTEM
16731 NURSE CALL AUDIO-VISUAL (NCAV) SYSTEM
16755 RADIO PAGING SYSTEM
16756 RF TRANSPONDER SYSTEM
16770 PUBLIC ADDRESS SYSTEM
16771 SOUND REINFORCEMENT SYSTEM
16781 TELEVISION (TV) SYSTEM
16786 EMS RECORDER
16788 FACILITY SECURITY SYSTEM

-- End of Project Table of Contents --

SECTION TABLE OF CONTENTS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

SECTION 07270

FIRESTOPPING

PART 1 GENERAL

1.1 REFERENCES
1.2 SUBMITTALS
1.3 GENERAL REQUIREMENTS
1.4 STORAGE AND DELIVERY
1.5 INSTALLER QUALIFICATIONS

PART 2 PRODUCTS

2.1 FIRESTOPPING SYSTEM

PART 3 EXECUTION

3.1 PREPARATION
3.2 INSTALLATION
3.3 INSPECTION

-- End of Section Table of Contents --

SECTION 07270

FIRESTOPPING

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 basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 814	(1997) Fire Tests of Through-Penetration Fire Stops

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H; SUBMITTAL PROCEDURES:

SD-04 Drawings

Firestopping Materials

Detail drawings including manufacturer's descriptive data, typical details, installation instructions and the fire-test data and/or report as appropriate for the fire resistance rated construction and location. Submittal shall indicate the firestopping system to be provided for each type of application. When more than 5 penetrations are to receive firestopping, drawings shall indicate location and type of application.

SD-13 Certificates

Firestopping Materials

Certificates attesting that firestopping system complies with the specified requirements. The label or listing of the Underwriters Laboratories will be acceptable evidence. In lieu of the label or listing, a written certificate may be submitted from an approved, nationally recognized testing agency equipped to perform such services, stating that the items have been tested and conform to the specified requirements and testing methods.

Installer Qualifications

Documentation of training and experience.

Inspection

Manufacturer's representative certification stating that firestopping work has been inspected and found to be applied according to the manufacturer's recommendations and the specified requirements. Manufacturers

representative/inspector must be approved by the Government. Inspector must have a minimum five (5) years experience in inspecting firestopping installations. Inspector must prepare reports of inspections and submit to the government.

1.3 GENERAL REQUIREMENTS

All firestopping shall be provided and installed by a single firm which has over three (3) years experience specializing in the installation of firestopping. Firestopping shall consist of furnishing and installing the specified system to form an effective barrier against the spread of flame, smoke and gases, and maintain the integrity of fire resistance rated walls and partitions.

1.4 STORAGE AND DELIVERY

Materials shall be delivered in the original unopened packages or containers showing name of the manufacturer and the brand name. Materials shall be stored off the ground and shall be protected from damage and exposure to elements. Damaged or deteriorated materials shall be removed from the site.

1.5 INSTALLER QUALIFICATIONS

Installer of firestopping system shall be trained by the manufacturer or the manufacturer's representative, and shall have a minimum of 3 years experience in the installation of firestopping of the type specified.

PART 2 PRODUCTS

2.1 FIRESTOPPING SYSTEM

Firestopping system shall be EZ Path Fire Rated pathways manufactured by Specified Technologies, Inc. 200 Evans Way, Somersville, New Jersey, 08876 (800) 992-1180; product information: www.stifirestop.com, complying with the following minimum requirements:

All system cabling shall utilize an enclosed fire-rated pathway device wherever the cables penetrate rated walls and floors. The fire-rated pathway shall contain a built-in fire sealing system sufficient to maintain the hourly fire rating of the barrier being penetrated. The self-contained sealing system shall automatically adjust to the installed cable loading and shall permit cables to be installed, removed, or retrofitted without the need to remove or reinstall firestop materials. The pathway shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E 814 (UL1479).

PART 3 EXECUTION

3.1 PREPARATION

Areas to receive the firestopping system shall be free of dirt, grease, oil, or loose materials which may affect the fitting or fire resistance of the firestopping system.

3.2 INSTALLATION

Firestopping devices and materials shall be installed in accordance with the manufacturer's written instructions.

3.3 INSPECTION

Firestopped areas shall not be covered or enclosed until inspection is complete and approved. A manufacturer's representative shall inspect the applications initially to ensure adequate preparations (clean surfaces suitable for application, etc.) and periodically during the work to assure that the completed work has been accomplished according to the manufacturer's written instructions and the specified requirements.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 13080

SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

PART 1 GENERAL

1.1 REFERENCES
1.2 SYSTEM DESCRIPTION
1.2.1 General
1.2.2 Design Criteria
1.2.3 Design Responsibility
1.2.4 Quality Assurance
1.2.5 Building Equipment
1.2.6 Equipment and Systems
1.3 SUBMITTALS

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT
2.1.1 Bolts and Nuts
2.1.2 Seismic Protection Materials
2.1.3 Suspended Equipment and Systems

PART 3 EXECUTION

3.1 ANCHOR BOLTS
3.1.1 Expansion or Chemically Bonded Anchors
3.1.2 Anchorage(s) into Low-Density Concrete at IBS Floor Levels
3.1.3 Alternate Design
3.1.4 General Testing
3.1.4.1 Pullout Testing
3.1.4.2 Test Reports
3.2 ANCHOR RODS, ANGLES, AND BARS
3.3 OTHER EQUIPMENT AND SYSTEMS

-- End of Section Table of Contents --

SECTION 13080

SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

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 basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36M	(1997a) Carbon Structural Steel
ASTM A 307	(1994) Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
ASTM A 563	(1996) Carbon and Alloy Steel Nuts
ASTM A 570/A570M	Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality
ASTM A 575-96	Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades
ASTM A576-90b	(1995)e1 Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality
ASTM A635/A635M-98	Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Carbon, Hot-Rolled
ASTM A 653M	(1997) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM E 488	(1996) Strength of Anchors in Concrete and Masonry Elements

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B18.2.1	(1996) Square and Hex Bolts and Screws (Inch Series)
ASME B18.2.2	(1987; R 1993) Square and Hex Nuts (Inch Series)

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

FEMA 302	(1997) NEHRP Recommended Provisions for Seismic Regulations for New Buildings and

Other Structures

INTERNATIONAL SEISMIC APPLICATION TECHNOLOGY (I.S.A.T)

I.S.A.T.	(2002) Manual of "Engineered Seismic Bracing of Suspended Utilities" (3rd Edition)

1.2 SYSTEM DESCRIPTION

1.2.1 General

a. The requirements for seismic protection measures described in this section shall be applied to communication equipment and other nonstructural building equipment and systems specified herein.

b. In addition to equipment attachments and supports, the equipment itself shall be designed to meet the force and displacement requirements of FEMA 302. Seismic effects that shall be considered in the design of the equipment itself include the dynamic effects of the equipment, its contents, if any, and its supports; loads from attached components such as piping; and the interaction between the equipment, its housing and its supports.

c. Manufacturer's standard bracing or anchorage assemblies that may be purchased with components shall be in accordance with the requirements of this section. Certification of compliance shall be provided by a qualified registered professional engineer.

1.2.2 Design Criteria

a. Lateral support against earthquake induced forces shall be accomplished by positive attachments without consideration of friction resulting from gravity loads. Seismic protection requirements for building equipment and systems shall be in accordance with FEMA 302 and shall be based upon the following:

Seismic Use Group = III
Seismic Design Category = D
Component Importance Factor (I_p) = 1.5
Site Class = D
Short Period Spectral Response Acceleration (S_S) = 1.12
Design Spectral Response Acceleration at Short Periods (S_{DS}) = 0.79

b. Seismic protection for all other floor, ceiling, wall or roof mounted equipment or systems and free standing components shall be designed by a qualified registered professional engineer to conform to FEMA 302.

c. Conformance to references and standards listed in FEMA 302, par. 6.1.1 shall not be considered as meeting the requirements of this section for seismic protection unless conformance to FEMA 302 is certified by a qualified registered professional engineer.

d. Seismic protection for nonstructural building equipment or systems shall be designed so that the deflection of the protected component does not exceed an amount that would:

1. Cause damage or permanent distortion to the component to the extent that the component becomes non-functional during or after

the design seismic event.

2. Prevent the component from performing its intended function, both during or after the design seismic event.

3. Exceed the recommendations of the manufacturer of the component.

e. Seismic protection shall not impinge on access aisles, access to equipment or life safety egress, and shall not be visible in occupied areas or create hazards such as choking or tripping. The contractor shall verify conformance with this paragraph prior to construction.

f. The design of seismic protection shall be compatible with specific details provided elsewhere in the contract documents. In the event of conflicts, the solution which provides the greatest level of protection against damage shall be used.

g. The design of seismic protection shall be integrated with gravity supports and the interaction of the components shall be compatible with the requirements of this section.

1.2.3 Design Responsibility

a. Except as noted in par. 1.2.3.b, the contractor is responsible for designing all seismic protection in this contract. Design of seismic protection shall be signed and sealed by a qualified registered professional engineer and paid for by the contractor.

b. Nonstructural building equipment and systems that are fully detailed on the drawings shall be constructed as detailed. Where the drawings indicate a method of construction, with specific information omitted, or where the method of seismic protection is not shown on the drawings, the design of the seismic protection shall be performed or completed by the contractor.

1.2.4 Quality Assurance

a. Design Review

The Government has the right to select at random and at any time up to 10% of the number of seismic braces, pieces of equipment, components, supports or restraints and require that the item(s) selected be shown, by structural/seismic calculations, to be suitable for the imposed loadings. Should any item require correction, additional work or replacement, all like items shall also be corrected or replaced at the expense of the contractor and these items will not count as any part of the 10% selection.

b. Submittal of Calculations

Submittal of calculations for seismic protection is not required, however, calculations signed and sealed by a qualified registered professional engineer shall be kept on file by the contractor, and shall be readily available for review by the Government. Calculations for seismic protection shall be well organized and indexed by the trade involved, the type of element protected and by other specific category such as equipment description, mark, pipe size, etc.

c. Coordination of Seismic Protection Locations and Installation

The contractor shall be responsible for coordinating the methods and locations of seismic protection for all trades prior to installation. Should conflicts occur during construction, the contractor shall be responsible for satisfactorily resolving the conflict at no additional cost to the Government.

1.2.5 Building Equipment

Building equipment shall include but not be limited to the following items. The items listed are representative of the types of equipment to be protected and the list is not all-inclusive. Other items of building equipment of a similar nature shall also be protected.

a. Communications Equipment

Equipment Racks
Wall Mounted Panels

1.2.6 Equipment and Systems

Seismic protection for all equipment and systems shall be developed by the contractor in accordance with the requirements of this specification.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H; SUBMITTAL PROCEDURES:

SD-01 Data

Manufacturer's catalog sheets

Test data

Material Specifications

Manufacturer's catalog sheets shall be submitted for any standard bracing or anchorage assemblies that may be purchased with components. Test data substantiating proposed design values of bracing or anchorage assemblies or devices shall be submitted. Test data for expansion or chemically bonded anchors specified in Par. 3.1.1 shall be submitted for each brand or type used and for each different material receiving the anchor. Submit material specifications from a nationally recognized organization, i.e., ASTM, for any materials or equipment that is proposed but is not listed to Section 2, Products

SD-04 Drawings

Seismic Protection

Equipment Requirements

Detail drawings along with templates and erection and installation details for all seismic protection. Submittals shall be complete in detail; shall indicate thickness, type, grade, class of metal and dimensions. Drawings shall show construction details, reinforcement, anchorage, and installation

with relation to building construction. All shop drawings, calculations and test data shall be prepared by or under the supervision of a qualified registered professional engineer. The engineer shall stamp and sign all submittals.

SD-08 Statements

Statement containing the plan for testing of expansion or chemically bonded anchors

Statement of testing agency credentials

SD-09 Reports

Reports of field testing for expansion and chemically bonded anchors

Reports shall be submitted for each test as specified in Par. 3.1.4.

SD-13 Certificates

Certificates of Compliance

Certificates of compliance with the requirements of this section shall be submitted for all component and manufacturers' standard bracing assemblies.

A certificate stating "The seismic protection details for all trades in area _____have been reviewed and coordinated, are in accordance with the contract requirements, and all conflicts have been resolved," shall be submitted before installation begins. These certificates shall be signed and sealed by the qualified registered professional engineer, the subcontractor, and the contractor's quality control officer.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Materials and equipment shall conform to the requirements specified below:

2.1.1 Bolts and Nuts

Squarehead and hexhead bolts, and heavy hexagon nuts, ASME B18.2.1, ASME B18.2.2, or ASTM A 307 for bolts and ASTM A 563 for nuts.

2.1.2 Seismic Protection Materials

Material used for members listed in this section and on the drawings, shall conform to the following. Other items may be used as deemed necessary by the contractor's qualified registered professional engineer provided material specifications are provided.

a. Plates, rods, and rolled shapes, ASTM A 36M.

b. Light gauge steel, less than 6 mm thickness, ASTM A 653M.

c. Strut System Channels, ASTM A 570/A570M, Grade 33 or ASTM A 653M, Grade 33.

d. Strut System Fittings, ASTM A 575-96, ASTM A576-90b, ASTM A 36M or ASTM A635/A635M-98.

2.1.3 Suspended Equipment and Systems

a. All components for seismic protection of suspended equipment and systems shall conform to the latest edition of I.S.A.T. Manual.

b. Suspended equipment or systems connected to floor mounted equipment shall be designed to accommodate the relative movement between the components.

PART 3 EXECUTION

3.1 ANCHOR BOLTS

3.1.1 Expansion or Chemically Bonded Anchors

Expansion or chemically bonded anchors shall not be used unless test data in accordance with ASTM E 488 has been provided to verify the adequacy of the specific anchor and application. The expansion anchor number and size shall be determined by a qualified registered professional engineer employed by the contractor and shall be not less than that determined to resist the forces required by FEMA 302 or required in paragraph Minimum Bolt Sizes, Cast-In-Place Anchor Bolts. Expansion and chemically bonded anchors shall be installed in accordance with the manufacturer's recommendations. The allowable forces shall be adjusted for the spacing between anchor bolts and the distance between the anchor bolt and the nearest edge, as specified by the manufacturer. Chemical anchors shall not be permitted overhead in fire rated assemblies.

3.1.2 Anchorage(s) into Low-Density Concrete at IBS Floor Levels

It shall be expressly understood by Contractor that the low-density concrete material occurring at IBS floor levels does not offer significant pull-out or shear resistance for drilled-in fasteners of any type, nor does any published information by fastener manufacturers exist for this type of base material. Contractor shall perform testing of anchorages into low-density concrete prior to anchor selection, design, and use. Provide report of testing results prior to use. Satisfactorily repair/patch all test locations.

3.1.3 Alternate Design

The requirements of I.S.A.T. may be used for design of anchor bolts for floor or pad mounted equipment.

3.1.4 General Testing

Expansion and chemically bonded anchors shall be tested in place after installation. The tests shall occur not more than 24 hours after installation of the anchor and shall be conducted by an independent testing agency with five or more years of experience performing similar testing, paid by the contractor. Testing shall be performed on random anchor bolts as described below.

3.1.4.1 Pullout Testing

Expansion and chemically bonded anchors shall be tested by applying a pullout load using a hydraulic ram attached to the anchor bolt. At least 5 percent of the anchors, but not less than three per day shall be tested.

The load shall be applied to the anchor without removing the nut; when that is not possible, the nut shall be removed and a threaded coupler shall be installed of the same tightness as the original nut. The test setup shall be checked to verify that the anchor is not restrained from withdrawing by the baseplate, the test fixture, or any other fixtures. The support for the testing apparatus shall be at least 1.5 times the embedment length away from the bolt being tested. Each tested anchor shall be loaded to 2 times the design tension value for the anchor. The anchor shall have no observable movement at the test load. If any anchor fails the test, similar anchors not previously tested shall be tested until 20 consecutive anchors pass. Failed anchors shall be retightened and retested to the specified load; if the anchor still fails the test it shall be replaced.

3.1.4.2 Test Reports

Reports of tests shall be submitted in accordance with Paragraph 1.3.

3.2 ANCHOR RODS, ANGLES, AND BARS

Anchor rods, angles, and bars shall conform to I.S.A.T. requirements. Rods shall be solid metal or pipe. Anchor rods, angles, and bars shall not exceed lengths required by I.S.A.T..

3.3 OTHER EQUIPMENT AND SYSTEMS

Any building equipment or systems not listed in FEMA 302 shall have seismic protection designed in accordance with Chapter 6 of FEMA 302 with the following coefficients:

Rigid or rigidly attached components:
$A_p = 1.0$
$R_p = 2.5$

Flexible or Flexibly attached components:
$A_p = 2.5$
$R_p = 2.5$

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16710

PREMISES DISTRIBUTION SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.2 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Products
1.5.2.2 Design and Installation Work
1.5.2.3 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability

2.1.7 Model and Enhancements
2.1.8 Software and License
2.1.9 Equipment Design for Wet Areas
2.2 UNSHIELDED TWISTED PAIR CABLE SYSTEM
2.2.1 Backbone Cable
2.2.2 Horizontal Cable
2.2.3 Connecting Hardware
2.2.3.1 Telecommunications Outlets
2.2.3.2 Patch Panels
2.2.3.3 Patch Cords
2.2.3.4 Terminal Blocks
2.3 SHIELDED TWISTED PAIR CABLE SYSTEM
2.4 COAXIAL CABLE SYSTEM
2.5 FIBER OPTIC CABLE SYSTEM
2.5.1 Backbone Cable
2.5.1.1 Multimode Backbone Cable
2.5.1.2 Singlemode Backbone Cable
2.5.2 Horizontal Distribution Cable
2.5.3 Connecting Hardware
2.5.3.1 Connectors
2.5.3.2 Patch Panels
2.5.3.3 Patch Cords
2.6 EQUIPMENT RACKS
2.6.1 Floor Mounted Open Frame Racks
2.6.2 Wall Mounted Open Frame Racks
2.6.3 Cable Guides
2.6.4 Floor Mounted Cabinets
2.6.5 Wall Mounted Cabinets
2.7 EQUIPMENT MOUNTING BACKBOARD
2.8 TELECOMMUNICATIONS OUTLET BOXES
2.9 MAIN DISTRIBUTION FRAME (MDF)
2.9.1 Description
2.9.2 Capacity
2.10 FIBER MAIN DISTRIBUTION FRAME (FMDF)
2.10.1 Description
2.10.2 Capacity
2.11 FIBER BUILDING DISTRIBUTION FRAME
2.12 INTERMEDIATE DISTRIBUTION FRAMES (IDF)
2.12.1 Description
2.12.2 Capacity
2.13 INTERMEDIATE PANELS (IP) AND DISTRIBUTION PANELS (DP)
2.13.1 Description
2.13.2 Capacity

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interfaces and Interconnections
3.3.3 Call Routing
3.3.4 Application Programming
3.3.5 Planning Data
3.4 INSTALLATION
3.4.1 General

3.4.2 Equipment Installation
3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Interconnections
3.5.3 Installation Setup
3.6 INSPECTION, TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing
3.6.3 System Readiness Checks
3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspection and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 PDS System
3.11.2 Indicated Items
3.11.3 Patch Cords
3.11.4 UPS
3.11.5 Software
3.11.6 Cord Sets, Station Accessories and Wall Brackets
3.11.7 System LAN
3.12 JACK SCHEDULE

-- End of Section Table of Contents --

SECTION 16710

PREMISES DISTRIBUTION SYSTEM

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 basic designation only. In the event that, at the time of system acceptance testing, the following documents have undergone revision or replacement by a current document, the systems, as installed, shall conform to the then current standard.

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

ANSI/TIA/EIA-568-B	(2001) Commercial Building Telecommunications Cabling Standard
ANSI/TIA/EIA-568-B.2-1	(2002) Transmission Performance Specifications for 4-pair 100 ohm Category 6 Cabling
ANSI/TIA/EIA-569-A	(2001) Commercial Building Standard for Telecommunications Pathways and Spaces
ANSI/TIA/EIA-606A	(1993) Administration Standard for the Telecommunications Infrastructure of Commercial Buildings

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-83-596	(1994) Fiber Optic Premises Distribution Cable

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Standard for Health Care Facilities

1.2 DEFINITIONS

1.2.1 General Definitions

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

1.2.2 Additional Acronyms

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

BACH Bassett Army Community Hospital

CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
FBDF	Fiber Building Distribution Frame
FSS	Facility Security System
FMDF	Fiber Main Distribute Frame
GFGI	Government Furnished, Government Installed
MDF	Main Distribution Frame
NC	Nurse Call (Subsystems)
NCAV	Nurse Call Audio-Visual (System)
NCTV	Nurse Call Tone-Visual (System)
PDS	Premises Distribution System
RFTS	RF Transponder System
O&M	Operation and Maintenance (Manuals)
RF	Radio Frequency
RPS	Radio Paging System
UON	Unless Otherwise Noted
UPS	Uninterruptible Power Supply

1.2.3 Additional Terms

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

Software	Operating systems and application programs that enable a computer, or computer-based systems, to function as specified. Software shall include the documentation to describe, maintain and use the programs.
System	Premises Distribution System or PDS, UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy all specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.
Telecommunications Systems	All low voltage, rf, and power limited communications and security systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.
Telecommunications Rooms	Called Comm Rooms on the drawings. Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and devices for all telecommunications systems.
24x7 Staffed	A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the NCAV System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all the system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

The Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements, dimensions and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, software, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations; G

This system is passive and power calculations are not required.

Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training

date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section H SPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

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

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.4.

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the PDS System and all interfaced telecommunications systems and other systems. including the exact point and type of demarcation.

b. The layout and mounting of all PDS equipment, and the routing and mounting of cabling in Comm Rooms and the Comm Equipment Room as coordinated with the layout of all other systems equipment in these rooms.

c. The layout and mounting of all PDS outlets, and the routing and mounting of cabling on Nurse Station modular furniture.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

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

SD-09 Reports

Testing Reports; G

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

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

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

SD-14 Samples

Product Samples; G

Submit one sample unit of each type of outlet, outlet cover, cable and connecting block for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS.

Software Manuals; G

No software is provided as part of the PDS

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

The premises distribution system shall consist of inside-plant horizontal and backbone cables and connecting hardware to transport telephone and data (including LAN) signals between equipment items in a building.

A record of all installed cable shall be provided on electronic media using Windows based computer cable management software per ANSI/TIA/EIA-606A. A licensed copy of the cable management software including documentation, shall be provided. The cable records shall include the required data fields for each cable and complete end-to-end circuit report for each complete circuit from the assigned outlet to MDF per ANSI/TIA/EIA-606A.

A record of all installed patch panels and outlets shall be provided on electronic media using Windows based computer cable management software per ANSI/TIA/EIA-606A. A licensed copy of the cable management software including documentation, shall be provided. The hardware records shall include only the required data fields per ANSI/TIA/EIA-606A.

1.4.2 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

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

b. Riser diagrams shall indicate the identification number (ID) for all equipment components as shown on the Telecommunications Drawings.

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

d. Installation details for equipment and cabling that is surface mounted on the back panel of GFGI modular furniture shall include the make and model of the surface mounted boxes and wireways, and details for any mounting hardware.

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

f. Legend of graphic symbols used on all drawings.

g. Details shall indicate anchoring and bracing provided for seismic protection in accordance with the requirements of the Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

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

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

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

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and or Installer in accordance with the qualifications specified in this Section.

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

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

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

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

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

Training Personnel

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

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

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

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

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

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

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

1.5.1.2 System Contractor Qualifications

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

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

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

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

1.5.1.3 Installer Qualifications

a. The Installer shall be regularly engaged in the business of

installation of the type of system specified in this Section.

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

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

1.5.1.4 Manufacturer Qualifications

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

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

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

1.5.2 Regulatory Requirements

1.5.2.1 Products

The PDS identification, configuration and materials shall comply with all requirements of ANSI/TIA/EIA-568-B wiring scheme B and ANSI/TIA/EIA-606

1.5.2.2 Design and Installation Work

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

1.5.2.3 Electromagnetic Interference (EMI)

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

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

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

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

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

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

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

1.6.2 Delivery Coordination

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

1.6.3 Loss Liability

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

1.6.4 Delivery Restrictions

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

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

1.6.5 Contractor Responsibility

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

1.7 SEQUENCING AND SCHEDULING

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

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

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

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

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS and CLOSEOUT SUBMITTALS.

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

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express shipped to BACH if not available locally within a 150 mile driving radius of BACH.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

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

1.9.1.3 Post Acceptance Spare Parts

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

Quantity	Items
1	Each type of patch panel
96	Patch Panel Jacks
12	Each different length patch cord assembly
12	Each type of PDS Outlet Assembly Cover and Outlet

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module

replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

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

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

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

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. The System Contractor shall provide an on-line diagnostic maintenance support capability as specified herein.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

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

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction. A major malfunction shall be defined as the failure of more than 10% of the count in any backbone cable unit, or the failure of more than 10% of horizontal cables in any one cable tray routing segment.

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not

constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified or indicated on the Telecommunications Drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided as part of the original bid price.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

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

2.1.4 Identical Products

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

2.1.5 Nameplates and Equipment Markings

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

b. All cables, outlets and jackfields shall be plainly and permanently labeled with permanent identification. All identification shall meet the requirements of ANSI/TIA/EIA-606-A.

c. Stick on marker tape is not acceptable.

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

2.1.6 Mounting Alignment Capability

Wall mounted components shall have an adjustable mounting alignment

capability to compensate for improperly aligned backboxes and to insure a plumb, square, and level installation.

2.1.7 Model and Enhancements

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

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

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

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

2.1.8 Software and License

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

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

c. Software maintenance that is provided to any or all other customers without charge shall be provided to the Government.

2.1.9 Equipment Design for Wet Areas

All equipment that will be installed in wet areas shall be designed and constructed for such purpose and installed in strict accordance with the Manufacturer's instructions for such location.

2.2 UNSHIELDED TWISTED PAIR CABLE SYSTEM

2.2.1 Backbone Cable

Backbone cable shall meet the requirements of ANSI/TIA/EIA-568-B for Category 3 100-ohm unshielded twisted pair cable. Cable shall be label-verified. Cable jacket shall be factory marked at regular intervals indicating verifying organization and performance level. Conductors shall be solid untinned copper 22 AWG. Cable shall be rated CMP as defined by

NFPA 70.

2.2.2 Horizontal Cable

Horizontal cable shall meet the requirements of ANSI/TIA/EIA-568-B.2-1 for Category 6. Cable jacket shall be factory marked at regular intervals indicating verifying organization and performance level. Cable shall be rated CMP as defined by NFPA 70.

2.2.3 Connecting Hardware

Connecting and cross-connecting hardware shall be the same category or higher and the same gauge or larger as the cable it serves. Hardware shall be in accordance with ANSI/TIA/EIA-568-B.

2.2.3.1 Telecommunications Outlets

a. Outlet assemblies used in the premises distribution system shall consist of modular jacks assembled into both simplex and duplex outlet assemblies in single or double gang covers as specified in this section and as indicated in the drawings.

b. Desk and lower wall outlet plates shall come equipped with three unkeyed modular jacks labeled at the exterior of each jack position with identification which will match the patch panel designations in the serving Comm Room as indicated in the drawings. Any additional space(s) shall contain a blank cover plate(s) and remain unlabeled

c. Modular jacks shall be rated for the same category or higher and gauge as the cable they terminate and shall meet the requirements of ANSI/TIA/EIA-568-B and shall meet the Link Test parameters as listed in ANSI/TIA/EIA-TSB-67 and supplemented by ANSI/EIA ANSI/TIA/EIA-568-B.2-1.

d. Modular jack pin/pair configuration shall be T568B per ANSI/TIA/EIA-568-B.

e. Desk, counter, Type L, Type M and lower wall faceplates shall be provided as indicated in the drawings and shall be ivory in color and be manufactured from nylon or impact resistant plastic.

f. Wall (upper) instrument mounting plates with instrument studs and RO outlet faceplates shall be manufactured of stainless steel.

2.2.3.2 Patch Panels

a. Patch panels shall be comprised of a complete system of components by a single Manufacturer and shall consist of eight-position modular jacks, with rear mounted Type 110 insulation displacement connectors, arranged in rows and columns on 480 mm rack mounted panels as indicated in the drawings.

b. Jack pin/pair configuration shall be scheme "B" per ANSI/TIA/EIA-568-B.

c. Jacks shall be unkeyed.

d. Panels shall be provided with labeling space and labeled with a numbering plan devised in accordance with ANSI/TIA/EIA-606-A.

e. The modular jacks shall conform to the requirements of ANSI/TIA/EIA-568-B, and shall be rated for use with Category 6 cable or

higher in accordance with ANSI/TIA/EIA-568-B.2-1 and shall meet the Link Test parameters as listed in ANSI/TIA/EIA-TSB-67 and supplemented by ANSI/TIA/EIA-568-B.2-1.

f. Modular jacks shall be self contained and be individually replaceable/relocatable in the rack panels.

2.2.3.3 Patch Cords

a. Patch cords shall be cable assemblies consisting of flexible, twisted pair stranded wire with eight-position plugs at each end.

b. Cable jacket shall be factory marked in English and at regular intervals indicating the certifying organization and performance level.

c. Patch cords shall be wired straight through; pin numbers shall be identical at each end and shall be paired to match patch panel jack wiring as dictated in this Specification.

d. Patch cords shall be unkeyed.

e. Patch cords shall be factory assembled, tested and certified by the Manufacturer.

f. Patch cords shall conform to the requirements of ANSI/TIA/EIA-568-B.2-1 for Category 6 or higher.

g. Patch cords shall be provided in two distinct colors in quantities as indicated in the schedule below.

2.2.3.4 Terminal Blocks

a. Terminal Blocks are installed in the IPs as indicated in the drawings. IP #1 and #2 Terminal blocks shall consist of a plastic block containing (12) 8 conductor jack assemblies. Connection of horizontal wiring to the jack assemblies shall be by Type 110 insulation displacement connections. IP Terminal blocks #3 and #4 shall consist of a plastic block containing Type 110 insulation displacement connections. The nylon or plastic frame is to be surface mounted. Blocks shall be provided with labeling space and labeled with a numbering plan devised in accordance with ANSI/TIA/EIA-606A.

b. Terminal Blocks are installed in the DPs as indicated in the drawings. DP Terminal blocks shall consist of a plastic block containing Type 110 insulation displacement connections. The nylon or plastic frame is to be surface mounted. Blocks shall be provided with labeling space and labeled with a numbering plan devised in accordance with ANSI/TIA/EIA-606A.

c. MDF Vertical frame blocks for termination of the backbone cabling shall be provided, installed and wired by the contractor. Vertical frame blocks shall be Newton Instrument Company figure 5079 (wire wrap both side, no protector) blocks or equal.

d. MDF vertical protector blocks for Outside Plant termination, Horizontal Equipment Blocks, all equipment tails and all cross connects are GFGI.

2.3 SHIELDED TWISTED PAIR CABLE SYSTEM

No Shielded Twisted Pair cable is installed as part of this projec2.4 COAXIAL CABLE SYSTEM

No Coaxial Data (10BASE5) system or cable will be installed as part of this project.2.5 FIBER OPTIC CABLE SYSTEM

2.5.1 Backbone Cable

2.5.1.1 Multimode Backbone Cable

a. Multimode fiber optic backbone cable shall meet the requirements of ANSI/TIA/EIA-568-B and ICEA S-83-596 for 62.5/125 micrometer multimode graded index optical fiber cable.

b. Numerical aperture for each fiber shall be a minimum of 0.275.

c. Cable construction shall be tight buffered type.

d. Individual fibers shall be color coded for identification.

e. Cable shall be imprinted with fiber count and aggregate length at regular intervals.

f. Cable shall be rated OFNP as defined by NFPA 70.

g. Cables shall be labeled with a numbering plan devised in accordance with ANSI/TIA/EIA-606A. Cable identification at both the jacket and strand level, is to match on each end of each cable.

2.5.1.2 Singlemode Backbone Cable

a. Singlemode fiber optic backbone cable shall meet the requirements of ANSI/TIA/EIA-568-B and ICEA S-83-596 and the following: operation at a center wavelength of 1310 and 1550nm; core/cladding diameter 8.3 nominal/125 micrometer; maximum attenuation 1.0 dB/km at 1300 nm and .4 dB/km at 1550 nm.

b. Numerical aperture for each fiber shall be a minimum of 0.10.

c. Cable construction shall be tight buffered type.

d. Individual fibers shall be color coded for identification.

e. Cable shall be imprinted with fiber count and aggregate length at regular intervals.

f. Cable shall be rated OFNP per NFPA 70.

g. Cables shall be labeled with a numbering plan devised in accordance with ANSI/TIA/EIA-606A. Cable identification at both the jacket and strand level, is to match on each end of each cable.

2.5.2 Horizontal Distribution Cable

There is no Horizontal Fiber Optic cable installed as part of this project.

2.5.3 Connecting Hardware

2.5.3.1 Connectors

Connectors shall be SC type with ceramic ferrule material with a maximum insertion loss of .5 dB. Connectors shall meet performance requirements of ANSI/TIA/EIA-568-B. Connectors shall be field installable. Connectors shall utilize adhesive for fiber attachment to ferrule. Connectors shall terminate fiber sizes as required for the service.

2.5.3.2 Patch Panels

Patch panels shall be a complete system of components by a single manufacturer, and shall provide termination, splice storage, routing, radius limiting, cable fastening, storage, and cross-connection. Patch panels shall be 480 mm rack mounted panels. Patch panels shall provide strain relief for cables. Panels shall be provided with labeling space and labeled with a numbering numbering plan devised in accordance with ANSI/TIA/EIA-606A . Patch panel connectors and couplers shall be the same type and configuration as used elsewhere in the system.

2.5.3.3 Patch Cords

Patch cords shall be cable assemblies consisting of flexible optical fiber cable with connectors of the same type as specified herein. Optical fiber shall be the same type as used elsewhere in the system. Patch cords shall be complete assemblies from manufacturer's standard product lines.

2.6 EQUIPMENT RACKS

2.6.1 Floor Mounted Open Frame Racks

Floor mounted equipment racks shall be welded steel relay racks with uprights to mount equipment 480 mm wide, Newton Instrument 4012 or equal. Uprights shall be 75 mm deep channel, 32 mm wide, drilled and tapped 12-24 in a 13 mm pattern. Racks shall be provided with a standard top crossmember, and predrilled base plate to allow floor fastening. Open frame equipment racks shall be 2.4 m in height and painted semi-gloss gray or black. All racks in the facility are to be of the same color and finish.

2.6.2 Wall Mounted Open Frame Racks

No wall mounted open frame racks will be installed as part of this project.

2.6.3 Cable Guides

Cable guides shall be specifically manufactured for the purpose of routing cables, wires and patch cords horizontally and vertically on 480 mm equipment racks. Cable guides shall consist of bracket-like devices mounted on rack panels for horizontal use and 2.4 m units manufactured in the same series as the relay racks and finished in kind for vertical use. All cable guides shall be double sided and provide the same cable carrying capacity on both the front and rear of the frames. Cable guides shall mount to racks by screws and/or nuts and lockwashers in accordance with Manufacturer's instructions.

2.6.4 Floor Mounted Cabinets

No Floor Mounted Cabinets will be installed by this project.

2.6.5 Wall Mounted Cabinets

No wall mounted cabinets will be installed by this project.

2.7 EQUIPMENT MOUNTING BACKBOARD

All plywood backboards are existing.

2.8 TELECOMMUNICATIONS OUTLET BOXES

All Telecommunications outlet boxes, conduits and cable trays are existing UON.

2.9 MAIN DISTRIBUTION FRAME (MDF)

A free standing, 24 (min) vertical double sided Main Distribution Frame, Newton Instrument Figure 5005 or equal, shall be provided as indicated in the drawings in room 316-06, Telephone Switch. The MDF shall provide for horizontally mounted GFGI blocks for the termination of PBX equipment wiring on one side, and for vertically mounted (CFCI) backbone and GFGI outside cable plant blocks on the other side.

2.9.1 Description

a. Vertical space will be reserved at the right end on the vertical side of the frame (facing the vertical side) for the installation of GFGI Outside Cable Plant connector blocks.

b. Unprotected connecting blocks shall be mounted on the vertical side of the frame at the left end (facing the vertical side) of the frame. The connector blocks shall be wire wrapped to the backbone cables as indicated in the drawings and this specification.

c. The center of the vertical side of the MDF shall remain available for expansion of either outside plant or backbone, as indicated in the drawings.

c. The MDF shall provide a Horizontal to Vertical side clearance measured from the back of a horizontal block to the back of a vertical block of at least 500 mm.

d. The MDF structure shall provide cable troughs or supports and cable dressing rings for routing of cross connect wire.

e. The frame hardware and connecting blocks shall be approved for use with each other by the respective manufacturers. Block adapters, if used, shall be commercial off-the-shelf products of either manufacturer.

f. All connecting blocks provided shall utilize wirewrap and shall meet the transmission and electrical characteristics of ANSI/TIA/EIA-568-B for Category 3 devices.

g. 66 style connecting blocks are not permitted.

2.9.2 Capacity

a. Adequate basic frame assembly shall be provided to, at a minimum, cover all sleeves from the IBS as indicated in the drawings.

b. Vertical frame space shall be reserved to terminate on GFGI provided protector blocks 6,300 pair Outside Plant Cable.

c. Adequate vertical, unprotected blocks, mounts or brackets and related hardware shall be provided to terminate 2,500 pair backbone cables connection to the Communications Rooms. 1,825 pair are to be terminated on these blocks as part of the project. Vertical frame space shall be reserved to terminate an additional 1,000 pair backbone cable on matching GFGI provided unprotected blocks at the same density.

d. The horizontal side of the frame will be populated by the Government. Adequate space shall be provided to install 100 each 100 pair equipment blocks minimum.

2.10 FIBER MAIN DISTRIBUTION FRAME (FMDF)

A free standing Fiber Main Distribution Frame shall be provided as indicated in the drawings in room 316-03, Computer Room. The FMDF shall provide for the termination of outside cable plant Fiber provided from the GFGI FBDF in the Telephone Room (316-06), backbone fiber from the Communications Rooms, and for fiber horizontals within the Computer Room.

2.10.1 Description

a. The FMDF shall have a clear identification at each outlet which shall reflect the strand identification information.

b. The FMDF is to be equipped with retainers or wireways that will adequately terminate, support, and protect fiber cable assemblies entering the frame.

c. The FMDF shall have wireways or supports within the connector field that will adequately support all patch cords connected to the various connectors.

d. Connectors are to be SC type.

2.10.2 Capacity

a. The FMDF shall accommodate a minimum of 24 strands single mode Tie Cable from the Telephone equipment Room FBDF.

b. The FMDF shall accommodate a minimum of 84 strands single mode Backbone strands.

c. The FMDF shall accommodate a minimum of 168 strands multimode Backbone strands.

d. The FMDF shall accommodate a minimum of 48 strands of equipment single mode horizontals from within the computer room.

e. THE FMDF shall accommodate a minimum of 256 strands of equipment multimode horizontals from within the computer room.

f. The FMDF base structure shall not be populated in excess of 50% of the total frame outlet capacity. The wireways/retainers shall not be populated in excess of 50% of total frame capacity.

2.11 FIBER BUILDING DISTRIBUTION FRAME

The FBDF is GFGI and located in room 316-06, Telephone Switch.

2.12 INTERMEDIATE DISTRIBUTION FRAMES (IDF)

The IDFs in this project are provide in each Comm Room for the termination of backbone cable, horizontal cable, backbone fiber, and the cross connects or jumpers required to interconnect those cables into the system.

2.12.1 Description

a. The IDF is tightly integrated with the active equipment in each Communications Room. All IDF components and GFGI active components are to be mounted in relay racks as indicated in the drawings.

b. Each relay rack is to be laid out in the same manner as indicated in the drawings with appropriate cable administration hardware installed both within and between each rack.

c. Patch Panels for UTP are to be comprised of 8 position miniature modular unkeyed outlet assemblies independently mounted into the jackfield. It shall be possible to replace individual outlets within the jackfield.

d. Patch panel fields assigned for use of UTP backbone shall have one pair terminated on pair 1 of the outlet. Pair 25 (slate/violet) of each binder shall be coiled back and remain unterminated.

e. Patch panel fields assigned to horizontal UTP cables shall have all four pairs terminated at both the jackfield outlet and at the respective outlet on the floor.

f. Unused jackfield positions, and positions reserved for growth shall have blank panels installed as shown in the drawings.

g. All horizontal outlets shall be considered as Category 6 circuits, wired completely, and tested in accordance with TIA/EIA-TSB-67 standard, including the additional tests and test set accuracy requirements of ANSI/TIA/EIA-568-B.2-1

2.12.2 Capacity

a. As shown in the drawings, each lead rack unit in each Communications Room will support 72 backbone pairs and 72 outlet assemblies with each of four positions filled, 24 multimode backbone cables and 12 single mode cables. Additionally, each lead rack will support the installation of a GFGI data switch and related GFGI uninterruptible power supply (UPS).

b. As shown in the drawings, each secondary rack unit in each Communications Room will support 72 backbone pairs and 72 outlet assemblies with each of four positions filled. Space for an additional field supporting 24 multimode backbone cables and 12 single mode cables will be reserved with a blank plate. Additionally, each secondary rack will support the installation of a future GFGI data switch and related GFGI uninterruptible power supply (UPS) each reserved with a separate blank

plate.

c. All Cable administration components as indicated in the drawings shall be supplied as part of this project.

2.13 INTERMEDIATE PANELS (IP) AND DISTRIBUTION PANELS (DP)

2.13.1 Description

a. IPs #1 and #2 are located at station service points in the facility as indicated in the drawings. Wiring from these panels shall be terminated directly at the serving Comm Room on the assigned jackfields. IPs shall be equipped with terminal blocks and jacks as indicated in this Specification. Station cables shall be connected directly at IP #1 and #2.

b. IPs #3 and #4 are located in the Comm Riser as indicated in the drawings. Wiring from these panels shall be terminated directly at the serving Comm Room on the assigned jackfields. IPs #3 and #4 shall be equipped with 110 Type terminal blocks as indicated in this Specification. A minimum of two blocks shall be provided and cross connects shall be performed at the IP #3 and #4.

c. DPs are located at strategic points in the facility as indicated in the drawings. Wiring from these panels shall be terminated directly on the vertical section of the MDF reserved for Backbone wiring. DPs shall be equipped with 110 Type terminal blocks as indicated in this Specification. A minimum of two blocks shall be provided and cross connects shall be performed at the DP.

2.13.2 Capacity

Capacity shall be as indicated in the drawings.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of Comm Rooms are identified on the Telecommunications Drawings.

c. Contractor is to coordinate construction schedules, access times and allocation of Comm riser sleeves in the Second Floor IBS with the Government Outside Plant Contractor.

c. All flush and ceiling mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Junction box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

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

3.2.3 Electrical Power

The PDS is a passive system and has no electrical power requirements.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interfaces and Interconnections

a. Coordinate and define the details of all interfaces and interconnections with other systems and equipment as specified herein. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of Drawings and Data submittals.

b. Interfaces and interconnections shall include:

BACH Data Systems
BACH Telephone System
EMS Recorder System
FSS System
PA System
Radio Page System Encoder/CPU

3.3.3 Call Routing

The PDS is a passive system and has no routing definitions or requirements.

3.3.4 Application Programming

the PDS is a passive system and has no application programming requirement.

3.3.5 Planning Data

Gather data required to develop all required plans, including testing and training plans.

3.4 INSTALLATION

3.4.1 General

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

b. Installation shall comply with the requirements of NFPA 70, NFPA 99, TIA/EIA-568-B, ANSI/TIA/EIA-569-A and TIA/EIA-606-A.

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

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

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

f. Provide surface mount metal wireways and boxes for PDS outlets that are required to be surface mounted on the backpanel of GFGI free standing modular furniture, as indicated on the Telecommunications Drawings.

g. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

3.4.2 Equipment Installation

a. Appropriate waterproof gaskets shall be used for station installations in wet areas (Loading Docks, exterior).

b. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project.

c. Mounted equipment shall be firmly secured in place, plumb, square, and level.

d. Equipment mounting shall comply with the seismic bracing and anchorage requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

3.4.3 System Cabling Installation

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

b. All cables and the installation of cables shall be in accordance with ANSI/TIA/EIA-568, ANSI/TIA/EIA-569-A, and NFPA 70 NEC.

c. System cables shall be installed without kinks, sharp bends or deformations, in a manner to prevent abrasion. Cable assemblies are to be jacketed for their full length, less the absolute minimum of jacket recommended to be removed by the terminating connector Manufacturer and applicable Manufacturer's standards.

d. System cabling shall be installed in designated cable trays, conduits and boxes.

e. Horizontal cables shall have a minimum of 150 mm slack jacketed cable coiled loosely within the outlet box.

f. Horizontal cables serving pay telephone (P, PH outlet designations) shall have a minimum of 300 mm slack jacketed cable coiled loosely within the outlet box.

g. Horizontal cables serving GFGI Laboratory (L outlet designations) shall be terminated in the laboratory casework if p[resent at time of installation. If casework is not present, the cables are to be prepared at the ceiling mounted junction boxes as indicated in the drawings. Each cable assembly shall have a minimum of 6 m slack jacketed cable. It shall be terminated, tested and placed in a protective plastic bag and coiled loosely at the junction box.

h. All backbone and horizontal cables at patch panels shall have a service loop containing 1 meter of fully jacketed cable assembly. Pair 25 (Slate/Violet) of each binder in backbone cables will not be terminated on an outlet. It is to be left full length, coiled back, tagged and stored on the rear of the patch panel where the binder is terminated.

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

j. Certify that system cable that are installed in the existing communications systems cable trays along with the cables from other systems shall not adversely affect the performance of this system or any other project system.

k. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

l. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

m. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

Equipment racks shall be grounded and ground kits provided as indicated in the drawings.

3.5 APPLICATION

3.5.1 AC Power Connections

The PDS is a passive system and has no power requirements

3.5.2 Interconnections

Interconnections required for a complete and operable signal distribution system shall be provided. This shall include, but not be limited to, the installation of patch cords at each IDF as indicated in the Jack Schedule "Patch" column and the end-to-end testing of pair 1 from each patched outlet to the MDF.

3.5.3 Installation Setup

Contractor shall make all adjustments and wiring corrections as detected by the test plan as necessary to setup the system to function in accordance with specific user requirements for the system.

3.6 INSPECTION, TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY

CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

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

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

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

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

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, system readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition. Upon completion of this restoration, all jacks in the affected outlet assembly shall be retested to these requirements.

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

3.6.2 Periodic Inspection and Testing

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

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

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

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

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

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

e. Video record acceptance tests in accordance with Section H SPECIAL

ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements and user setup requirements for the system.

b. Testing shall include, but not be limited to, the following tests to demonstrate all requirements:

(1) Backbone Tests

All* metallic cable pairs shall be tested for proper identification and continuity. All opens, shorts, crosses, grounds, and reversals shall be corrected. Correct color coding and termination of each pair shall be verified in the Comm Room and at the outlet. Horizontal wiring shall be tested from and including the termination device in the Comm Room to and including the modular jack in each room. Backbone wiring shall be tested end-to-end, including termination devices, from terminal block to terminal block, in the respective Comm Rooms to the MDF in the Telephone Switch Room.

*Pair 25 (slate/violet) in each binder of riser cable is not utilized by the design and is not required to be tested.

These test shall be completed and all errors corrected before any other tests are started.

(2) Category 6 Circuits

All horizontal circuits shall be installed and certified as Category 6 circuits. All circuits shall be tested using a test set meeting the Class II accuracy requirements of ANSI/TIA/EIA-TSB-67 standard, including the additional tests and test set accuracy requirements of ANSI/TIA/EIA-568-B.2-1. Testing shall use the Basic Link Test procedure of ANSI/TIA/EIA-TSB-67, as supplemented by ANSI/TIA/EIA-568-B.2-1. Cables and connecting hardware which contain failed circuits shall be replaced and retested to verify that all tests are met by the corrected circuit.

(3) Fiber Optic Cable

Tests shall be performed from both ends of each circuit. Connectors shall be visually inspected for scratches, pits or chips and shall be reterminated if any of these conditions exist. Each circuit leg and complete circuit shall be tested for insertion loss at both 850 and 1300 nm using a light source similar to that used for the intended communications equipment. High-resolution optical time domain reflectometer (OTDR) tests shall be performed from each end of each fiber. Scale of the OTDR trace shall be such that the entire circuit appears over a minimum of 80 percent of the X-axis. Testing shall comply with ANSI/TIA/EIA-568-B.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as necessary to demonstrate compliance with all requirements to the Contracting Officer.

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

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

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

3.6.7 Warranty Period Inspection and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

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

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified demonstration and training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to the BACH staff in accordance with the approved Training Plan.

3.7.2 General Preparations

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

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated BACH staff in the operation and maintenance of the provided system.

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

3.7.4 Training Instructions

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

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

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

a. Furnish all training materials and handouts. Handouts shall be provided in the quantity needed for all of the BACH maintenance technicians that will receive training.

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

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

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

c. Each course shall include classroom training and field training. Field training for BACH staff shall take place in the area where the staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

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

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

3.7.7 Operational Staff Training

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

b. Operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system is installed and accepted by the Government, the operational staff shall be given a refresher course.

3.7.8 Technician Training

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

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

c. Nine (9) months after the system is installed and accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided on site. Training shall include comprehensive instruction for complete setup, operation, maintenance and repair of the system, including the theory of operation, software installation and setup, maintenance programs, failure diagnostic programs, troubleshooting and repair. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training for Manufacturer's certification as a maintenance technician.

3.8 PROTECTION

Items that can be easily stolen shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 PDS System

a. Provide a complete and operational PDS System as specified in this Section, as indicated on the Telecommunications Drawings, as required by the system application design, and as further defined below.

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

3.11.2 Indicated Items

Provide the quantity and type of system components, such as jacks, racks, blank panels, cable management devices, patch panels and outlets, as indicated on the Telecommunications Drawings. All racks are to have blank panels, in the unit sizes indicated, installed in all unoccupied locations for their full height, including those spaces reserved for GFGI apparatus.

3.11.3 Patch Cords

a. Provide and install 900 2.0 meter patch cords for cross connecting voice grade service in the Comm Rooms as directed by the attached jack Schedule.

b. Provide an additional 100 2.0 meter patch cords for cross connecting voice grade service in the Comm Rooms as directed by the attached jack Schedule in a matching color to subparagraph (a) above.

c. Provide 400 2.0 meter patch cords for cross connecting data services between patch panels and GFGI data switches. Provide these patch cords in a jacket color unique from subparagraph (a) above.

3.11.4 UPS

The PDS is a passive system and does not require a UPS.

3.11.5 Software

The PDS is a passive system and does not require software.

3.11.6 Cord Sets, Station Accessories and Wall Brackets

a. Station cords are GFGI.

b. Provide and install stainless steel wall mounting plates with station mounting studs at locations indicated in the drawings.

c. Pay telephone instruments and mounting columns are GFGI.

d. Elevator instruments are GFGI.

e. Weatherproof instruments and their housings are GFGI.

3.11.7 System LAN

The PDS is a passive system and does not utilize LAN hardware or software. All LAN switches, network apparatus and UPS devices indicated in the drawings is GFGI.

3.12 JACK SCHEDULE

The PDS Jack Schedule is Attached.

Jack Schedule Legend:

a. The "Room" column displays the construction room number.

b. The "Outlet ID" column identifies the particular PDS device in the room for the specific line listing. All PDS outlets are identified with a first character of "P".

c. The Room Name column displays the construction name for the room.

d. The "Type" column displays the rough in and outlet information. Outlet types are detailed in the drawings.

e. If there is a "1" in the "Patch" column, after individual tests are complete, a patch cord is to be inserted into the outlet and a backbone cable assignment, and the circuit tested end to end from the outlet to the MDF.

f. The "Comm Room" column indicates where the horizontal from that specific outlet is to be terminated.

-- End of Section --

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
		Central Sterile			
204-02	P01	Corridor	W	1	219-04
204-03	P01	Assembly	W	1	219-04
205-03	P01	Office	D	1	219-04
205-03	P02	Office	D		219-04
205-04	P01	Sterile Storage	W	1	219-04
205-04	P02	Sterile Storage	W	1	219-04
205-05	P01	Bulk Storage	W	1	219-04
210-20	P01	Cart Receiving	W	1	219-04
		Communications			
022-01	P01	Cable Vault	W	1	117-23
117-23		Comm Room	FR		117-23
118-16		Comm Room	FR		118-16
129-05		Comm Room	FR		129-05
134-02		Comm Room	FR		134-02
217-29		Comm Room	FR		217-29
219-04		Comm Room	FR		219-04
229-07		Comm Room	FR		229-07
316-06		Tele Switch	FR	1	316-06
316-06		Tele Switch	FR	1	316-06
316-06		Tele Switch	FR	1	316-06
317-04		Comm Room	FR		317-04
424-01		Comm Equipment Room	FR		424-01
424-01		Page Feeds, RF and Audio	FR	37	424-01
424-01		Nurse Call Diagnostic Port	FR	1	424-01
		Command Suite/Nursing Admin			
321-01	P01	Office, Deputy	D		317-04
321-01	P02	Office, Deputy	D	1	317-04
321-02	P01	Office, Commander	D		317-04
321-02	P02	Office, Commander	D	1	317-04
321-02	P03	Office, Commander	D	1	317-04
321-05	P01	Office, DCPS	D		317-04
321-05	P02	Office, DCPS	D	1	317-04
321-06	P01	Office, CSM	D	1	317-04
321-06	P02	Office, CSM	D	1	317-04
321-08	P01	Office, Dir. of Nursing	D	1	317-04
321-08	P02	Office, Dir. of Nursing	D	1	317-04
321-09	P01	Reception/Waiting	D	1	317-04
321-09	P02	Reception/Waiting	D	1	317-04
321-09	P03	Reception/Waiting	D	1	317-04
321-09	P04	Reception/Waiting	D	1	317-04
321-10	P01	Conference/Classroom	W	1	317-04
321-10	P02	Conference/Classroom	D	1	317-04
321-10	P03	Conference/Classroom	D		317-04
321-10	P04	Conference/Classroom	D		317-04
321-10	P05	Conference/Classroom	D		317-04
321-10	P06	Conference/Classroom	D		317-04
321-12	P01	Office, CWM	D	1	317-04

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
321-12	P02	Office, CWM	D	1	317-04
322-01	P01	Files/Copy	W	1	317-04
322-01	P02	Files/Copy	D		317-04
322-07	P01	Office, Asst. Chief	D		317-04
322-07	P02	Office, Asst. Chief	D	1	317-04
322-08	P01	Office, Safety Officer	D		317-04
322-08	P02	Office, Safety Officer	D	1	317-04
		Company Command			
228-02	P01	Recept./Files	D	1	229-07
228-02	P02	Recept./Files	D	1	229-07
228-02	P03	Recept./Files	MK	1	229-07
228-02	P04	Recept./Files	MK	1	229-07
228-07	P01	Waiting	D		229-07
228-03	P01	Office, NCOIC	D	1	229-07
228-03	P02	Office, NCOIC	D		229-07
228-04	P01	Office, Commander	D		229-07
228-04	P02	Office, Commander	D	1	229-07
		CSD			
103-07	P01	Dr. Office	D	1	117-23
103-07	P02	Dr. Office	D		117-23
103-09	P01	Exam, Flight Medicine	D		117-23
103-09	P02	Exam, Flight Medicine	D	1	117-23
104-03	P01	Exam, Flight Medicine	D		117-23
104-03	P02	Exam, Flight Medicine	D	1	117-23
104-04	P01	Office, NCOIC	D	1	117-23
104-04	P02	Office, NCOIC	D		117-23
109-03	P01	Pharmacy Consult	D	1	117-23
109-03	P02	Pharmacy Consult	D		117-23
109-04	P01	Screening	D	1	117-23
109-04	P02	Screening	D		117-23
110-01	P01	Reception / Files	D	1	117-23
110-01	P02	Reception / Files	D	1	117-23
110-02	P01	Wait	D		117-23
		Dental Care			
229-04	P01	Storage	W	1	229-07
229-05	P01	Darkroom	D		229-07
229-06	P01	X-ray	W	1	229-07
229-06	P02	X-ray	D		229-07
229-06	P03	X-ray	D		229-07
229-12	P01	Reception	C	1	229-07
229-12	P02	Reception	D	1	229-07
229-13	P01	Copy/Computer	D		229-07
229-13	P02	Copy/Computer	W	1	229-07
229-14	P01	Office, NCOIC	D	1	229-07
229-14	P02	Office, NCOIC	D		229-07
229-15	P01	Hygienist Treatment	W	1	229-07
229-16	P01	Dental Lab	W	1	229-07

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
229-16	P02	Dental Lab	C		229-07
239-01	P01	Soiled Instrument	W	1	229-07
239-02	P01	Oral Surg, Treatmt	W	1	229-07
239-03	P01	Oral Surg, Treatmt	W	1	229-07
239-05	P01	Trash	W	1	229-07
239-08	P01	Lockers (6)	W	1	229-07
239-10	P01	Central Issue	D	1	229-07
239-12	P01	Lounge	D		229-07
239-12	P02	Lounge	W	1	229-07
239-13	P01	Lockers (6)	W	1	229-07
239-17	P01	Office, Physician	D	1	229-07
239-17	P02	Office, Physician	D		229-07
239-19	P01	DTR	W	1	229-07
239-20	P01	DTR	W	1	229-07
239-21	P01	DTR	W	1	229-07
239-22	P01	DTR	W	1	229-07
239-23	P01	Office, Physician	D		229-07
239-23	P02	Office, Physician	D	1	229-07
239-24	P01	Office, Physician	D	1	229-07
239-24	P02	Office, Physician	D		229-07
		EENT Clinic			
133-01	P01	Screening	D	1	134-02
133-02	P01	Hearing Aid Work Room	D	1	134-02
133-03	P01	8 Man Booth	D		134-02
133-04	P01	Audio Booth	JB1		134-02
133-06	P01	Treatment	D		134-02
133-06	P02	Treatment	W	1	134-02
133-08	P01	Office, Physician	D		134-02
133-08	P02	Office, Physician	D	1	134-02
133-10	P01	Office, Physician	D		134-02
133-10	P02	Office, Physician	D	1	134-02
133-11	P01	Optometry Screening	D	1	134-02
133-11	P02	Optometry Screening	D	1	134-02
133-11	P03	Optometry Screening	D	1	134-02
133-13	P01	Visual Field	W	1	134-02
133-13	P02	Visual Field	D		134-02
133-15	P01	Fitting dispensing	D		134-02
133-15	P02	Fitting dispensing	W	1	134-02
133-16	P01	Exam, Optometry	D		134-02
133-16	P02	Exam, Optometry	D	1	134-02
133-17	P01	Exam, Optometry	D	1	134-02
133-17	P02	Exam, Optometry	D		134-02
133-18	P01	Treatment	D		134-02
133-18	P02	Treatment	W	1	134-02
134-03	P01	Exam, Optometry	D	1	134-02
134-03	P02	Exam, Optometry	D		134-02
134-04	P01	Exam, Optometry	D		134-02
134-04	P02	Exam, Optometry	D	1	134-02
134-05	P01	Exam, Ophthalmology	D		134-02

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
134-05	P02	Exam, Ophthalmology	D	1	134-02
134-06	P01	Exam, Ophthalmology	D		134-02
134-06	P02	Exam, Ophthalmology	D	1	134-02
143-01	P01	Office, Physician	D	1	134-02
143-01	P02	Office, Physician	D		134-02
143-02	P01	Exam, Ophthalmology	D		134-02
143-02	P02	Exam, Ophthalmology	D	1	134-02
143-03	P01	Office, Physician	D	1	134-02
143-03	P02	Office, Physician	D		134-02
143-04	P01	Storage	D	1	134-02
143-07	P01	Soiled Utility	W	1	134-02
143-08	P01	ENT (ENG)	D	1	134-02
143-08	P02	ENT (ENG)	W		134-02
143-10	P01	Clean Utility	W	1	134-02
144-01	P01	Laser	W	1	134-02
144-01	P02	Laser	D		134-02
		Emergency Service			
101-02	P01	Ambulance Garage	W	1	117-23
101-03	P01	Equip Storage	W	1	117-23
101-05	P01	Lounge	W	1	117-23
101-05	P01	Lounge	D		117-23
102-01	P01	Ambulance Storage	W	1	117-23
102-03	P01	Peds Room, (1 isolation)	D	1	117-23
102-03	P02	Peds Room, (1 isolation)	D		117-23
102-04	P01	Peds Room, (1 isolation)	D	1	117-23
102-04	P02	Peds Room, (1 isolation)	D		117-23
102-06	P01	Trauma/ER	W	1	117-23
102-06	P02	Trauma/ER	W	1	117-23
102-06	P03	Trauma/ER	D		117-23
102-08	P01	Multi-purpose Cubicles	W	1	117-23
102-09	P01	Multi-purpose Cubicles	W	1	117-23
102-10	P01	Nurse station	MK	1	117-23
102-10	P02	Nurse station	D	1	117-23
102-10	P03	Nurse station	D	1	117-23
102-11	P01	OB/GYN Room	D	1	117-23
102-11	P02	OB/GYN Room	D		117-23
102-13	P01	Exam, Ortho	D	1	117-23
102-14	P01	Screening	D	1	117-23
102-14	P02	Screening	D		117-23
102-15	P02	Communications	DP		117-23
102-15	P03	Communications	MK	1	117-23
102-15	P04	Communications	MK	1	117-23
102-15	P01	Communications	D	1	117-23
102-15	P05	Communications	RO		117-23
102-16	P01	Nourishment	C	1	117-23
102-16	P02	Nourishment	C	1	117-23
102-16	P03	Nourishment	C	1	117-23
102-16	P04	Nourishment	D	1	117-23
102-16	P05	Nourishment	MK	1	117-23

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
103-02	P01	Waiting	PH	1	117-23
103-03	P03	Reception Desk	MK	1	117-23
103-03	P02	Reception Desk	MK	1	117-23
103-03	P01	Reception Desk	D	1	117-23
107-02	P01	Lockers (25)	W	1	117-23
108-02	P01	Consult/Fam wait	D	1	117-23
108-02	P02	Consult/Fam wait	D		117-23
108-04	P01	Clean Supply	W	1	117-23
108-05	P01	Soiled Utility	W	1	117-23
108-06	P01	Corridor	W	1	117-23
108-07	P01	On-Call	D	1	117-23
108-09	P01	Offices:Private	D		117-23
108-09	P02	Offices:Private	D	1	117-23
108-10	P01	Offices:Private	D		117-23
108-10	P02	Offices:Private	D	1	117-23
108-11	P01	Offices:Private	D		117-23
108-11	P02	Offices:Private	D	1	117-23
		Engineering (part of Logistics)			
131-17	P01	Plan Storage Room	W	1	129-05
131-17	P02	Plan Storage Room	D		129-05
131-18	P01	O&M Manuals	W	1	129-05
131-18	P02	O&M Manuals	D		129-05
131-18	P03	O&M Manuals	D		129-05
135-02	P01	Electrical Shop	W	1	134-02
135-03	P01	Mechanical Shop	W	1	134-02
135-05	P01	Lounge/Lockers	W	1	134-02
135-05	P02	Lounge/Lockers	D		134-02
135M-	P01	Blueprint Files	W	1	134-02
135M-	P01	UCS	D		134-02
135M-	P02	UCS	D	1	134-02
135M-	P01	CEP Maintenance Area	W	1	134-02
135M-	P02	CEP Maintenance Area	D		134-02
135M-	P01	Corridor	W	1	134-02
135M-	P01	HVAC	W	1	134-02
140-09	P01	Computer room/diagnostic	D	1	129-05
140-09	P02	Computer room/diagnostic	D	1	129-05
140-09	P03	Computer room/diagnostic	D	1	129-05
140-11	P01	Storage	W	1	129-05
140-12	P01	Biomed Maint NCOIC	D	1	129-05
140-12	P02	Biomed Maint NCOIC	D		129-05
140-13	P01	Equipment Receiving	C	1	129-05
140-13	P02	Equipment Receiving	W	1	129-05
140-14	P01	Chief, Biomedical Mnt	D		129-05
140-14	P02	Chief, Biomedical Mnt	D	1	129-05
140-15	P01	Work Station	D	1	129-05
140-15	P02	Work Station	D	1	129-05
140-15	P03	Work Station	D	1	129-05
140-15	P05	Work Station	D	1	129-05
141-02	P01	Office, shared	D	1	129-05

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
141-02	P02	Office, shared	D	1	129-05
141-02	P03	Office, shared	D	1	129-05
141-02	P04	Office, shared	D	1	129-05
141-03	P06	Equip Holding	W	1	129-05
141-03	P07	Equip Holding	W	1	129-05
141-04	P01	Cont. Off.	D	1	129-05
141-05	P01	Ch, Facility Mgmt	D	1	129-05
141-05	P02	Ch, Facility Mgmt	D		129-05
141-06	P01	Electrical Shop	D		129-05
141-06	P02	Electrical Shop	W	1	129-05
141-07	P04	Biomed Reference Lib	D	1	129-05
141-08	P01	Open Shops	D	1	129-05
141-08	P02	Open Shops	D	1	129-05
141-09	P01	Shop	W	1	129-05
141-10	P01	Alarm Monitor Room	C	1	129-05
141-10	P02	Alarm Monitor Room	D	1	129-05
141-10	P03	Alarm Monitor Room	D	1	129-05
141-11	P01	Flam. Storage	W		129-05
		Food Service			
127-01	P01	Clinical Dietet. Br, Ch. OFC	D		129-05
127-01	P02	Clinical Dietet. Br, Ch. OFC	D	1	129-05
127-02	P01	Cost accountant	D	1	129-05
127-02	P02	Cost accountant	D		129-05
127-03	P01	Admin Br. Chief, OFC	D		129-05
127-03	P02	Admin Br. Chief, OFC	D	1	129-05
127-04	P01	Office, Shared	D	1	129-05
127-04	P02	Office, Shared	D	1	129-05
127-04	P03	Office, Shared	D		129-05
127-05	P01	NCOIC	D		129-05
127-05	P02	NCOIC	D	1	129-05
128-01	P01	Scramble Area	D	1	129-05
128-01	P02	Scramble Area	W	1	129-05
128-01	P03	Scramble Area	W	1	129-05
128-01	P04	Scramble Area	W	1	129-05
128-05	P01	Lounge	W	1	129-05
128-07	P01	Prod& SVC Br. Ch, OFC	D	1	129-05
128-07	P02	Prod& SVC Br. Ch, OFC	D		129-05
128-08	P01	Salad Assem.	W	1	
128-09	P01	Therap Diet Prep	W	1	129-05
128-09	P02	Therap Diet Prep	W	1	129-05
128-12	P01	Copy/Supplies	D	1	129-05
128-12	P02	Copy/Supplies	D	1	129-05
129-01	P01	Tray Cart St	W	1	129-05
129-04	P01	Supply	W	1	129-05
129-07	P01	Trash Holding	W	1	129-05
129-11	P01	Receiving (Dirty dishes)	W	1	129-05
138-01	P01	Dry Storage	W	1	129-05
138-02	P01	Ingredients	W	1	129-05
139-03	P01	Loading dock	W		129-05

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
139-04	P01	Loading dock	WP	1	129-05
139-05	P01	Receiving/Processing	W	1	129-05
224-01	P01	CAFÉ	W	1	217-29
224-01	P02	CAFÉ	W	1	217-29
		Housekeeping			
129-02	P01	Cart Storage	W	1	129-05
139-07	P01	Mop Laundry	W	1	129-05
228-11	P01	Cart Storage	W	1	229-07
228-11	P02	Cart Storage	D		229-07
228-12	P01	Supplies	W	1	229-07
228-12	P02	Supplies	D		229-07
228-10	P03	Equip charging	W	1	229-07
228-10	P02	Equip charging	D		229-07
228-10	P01	Equip charging	D		229-07
228-13	P01	Lockers (20)	W	1	229-07
238-06	P01	Office	D		229-07
238-06	P02	Office	D	1	229-07
		Information Management			
228-01	P01	Hospital Distribution	D	1	229-07
228-01	P02	Hospital Distribution	D	1	229-07
228-01	P03	Hospital Distribution	D	1	229-07
228-01	P04	Hospital Distribution	W	1	229-07
228-	P01	Mail Room	W	1	229-07
228-	P02	Mail Room	D	1	229-07
229-01	P01	Computer Training	D		229-07
229-01	P02	Computer Training	JB1		229-07
229-01	P03	Computer Training	JB1		229-07
229-01	P04	Computer Training	JB1		229-07
229-01	P05	Computer Training	DPF		229-07
229-01	P06	Computer Training	D		229-07
229-01	P07	Computer Training	W	1	229-07
315-01	P01	Office,Head Info Mgmt	D	1	317-04
315-01	P02	Office,Head Info Mgmt	D		317-04
315-02	P01	CHCS Admin Office	D		317-04
315-02	P02	CHCS Admin Office	D	1	317-04
315-09	P01	Office, ISSO	D		317-04
315-09	P02	Office, ISSO	D	1	317-04
315-09	P03	Office, ISSO	D		317-04
315-10	P01	Forms and Publications	D	1	317-04
315-10	P02	Forms and Publications	D		317-04
315-12	P01	Computer Configuration	D	1	317-04
315-12	P02	Computer Configuration	D	1	317-04
315-12	P03	Computer Configuration	D	1	317-04
315-12	P04	Computer Configuration	D		317-04
315-13	P01	Computer Storage	W		317-04
315-13	P02	Computer Storage	D		317-04
315-13	P03	Computer Storage	D	1	317-04
316-01	P01	Staff lounge	W	1	317-04

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
316-01	P02	Staff lounge	D		317-04
316-02	P01	Office, Shared	D	1	317-04
316-02	P02	Office, Shared	D		317-04
316-02	P03	Office, Shared	D		316-03
316-02	P04	Office, Shared	D	1	317-04
316-02	P05	Office, Shared	D	1	316-03
316-02	P06	Office, Shared	D		317-04
316-02	P07	Office, Shared	D		316-03
316-	P01	Office, Shared	DS	1	316-03
316-	P02	Office, Shared	D		317-04
316-	P03	Office, Shared	D		316-03
316-	P04	Office, Shared	DS		317-04
316-	P05	Office, Shared	D	1	316-03
316-	P06	Office, Shared	DS		317-04
316-	P07	Office, Shared	D	1	316-03
316-03	P01	Computer Room	D	1	317-04
316-03	P02	Computer Room	D	1	317-04
316-03	P03	Computer Room	D	1	317-04
		Inpatient Services			
208-01	P01	Med/Surg	BL	1	217-29
208-01	P02	Med/Surg	H		217-29
208-05	P01	Med/Surg	BL	1	217-29
208-05	P02	Med/Surg	H		217-29
208-07	P01	Med/Surg	BL	1	217-29
208-07	P02	Med/Surg	H		217-29
208-08	P01	Med/Surg	BL	1	217-29
208-08	P02	Med/Surg	H		217-29
208-10	P01	Med/Surg	BL	1	217-29
208-10	P02	Med/Surg	H		217-29
208-11	P01	Med/Surg	BL	1	217-29
208-11	P02	Med/Surg	H		217-29
215-01	P01	Med/Surg	BL	1	217-29
215-01	P02	Med/Surg	H		217-29
215-04	P01	Med/Surg	BL	1	217-29
215-04	P02	Med/Surg	H		217-29
215-05	P01	Med/Surg	BL	1	217-29
215-05	P02	Med/Surg	H		217-29
215-08	P01	Med/Surg	BL	1	217-29
215-08	P02	Med/Surg	H		217-29
215-09	P01	Equipment Stor/Clean	W	1	217-29
215-19	P01	Equipment Storage	W	1	217-29
215-19	P02	Equipment Storage	D		217-29
215-11	P02	Exam/Treatment	W	1	217-29
215-11	P01	Exam/Treatment	D		217-29
215-14	P01	Soiled Utility	W	1	217-29
215-15	P01	Tub room	W	1	217-29
215-16	P01	Dayroom Pantry	W	1	217-29
215-16	P02	Dayroom Pantry	D		217-29
216-01	P01	Nurse Station	M	1	217-29

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
216-01	P02	Nurse Station	M	1	217-29
216-01	P03	Nurse Station	M	1	217-29
216-01	P04	Nurse Station	M	1	217-29
216-03	P01	Office	D	1	217-29
216-03	P02	Office	D		217-29
216-04	P01	Office	D	1	217-29
216-04	P02	Office	D		217-29
216-07	P01	Peds Play area	W	1	217-29
216-08	P01	Corridor	D	1	217-29
216-09	P01	Nourishment	W	1	217-29
216-10	P01	Charting	D	1	217-29
216-12	P01	Staff Lockers (20)	W	1	217-29
216-13	P01	Report/Staff Lounge	D		217-29
216-13	P02	Report/Staff Lounge	D	1	217-29
216-13	P03	Report/Staff Lounge	W	1	217-29
216-14	P01	Medication	W	1	217-29
216-14	P02	Medication	D		217-29
216-14	P03	Medication	D		217-29
216-15	P01	Charting	D	1	217-29
216-16	P01	Nurse Station	M	1	217-29
216-16	P02	Nurse Station	M	1	217-29
216-16	P03	Nurse Station	M	1	217-29
216-16	P04	Nurse Station	M	1	217-29
216-16	P05	Nurse Station	M	1	217-29
216-19	P01	Linen	W	1	217-29
216-20	P01	Med/Surg	BL	1	217-29
216-20	P02	Med/Surg	H		217-29
216-30	P01	Nourishment	W	1	217-29
217-32	P01	Dayroom	W		217-29
221-03	P01	Med/Surg	BL	1	217-29
221-03	P02	Med/Surg	H		217-29
221-04	P01	Med/Surg	BL	1	217-29
221-04	P02	Med/Surg	H		217-29
221-07	P01	Med/Surg	BL	1	217-29
221-07	P02	Med/Surg	H		217-29
221-08	P01	Med/Surg	BL	1	217-29
221-08	P02	Med/Surg	H		217-29
222-03	P01	Med/Surg	BL	1	217-29
222-03	P02	Med/Surg	H		217-29
222-05	P01	Med/Surg Iso	BL	1	217-29
222-05	P02	Med/Surg Iso	H		217-29
222-08	P01	Med/Surg Iso	BL	1	217-29
222-08	P02	Med/Surg Iso	H		217-29
222-10	P01	Med/Surg	BL	1	217-29
222-10	P02	Med/Surg	H		217-29
223-02	P01	Med/Surg	BL	1	217-29
223-02	P02	Med/Surg	H		217-29
223-03	P01	Med/Surg	BL	1	217-29
223-03	P02	Med/Surg	H		217-29
223-06	P01	Med/Surg	BL	1	217-29

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
223-06	P02	Med/Surg	H		217-29
		Labor and Delivery			
212-02	P01	Clean Utility	W	1	219-04
212-03	P01	Soiled Utility	W	1	219-04
212-04	P01	Office	D		219-04
212-04	P02	Office	D	1	219-04
212-05	P01	Office	D	1	219-04
212-05	P02	Office	D		219-04
212-07	P02	LDRP/bassinet monitor	BL	1	219-04
212-07	P03	LDRP/bassinet monitor	H		219-04
212-07	P01	LDRP/bassinet monitor	D		219-04
212-10	P01	Equipment Storage	W	1	219-04
212-11	P01	On-Call Room	D	1	219-04
212-13	P01	Bassinets	W	1	219-04
212-13	P02	Bassinets	H		219-04
212-13	P03	Bassinets	H		219-04
212-13	P04	Bassinets	H		219-04
212-13	P05	Bassinets	H		219-04
212-13	P06	Bassinets	H		219-04
212-13	P07	Bassinets	H		219-04
212-13	P08	Bassinets	H		219-04
212-13	P09	Bassinets	H		219-04
212-13	P10	Bassinets	H		219-04
212-13	P11	Bassinets	H		219-04
212-13	P12	Bassinets	H		219-04
212-13	P13	Bassinets	H		219-04
212-	P01	Storage	W	1	219-04
212-14	P01	Report	D	1	219-04
212-14	P02	Report	D	1	219-04
212-14	P03	Report	D	1	219-04
212-15	P02	Treatment/Audio/Circ	W	1	219-04
212-15	P01	Treatment/Audio/Circ	C		219-04
212-16	P01	Tub Room	W	1	219-04
212-17	P01	Nurse Sub Station	M	1	219-04
212-17	P02	Nurse Sub Station	M	1	219-04
212-17	P03	Nurse Sub Station	JB2		219-04
212-17	P04	Nurse Sub Station	JB1		219-04
212-19	P01	Pharmacy/ Medication	D		219-04
212-19	P02	Pharmacy/ Medication	C	1	219-04
212-20	P01	Nurse Station	M	1	219-04
212-20	P02	Nurse Station	M	1	219-04
212-20	P03	Nurse Station	M	1	219-04
212-20	P04	Nurse Station	M	1	219-04
212-20	P05	Nurse Station	M	1	219-04
212-25	P02	LDRP/bassinet monitor	BL	1	219-04
212-25	P03	LDRP/bassinet monitor	H		219-04
212-25	P01	LDRP/bassinet monitor	D		219-04
213-02	P02	LDRP ISO	BL	1	219-04
213-02	P03	LDRP ISO	H		219-04

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
213-02	P01	LDRP ISO	D		219-04
213-05	P02	LDRP/bassinet monitor	BL	1	219-04
213-05	P03	LDRP/bassinet monitor	H		219-04
213-05	P01	LDRP/bassinet monitor	D		219-04
213-08	P02	LDRP/bassinet monitor	BL	1	219-04
213-08	P03	LDRP/bassinet monitor	H		219-04
213-08	P01	LDRP/bassinet monitor	D		219-04
213-09	P02	LDRP/bassinet monitor	BL	1	219-04
213-09	P03	LDRP/bassinet monitor	H		219-04
213-09	P01	LDRP/bassinet monitor	D		219-04
219-01	P01	Staff Lounge (33 people)	W	1	219-04
219-01	P02	Staff Lounge (33 people)	D		219-04
219-06	P02	Patient Dayroom	W	1	219-04
219-06	P01	Patient Dayroom	D		219-04
219-09	P01	NST Testing	W	1	219-04
219-09	P02	NST Testing	W	1	219-04
219-09	P03	NST Testing	W	1	219-04
219-09	P04	NST Testing	D	1	219-04
219-09	P05	NST Testing	W	1	219-04
219-12	P01	Exam/Treatment	D		219-04
219-12	P02	Exam/Treatment	D	1	219-04
219-13	P01	Lounge/Staff Education	D		219-04
219-13	P02	Lounge/Staff Education	D		219-04
219-13	P03	Lounge/Staff Education	W	1	219-04
219-15	P01	Transitional Holding	D	1	219-04
219-17	P01	Transitional Holding	D	1	219-04
220-01	P02	LDRP/bassinet monitor	BL	1	219-04
220-01	P03	LDRP/bassinet monitor	H		219-04
220-01	P01	LDRP/bassinet monitor	D		219-04
220-04	P02	LDRP/bassinet monitor	BL	1	219-04
220-04	P03	LDRP/bassinet monitor	H		219-04
220-04	P01	LDRP/bassinet monitor	D		219-04
220-07	P02	LDRP/bassinet monitor	BL	1	219-04
220-07	P03	LDRP/bassinet monitor	H		219-04
220-07	P01	LDRP/bassinet monitor	D		219-04
220-09	P02	LDRP/bassinet monitor	BL	1	219-04
220-09	P03	LDRP/bassinet monitor	H		219-04
220-09	P01	LDRP/bassinet monitor	D		219-04
		Laundry (part of Logistics)			
130-07	P01	Supply	W	1	129-05
130-08	P01	Clean/Issue	W	1	129-05
130-08	P02	Clean/Issue	W	1	129-05
130-11	P01	Processing	D	1	129-05
130-11	P02	Processing	W	1	129-05
130-	P01	Processing	W	1	129-05
130-12	P01	Soiled Receiving/Holding	W	1	129-05
130-13	P01	Offices:Private	D		129-05
130-13	P02	Offices:Private	D	1	129-05
130-14	P01	Locker	W	1	129-05

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
		Logistics			
130-09	P01	Locker	W	1	129-05
130-10	P01	Lounge	W	1	129-05
130-10	P02	Lounge	D		129-05
139-02	P01	Waste Treatment Room	D	1	129-05
139-10	P01	Office	D		129-05
139-10	P02	Office	D		129-05
139-11	P01	Office	D	1	129-05
139-11	P02	Office	D	1	129-05
140-02	P01	Office Shared	C		129-05
140-02	P02	Office Shared	D	1	129-05
140-02	P03	Office Shared	D	1	129-05
140-02	P04	Office Shared	D	1	129-05
140-04	P01	Issue/Turn In	W	1	129-05
140-04	P02	Issue/Turn In	W	1	129-05
140-04	P03	Issue/Turn In	W	1	129-05
140-04	P04	Issue/Turn In	D	1	129-05
140-04	P05	Issue/Turn In	D	1	129-05
140-04	P06	Issue/Turn In	D	1	129-05
140-04	P07	Issue/Turn In	D	1	129-05
141-14	P01	Corridor	W	1	129-05
238-05	P01	Office, NCOIC	D	1	229-07
238-05	P02	Office, NCOIC	D		229-07
238-07	P01	File	W	1	229-07
238-10	P01	Conference/bid room	W	1	229-07
238-10	P02	Conference/bid room	D	1	229-07
238-11	P01	Reception	D	1	229-07
238-11	P02	Reception	D	1	229-07
238-12	P01	Office,Ch, Log	D	1	229-07
238-12	P02	Office,Ch, Log	D		229-07
		Ortho/Surg Clinic			
132-08	P01	Ortho Exam	D		134-02
132-08	P02	Ortho Exam	D	1	134-02
132-12	P01	Exam	D		134-02
132-12	P02	Exam	D	1	134-02
132-13	P01	Doctor	D		134-02
132-13	P02	Doctor	D	1	134-02
132-14	P01	Exam	D	1	134-02
132-14	P02	Exam	D		134-02
132-15	P01	Screening	D	1	134-02
132-15	P02	Screening	D		134-02
132-19	P01	Reception/Records	D	1	134-02
132-19	P02	Reception/Records	MK	1	134-02
132-19	P03	Reception/Records	MK	1	134-02
132-19	P04	Reception/Records	MK	1	134-02
132-20	P01	Exam	D		134-02
132-20	P02	Exam	D	1	134-02
132-21	P01	Doctor	D	1	134-02

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
132-21	P02	Doctor	D		134-02
132-22	P01	Exam	D		134-02
132-22	P02	Exam	D	1	134-02
141-12	P01	Clin. Inst/Storage	W	1	134-02
142-06	P01	Ortho Stor	W	1	134-02
142-08	P01	Lockers	W	1	134-02
142-10	P01	Proctoscopy	W	1	134-02
142-10	P02	Proctoscopy	D		134-02
142-11	P01	Cast	D		134-02
142-11	P02	Cast	D		134-02
142-11	P03	Cast	D		134-02
142-11	P04	Cast	W	1	134-02
142-13	P01	Doctor	D	1	134-02
142-13	P02	Doctor	D		134-02
142-14	P01	Exam	D		134-02
142-14	P02	Exam	D	1	134-02
142-15	P01	Doctor	D	1	134-02
142-15	P02	Doctor	D		134-02
142-16	P01	QA Tech Reading	D	1	134-02
142-16	P02	QA Tech Reading	D		134-02
142-17	P01	Treatment	W	1	134-02
142-17	P02	Treatment	D		134-02
143-05	P01	Staff Lounge/conference	W	1	134-02
143-05	P02	Staff Lounge/conference	W	1	134-02
143-05	P03	Staff Lounge/conference	D		134-02
143-13	P01	HD Nurse	D	1	134-02
143-13	P02	HD Nurse	D		134-02
		Pathology			
106-03	P01	Record Storage	W	1	118-16
106-04	P01	Slide Storage	W	1	118-16
111-11	P01	Offices:Private	D	1	118-16
111-11	P02	Offices:Private	D		118-16
111-12	P01	Lounge	W	1	118-16
111-12	P02	Lounge	D		118-16
111-13	P01	Admin Work	D	1	118-16
111-13	P02	Admin Work	D	1	118-16
111-13	P03	Admin Work	D	1	118-16
111-13	P04	Admin Work	D	1	118-16
111-14	P01	Autopsy rm	W	1	118-16
111-14	P02	Autopsy rm	W	1	118-16
111-17	P01	Autopsy change, M	W	1	118-16
111-18	P01	Autopsy change, F	W	1	118-16
111-19	P01	Viewing	D	1	118-16
111-21	P01	Hematology	D	1	118-16
111-21	P02	Hematology	D		118-16
111-21	P03	Hematology	CJ	1	118-16
111-21	P04	Hematology	LF	1	118-16
111-21	P05	Hematology	LF		118-16
111-21	P06	Hematology	LF		118-16

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
111-21	P07	Hematology	LF		118-16
111-21	P08	Hematology	D		118-16
111-21	P09	Hematology	D		118-16
111-21	P10	Hematology	D	1	118-16
111-21	P11	Hematology	D	1	118-16
111-21	P12	Hematology	AL		118-16
111-21	P13	Hematology	AL		118-16
112-02	P01	Locker (27 @ 5sqft)	W	1	118-16
112-07	P01	Office, Supervisor	D	1	118-16
112-08	P01	Histopathology	D	1	118-16
112-08	P02	Histopathology	D	1	118-16
112-08	P03	Histopathology	D	1	118-16
112-09	P01	Microbiology	D	1	118-16
112-09	P02	Microbiology	D	1	118-16
112-09	P03	Microbiology	D	1	118-16
112-09	P04	Microbiology	D	1	118-16
112-10	P01	Office, Supervisor	D	1	118-16
112-11	P01	Office, Supervisor	D	1	118-16
112-12	P01	Office, Supervisor	D	1	118-16
112-13	P01	Office, Supervisor	D	1	118-16
112-14	P01	Office, Supervisor	D	1	118-16
119-02	P01	Offices:Private	W	1	118-16
119-02	P02	Offices:Private	D		118-16
119-	P01	Transcription	D	1	118-16
119-09	P01	ADP/Accessioning	W	1	118-16
119-09	P02	ADP/Accessioning	D	1	118-16
119-09	P03	ADP/Accessioning	D	1	118-16
119-09	P04	ADP/Accessioning	D	1	118-16
119-09	P05	ADP/Accessioning	D	1	118-16
119-09	P06	ADP/Accessioning	D	1	118-16
119-10	P01	Phlebotomy	W	1	118-16
119-10	P02	Phlebotomy	D	1	118-16
119-10	P03	Phlebotomy	W	1	118-16
120-01	P01	Office, Supervisor	D	1	118-16
		PAD			
112-03	P01	Staff Lounge	W	1	118-16
112-05	P01	Locker	W	1	118-16
112-06	P01	Locker	W	1	118-16
112-15	P01	Inpatient Records	D	1	118-16
112-15	P02	Inpatient Records	D	1	118-16
112-15	P03	Inpatient Records	D	1	118-16
112-15	P04	Inpatient Records	D	1	118-16
112-15	P05	Inpatient Records	D	1	118-16
112-16	P01	Doctors Work Room	D	1	118-16
112-16	P02	Doctors Work Room	D	1	118-16
112-16	P03	Doctors Work Room	D	1	118-16
112-16	P04	Doctors Work Room	D	1	118-16
113-03	P01	Store	W	1	118-16
113-04	P01	Office, Shared	D	1	118-16

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
113-04	P02	Office, Shared	D		118-16
113-04	P03	Office, Shared	D	1	118-16
113-04	P04	Office, Shared	D	1	118-16
113-05	P01	C,Pat. Admin	D		118-16
113-05	P02	C,Pat. Admin	D	1	118-16
113-06	P01	Transcription	D	1	118-16
113-06	P02	Transcription	D	1	118-16
113-06	P03	Transcription	D		118-16
113-06	P04	Transcription	DP		118-16
113-07	P01	Pat Admin NCO	D	1	118-16
113-07	P02	Pat Admin NCO	D		118-16
113-08	P01	Deputy, PAD	D	1	118-16
113-08	P02	Deputy, PAD	D		118-16
113-09	P01	Physical Evaluation Board PEBLO	D	1	118-16
113-09	P02	Physical Evaluation Board PEBLO	D		118-16
113-10	P01	Inpatient Record Administrator	D	1	118-16
113-10	P02	Inpatient Record Administrator	D		118-16
118-09	P01	Central Appointments	D	1	118-16
118-09	P02	Central Appointments	D	1	118-16
118-09	P03	Central Appointments	D	1	118-16
119-11	P01	OP Records Counter	MK	1	118-16
120-02	P01	Outpatient Records	W	1	118-16
120-02	P02	Outpatient Records	D	1	118-16
120-02	P03	Outpatient Records	D	1	118-16
120-02	P04	Outpatient Records	D	1	118-16
120-02	P05	Outpatient Records	FB	1	118-16
120-02	P06	Outpatient Records	FB	1	118-16
120-02	P07	Outpatient Records	FB	1	118-16
120-02	P08	Outpatient Records	D	1	118-16
120-02	P09	Outpatient Records	W	1	118-16
120-03	P01	Air EVAC/Correspondence	D	1	118-16
120-03	P02	Air EVAC/Correspondence	D	1	118-16
120-04	P01	CHCS Registration	D	1	118-16
120-04	P02	CHCS Registration	D	1	118-16
120-05	P01	Office	D	1	118-16
120-05	P02	Office	D		118-16
120-06	P01	Birth & Death Registration	D	1	118-16
120-06	P02	Birth & Death Registration	D		118-16
120-07	P01	Admissions Work	MK	1	118-16
120-07	P02	Admissions Work	MK	1	118-16
120-10	P01	Cashier	W	1	118-16
120-10	P02	Cashier	D	1	118-16
120-11	P01	Third Party Collections	D	1	118-16
120-11	P02	Third Party Collections	D	1	118-16
120-11	P03	Third Party Collections	FB	1	118-16
120-11	P04	Third Party Collections	FB	1	118-16
		Patient Services (Includes Lobby)			
118-20	P01	The Green	W	1	118-16
118-20	P02	The Green	DT		118-16

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
118-20	P03	The Green	DT		118-16
118-20	P04	The Green	DT		118-16
118-20	P05	The Green	DT		118-16
118-20	P06	The Green	DT		118-16
118-20	P07	The Green	DT		118-16
118-20	P08	The Green	DT		118-16
118-20	P09	The Green	DT		118-16
118-20	P10	The Green	W	1	118-16
118-22	P01	Phones	PH	1	
118-22	P02	Phones	PH	1	
118-22	P03	Phones	PH	1	
123-09	P01	General Seating	W	1	129-05
123-09	P02	General Seating	W	1	129-05
123-09	P03	General Seating	W	1	129-05
124-02	P01	Elevated Seating	W	1	129-05
124-03	P01	Chief, CSD	D		129-05
124-02	P01	Elevated Seating	W	1	129-05
124-03	P02	Chief, CSD	D	1	129-05
124-04	P01	Admin/Copy	W	1	129-05
124-05	P01	Patient Rep/CSD Waiting	D		129-05
124-11	P01	Gift Shop Storage	W	1	129-05
125-01	P01	ATM	D	1	129-05
125-03	P01	Barber Shop	D		129-05
125-03	P02	Barber Shop	D		129-05
125-05	P01	Reception/ Information	MK		129-05
125-05	P02	Reception/ Information	MK		129-05
125-07	P01	Gift shop/Shopette/books	W	1	129-05
125-07	P02	Gift shop/Shopette/books	FB	1	129-05
125-09	P01	Patient Rep	D		129-05
125-09	P02	Patient Rep	D	1	129-05
130-01	P01	Pay Phones	P	1	129-05
130-01	P02	Pay Phones	PH	1	129-05
220-10	P01	Chapel	D		229-07
		Personnel			
227-01	P01	Admin, Office	D	1	229-07
227-01	P02	Admin, Office	D		229-07
227-02	P01	Admin, Office	D		229-07
227-02	P02	Admin, Office	D	1	229-07
227-03	P01	Liasion, Office	D		229-07
227-03	P02	Liasion, Office	D	1	229-07
227-04	P01	C, Personnel	D		229-07
227-04	P02	C, Personnel	D	1	229-07
228-09	P01	Files	W	1	229-07
238-02	P01	Unit Clerks	D	1	229-07
238-02	P02	Unit Clerks	D	1	229-07
238-02	P03	Unit Clerks	D	1	229-07
238-02	P04	Unit Clerks	D	1	229-07
238-02	P05	Unit Clerks	D	1	229-07
238-02	P06	Unit Clerks	D	1	229-07

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
238-02	P07	Unit Clerks	D	1	229-07
238-02	P08	Unit Clerks	D	1	229-07
238-02	P09	Unit Clerks	D	1	229-07
238-02	P10	Unit Clerks	D	1	229-07
238-02	P11	Unit Clerks	D	1	229-07
238-02	P12	Unit Clerks	D	1	229-07
238-03	P01	Reception/ Waiting	D	1	229-07
238-09	P01	Copy / Fax	D	1	229-07
238-09	P02	Copy / Fax	D	1	229-07
		Pharmacy			
130-20	P01	Outpat Mfg & Pre Pack	D	1	129-05
130-20	P02	Outpat Mfg & Pre Pack	D	1	129-05
130-21	P01	Shipping/Receiving	MK	1	129-05
130-21	P02	Shipping/Receiving	D	1	129-05
130-22	P01	Bulk Storage	AL		129-05
130-22	P02	Bulk Storage	W	1	129-05
131-01	P01	Consult	D	1	129-05
131-02	P01	Main Dispensing	JB1		129-05
131-02	P02	Main Dispensing	W	1	129-05
131-02	P03	Main Dispensing	MK		129-05
131-02	P04	Main Dispensing	W	1	129-05
131-02	P05	Main Dispensing	MK		129-05
131-02	P06	Main Dispensing	MK		129-05
131-02	P07	Main Dispensing	W	1	129-05
131-02	P08	Main Dispensing	IP2		129-05
131-02	P09	Main Dispensing	D	1	129-05
131-02	P10	Main Dispensing	W	1	129-05
131-03	P01	Vault	W	1	129-05
131-03	P02	Vault	AL		129-05
131-04	P01	Unit Dose	D	1	129-05
131-04	P02	Unit Dose	D	1	129-05
131-04	P03	Unit Dose	D	1	129-05
131-05	P01	Lockers (15)	W	1	129-05
131-06	P01	IV Addmixture	D	1	129-05
131-08	P01	Lounge	W	1	129-05
131-12	P01	Consult	D	1	129-05
131-13	P01	Secretary/files	D	1	129-05
131-13	P02	Secretary/files	D	1	129-05
131-14	P01	Office, NCOIC	D	1	129-05
131-14	P02	Office, NCOIC	D		129-05
131-15	P01	Office, Pharmacist	D	1	129-05
131-15	P02	Office, Pharmacist	D		129-05
131-16	P01	Office, Chief	D	1	129-05
131-16	P02	Office, Chief	D		129-05
		Physical Therapy			
131-21	P01	Exam	D		134-02
131-21	P02	Exam	D	1	134-02
131-22	P01	Reception/Waiting	MK	1	134-02

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
131-22	P02	Reception/Waiting	MK	1	134-02
131-25	P01	Office	D	1	134-02
131-25	P02	Office	D		134-02
132-01	P01	Exercise Room	W	1	134-02
132-01	P02	Exercise Room	W	1	134-02
132-01	P03	Exercise Room	W	1	134-02
132-01	P04	Exercise Room	D	1	134-02
132-01	P05	Exercise Room	W	1	134-02
132-01	P06	Exercise Room	W	1	134-02
132-03	P01	Corridor	W	1	134-02
132-06	P01	Whirlpool Treatment	W	1	134-02
132-07	P01	Exam	D		134-02
132-07	P02	Exam	D	1	134-02
142-03	P01	Storage Area	W	1	134-02
		Primary Care, Team A (PCCA)			
107-07	P01	Treatment	D		117-23
107-07	P02	Treatment	W	1	117-23
107-08	P02	Treatment	W	1	117-23
107-08	P01	Treatment	D		117-23
108-12	P01	Staff Lounge/Conference	W	1	117-23
108-12	P02	Staff Lounge/Conference	D		117-23
108-12	P03	Staff Lounge/Conference	D		117-23
108-13	P01	Staff Lockers,F	W	1	117-23
108-16	P01	Staff Lockers,M	W	1	117-23
108-17	P01	Clean Utillity	W	1	117-23
108-18	P01	Soiled Utility	W	1	117-23
108-22	P01	Exam, Family Practice	D		117-23
108-22	P02	Exam, Family Practice	D	1	117-23
108-23	P01	Office, Physician	D	1	117-23
108-23	P02	Office, Physician	D		117-23
108-24	P01	Nurse	D	1	117-23
108-24	P02	Nurse	D		117-23
108-27	P01	Exam, Family Practice	D		117-23
108-27	P02	Exam, Family Practice	D	1	117-23
108-28	P01	Exam, Family Practice	D		117-23
108-28	P02	Exam, Family Practice	D	1	117-23
108-29	P01	Office, Physician	D	1	117-23
108-29	P02	Office, Physician	D		117-23
108-30	P01	Exam, Family Practice	D		117-23
108-30	P02	Exam, Family Practice	D	1	117-23
108-32	P01	Office, Physician	D	1	117-23
108-32	P02	Office, Physician	D		117-23
108-34	P01	Exam, TMC	D		117-23
108-34	P02	Exam, TMC	D	1	117-23
108-35	P01	Exam, TMC	D		117-23
108-35	P02	Exam, TMC	D	1	117-23
108-36	P01	Office, Physician	D	1	117-23
108-36	P02	Office, Physician	D		117-23
109-07	P01	Office, Occupational Hlth Nurse	D	1	117-23

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
109-07	P02	Office, Occupational Hlth Nurse	D		117-23
109-08	P01	Exam, Family Practice	D		117-23
109-08	P02	Exam, Family Practice	D	1	117-23
109-09	P01	Office, Physician	D	1	117-23
109-09	P02	Office, Physician	D		117-23
109-10	P01	Exam, Family Practice	D		117-23
109-10	P02	Exam, Family Practice	D	1	117-23
109-11	P01	Exam, Family Practice	D		117-23
109-11	P02	Exam, Family Practice	D	1	117-23
109-13	P01	Exam, Family Practice	D		117-23
109-13	P02	Exam, Family Practice	D	1	117-23
109-14	P01	Office, Physician	D	1	117-23
109-14	P02	Office, Physician	D		117-23
109-15	P01	Exam, Family Practice	D		117-23
109-15	P02	Exam, Family Practice	D	1	117-23
109-17	P01	Offices- Preventive Med	D	1	117-23
109-17	P02	Offices- Preventive Med	D		117-23
109-18	P01	Exam, Peds	D		117-23
109-18	P02	Exam, Peds	D	1	117-23
109-19	P01	Exam, Family Practice	D		117-23
109-19	P02	Exam, Family Practice	D	1	117-23
109-20	P01	Office, Physician	D	1	117-23
109-20	P02	Office, Physician	D		117-23
109-21	P01	Exam, Family Practice	D		117-23
109-21	P02	Exam, Family Practice	D	1	117-23
109-22	P01	Exam, TMC	D		117-23
109-22	P02	Exam, TMC	D	1	117-23
109-23	P01	Exam, TMC	D		117-23
109-23	P02	Exam, TMC	D	1	117-23
109-24	P01	Office, Physician	D	1	117-23
109-24	P02	Office, Physician	D		117-23
109-25	P01	Exam, Peds	D		117-23
109-25	P02	Exam, Peds	D	1	117-23
110-03	P01	Exam Preventive Med	D		117-23
110-03	P02	Exam Preventive Med	D	1	117-23
110-04	P01	Community Hlth Nurse	D	1	117-23
110-04	P02	Community Hlth Nurse	D		117-23
110-05	P01	Offices- Preventive Med	D	1	117-23
110-05	P02	Offices- Preventive Med	D		117-23
110-06	P01	Offices- Preventive Med	D		117-23
110-06	P02	Offices- Preventive Med	D	1	117-23
110-07	P01	Exam, Peds	D		117-23
110-07	P02	Exam, Peds	D	1	117-23
110-08	P01	Office, Physician	D	1	117-23
110-08	P02	Office, Physician	D		117-23
110-09	P01	Office, Physician	D	1	117-23
110-09	P02	Office, Physician	D		117-23
110-10	P01	Exam, Peds	D	1	117-23
110-10	P02	Exam, Peds	D		117-23
115-11	P01	Office, Physician	D	1	117-23

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
115-11	P02	Office, Physician	D		117-23
115-12	P01	Office, Physician	D	1	117-23
115-12	P02	Office, Physician	D		117-23
115-13	P01	Spiro	W	1	117-23
115-13	P02	Spiro	D		117-23
117-01	P01	Office, NCOIC	D	1	117-23
117-01	P02	Office, NCOIC	D		117-23
117-04	P01	Exam, Isolation	D		117-23
117-04	P02	Exam, Isolation	D	1	117-23
117-05	P01	Immunization Holding	D		117-23
117-06	P01	Spec. Receive	W	1	117-23
117-08	P01	Screening	D		117-23
117-10	P01	Pharmacy Consult	D	1	117-23
117-10	P02	Pharmacy Consult	D		117-23
117-11	P01	PPIP	D	1	117-23
117-11	P02	PPIP	D		117-23
117-12	P01	Health Risk Assess	D	1	117-23
117-12	P02	Health Risk Assess	D		117-23
117-13	P01	Spec. Receive	C	1	117-23
117-15	P01	Well Baby Waiting	D		117-23
118-01	P01	Allergy Injection	W	1	117-23
118-01	P02	Allergy Injection	W		117-23
118-01	P03	Allergy Injection	AL		117-23
118-01	P04	Allergy Injection	D	1	117-23
118-03	P01	Screening	D		117-23
118-04	P02	Screening	D		117-23
118-07	P01	Office, HBA	D	1	118-16
118-07	P02	Office, HBA	D		118-16
118-08	P01	Reception	MK	1	118-16
118-08	P02	Reception	MK	1	118-16
118-08	P03	Reception	D		118-16
121-09	P01	Office, Chief Amb Nursing	D	1	117-23
121-09	P02	Office, Chief Amb Nursing	D		117-23
121-10	P01	Office, Amb N NCOIC	D	1	117-23
121-10	P02	Office, Amb N NCOIC	D		117-23
		Primary Care, Team B (PCCB)			
115-04	P01	OB treatment	W	1	117-23
115-07	P01	Treatment	W		117-23
115-09	P01	OB Treatment	W		117-23
115-14	P01	Treatment	W		117-23
115-16	P01	Soiled Utility	W		117-23
115-18	P01	Storage	W		117-23
115-18	P02	Storage	W		117-23
115-19	P01	Exam, Family Practice	D		117-23
115-19	P02	Exam, Family Practice	D		117-23
115-21	P01	Clean Utillity	W		117-23
115-24	P01	Staff Lockers,F	W		117-23
115-25	P01	Exam, Family Practice	D		117-23
115-25	P02	Exam, Family Practice	D		117-23

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
116-01	P01	Office, Physician	D	1	117-23
116-01	P02	Office, Physician	D		117-23
116-02	P01	Ultrasound	W		117-23
116-02	P02	Ultrasound	D	1	117-23
116-03	P01	Exam, OB/GYN	D		117-23
116-03	P02	Exam, OB/GYN	D	1	117-23
116-04	P01	Exam, OB/GYN	D		117-23
116-04	P02	Exam, OB/GYN	D	1	117-23
116-05	P01	Exam, OB/GYN	D		117-23
116-05	P02	Exam, OB/GYN	D	1	117-23
116-09	P01	Office, Physician	D	1	117-23
116-09	P02	Office, Physician	D		117-23
116-10	P01	Exam, OB/GYN	D		117-23
116-10	P02	Exam, OB/GYN	D	1	117-23
116-11	P01	Exam, OB/GYN	D		117-23
116-11	P02	Exam, OB/GYN	D	1	117-23
116-12	P01	Exam, OB/GYN	D		117-23
116-12	P02	Exam, OB/GYN	D	1	117-23
116-14	P01	Exam, OB/GYN	D		117-23
116-14	P02	Exam, OB/GYN	D	1	117-23
116-15	P01	Exam, OB/GYN	D		117-23
116-15	P02	Exam, OB/GYN	D	1	117-23
116-16	P01	Exam, OB/GYN	D		117-23
116-16	P02	Exam, OB/GYN	D	1	117-23
116-17	P01	Office, Physician	D	1	117-23
116-17	P02	Office, Physician	D		117-23
116-18	P01	Office, Physician	D	1	117-23
116-18	P02	Office, Physician	D		117-23
116-19	P01	Ultrasound	D		117-23
116-19	P02	Ultrasound	W	1	117-23
116-20	P01	Exam, OB/GYN	D		117-23
116-20	P02	Exam, OB/GYN	D	1	117-23
116-21	P01	Exam, OB/GYN	D		117-23
116-21	P02	Exam, OB/GYN	D	1	117-23
116-22	P01	Exam, OB/GYN	D		117-23
116-22	P02	Exam, OB/GYN	D	1	117-23
116-25	P01	Office, Physician	D	1	117-23
116-25	P02	Office, Physician	D		117-23
116-26	P01	Exam, Family Practice	D		117-23
116-26	P02	Exam, Family Practice	D	1	117-23
116-27	P01	Exam, Family Practice	D		117-23
116-27	P02	Exam, Family Practice	D	1	117-23
116-29	P01	Exam, Family Practice	D		117-23
116-29	P02	Exam, Family Practice	D	1	117-23
116-30	P01	Office, Physician	D	1	117-23
116-30	P02	Office, Physician	D		117-23
116-31	P01	Office, Physician	D	1	117-23
116-31	P02	Office, Physician	D		117-23
116-33	P01	Exam, Family Practice	D		117-23
116-33	P02	Exam, Family Practice	D	1	117-23

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
116-34	P01	Exam, Family Practice	D		117-23
116-34	P02	Exam, Family Practice	D	1	117-23
116-35	P01	Office, Physician	D	1	117-23
116-35	P02	Office, Physician	D		117-23
116-36	P01	Exam, Family Practice	D		117-23
116-36	P02	Exam, Family Practice	D	1	117-23
116-37	P01	Office, NCOIC	D	1	117-23
116-37	P02	Office, NCOIC	D		117-23
117-17	P01	Screening	D	1	117-23
117-19	P01	Health Risk Assess	D		117-23
117-19	P02	Health Risk Assess	D	1	117-23
117-20	P01	PPIP	D	1	117-23
117-20	P02	PPIP	D		117-23
117-21	P01	Storage	W	1	117-23
117-22	P01	Screening	D	1	117-23
117-24	P01	Pharmacy Consult	D		117-23
117-24	P02	Pharmacy Consult	D	1	117-23
117-25	P01	Screening	D	1	117-23
121-02	P01	Storage	W	1	117-23
121-03	P01	Staff Lockers,M	W	1	117-23
121-04	P01	Nurse	D	1	117-23
121-04	P02	Nurse	D		117-23
121-05	P01	Exam, Family Practice	D		117-23
121-05	P02	Exam, Family Practice	D	1	117-23
121-07	P01	Staff Lounge/Conference	W	1	117-23
121-07	P02	Staff Lounge/Conference	D		117-23
121-07	P03	Staff Lounge/Conference	D		117-23
121-11	P01	Exam, TMC	D		117-23
121-11	P02	Exam, TMC	D	1	117-23
122-01	P01	Office, Physician	D	1	117-23
122-01	P02	Office, Physician	D		117-23
122-02	P01	Exam, Family Practice	D		117-23
122-02	P02	Exam, Family Practice	D	1	117-23
122-03	P01	Exam, Family Practice	D		117-23
122-03	P02	Exam, Family Practice	D	1	117-23
122-04	P01	Office, Physician	D	1	117-23
122-04	P02	Office, Physician	D		117-23
122-07	P01	Exam - Isolation	D		117-23
122-07	P02	Exam - Isolation	D	1	117-23
122-08	P01	Office, Physician	D	1	117-23
122-08	P02	Office, Physician	D		117-23
122-10	P01	Exam, TMC	D		117-23
122-10	P02	Exam, TMC	D	1	117-23
122-11	P01	Exam, TMC	D		117-23
122-11	P02	Exam, TMC	D	1	117-23
122-12	P01	Office, Physician	D	1	117-23
122-12	P02	Office, Physician	D		117-23
122-13	P01	Exam, TMC	D		117-23
122-13	P02	Exam, TMC	D	1	117-23
122-14	P01	Office, Physician	D	1	117-23

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
122-14	P02	Office, Physician	D		117-23
123-02	P01	Exam, Peds	D		117-23
123-02	P02	Exam, Peds	D	1	117-23
123-03	P01	Office, HBA	D		117-23
123-03	P02	Office, HBA	D	1	117-23
123-04	P01	Reception	D	1	117-23
123-04	P02	Reception	MK	1	117-23
123-04	P03	Reception	MK	1	117-23
123-05	P01	Exam, Peds	D		117-23
123-05	P02	Exam, Peds	D	1	117-23
123-06	P01	Exam, Peds	D		117-23
123-06	P02	Exam, Peds	D	1	117-23
123-07	P01	Exam, Peds	D		117-23
123-07	P02	Exam, Peds	D	1	117-23
123-08	P01	Office, Physician	D	1	117-23
123-08	P02	Office, Physician	D		117-23
		Quality Assurance			
315-03	P01	Office, Chief	D	1	317-04
315-03	P02	Office, Chief	D	0	317-04
315-04	P01	Office,NCOIC	D	0	317-04
315-04	P02	Office,NCOIC	D	1	317-04
315-05	P01	Office, Credentials Coordinator	D	0	317-04
315-05	P02	Office, Credentials Coordinator	D	1	317-04
315-06	P01	Copy/Fax	D	1	317-04
315-06	P02	Copy/Fax	D	1	317-04
315-07	P01	Files	D	1	317-04
315-14	P01	Office, Shared	D	1	317-04
315-14	P02	Office, Shared	D	1	317-04
		Radiology			
104-05	P01	Office, Radiologist	D	1	118-16
104-05	P02	Office, Radiologist	D		118-16
104-06	P01	Office, Chief	D	1	118-16
104-06	P02	Office, Chief	D		118-16
104-07	P02	Lounge	W	1	118-16
104-07	P01	Lounge	D		118-16
105-03	P01	Equipment	W	1	118-16
105-06	P01	Staff Locker (10),F	W	1	118-16
105-08	P01	Staff Locker (10), M	W	1	118-16
110-15	P01	Reading	D	1	118-16
110-15	P02	Reading	D	1	118-16
110-15	P03	Reading	D	1	118-16
110-15	P04	Reading	D	1	118-16
110-17	P01	Fluoroscopic	W	1	118-16
110-18	P06	Film Processing	W	1	118-16
110-18	P05	Film Processing	D		118-16
110-18	P04	Film Processing	D		118-16
110-18	P03	Film Processing	D		118-16
110-18	P02	Film Processing	D		118-16

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
110-18	P01	Film Processing	D		118-16
110-19	P01	Routine	W	1	118-16
110-22	P01	Routine	W	1	118-16
110-25	P01	Fluoroscopic	W	1	118-16
110-29	P01	Soiled Utility	W	1	118-16
111-03	P01	CT Computer	D		118-16
111-04	P01	CT Control	D	1	118-16
111-05	P02	CT Scan	W	1	118-16
111-05	P01	CT Scan	D		118-16
111-06	P03	Mammo	W	1	118-16
111-06	P02	Mammo	D		118-16
111-06	P01	Mammo	D		118-16
111-08	P01	Mammo Wait	W	1	118-16
111-09	P01	Active Rec. LF	D	1	118-16
111-09	P02	Active Rec. LF	D	1	118-16
111-09	P03	Active Rec. LF	D	1	118-16
111-09	P04	Active Rec. LF	D	1	118-16
111-10	P01	Office, NCOIC	D	1	118-16
111-10	P02	Office, NCOIC	D		118-16
118-06	P01	Ultrasound	W	1	118-16
118-06	P02	Ultrasound	D		118-16
118-15	P02	Ultrasound	W	1	118-16
118-15	P01	Ultrasound	D		118-16
119-01	P01	Office, Administrator	D	1	118-16
119-01	P02	Office, Administrator	D		118-16
119-03	P01	Tumor Registry	D	1	118-16
119-03	P02	Tumor Registry	D	1	118-16
119-04	P01	Recep	MK	1	118-16
119-04	P02	Recep	MK	1	118-16
119-04	P03	Recep	D	1	118-16
		Resource/Conference Centers			
224-02	P01	Reception/Control	MK	1	217-29
224-02	P02	Reception/Control	MK	1	217-29
224-02	P03	Reception/Control	MK	1	217-29
224-02	P04	Reception/Control	C	1	217-29
225-01	P01	Computer Stations	FB		217-29
225-01	P02	Computer Stations	FB		217-29
225-01	P03	Computer Stations	D		217-29
225-01	P04	Computer Stations	D		217-29
225-01	P05	Computer Stations	D		217-29
225-01	P06	Computer Stations	D		217-29
225-01	P07	Computer Stations	D		217-29
225-01	P08	Computer Stations	D		217-29
225-01	P09	Computer Stations	D		217-29
225-01	P10	Computer Stations	D		217-29
225-01	P11	Computer Stations	D		217-29
225-01	P12	Computer Stations	D		217-29
225-03	P01	Office	D		217-29
225-03	P02	Office	D	1	217-29

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
225-04	P01	Office	D		217-29
225-04	P02	Office	D	1	217-29
324-02	P01	Classroom	D		317-04
324-02	P02	Classroom	W	1	317-04
324-04	P01	Classroom	W	1	317-04
324-04	P02	Classroom	RO		317-04
324-04	P03	Classroom	D		317-04
324-05	P01	Classroom	RO		317-04
324-05	P02	Classroom	W	1	317-04
324-05	P03	Classroom	D		317-04
325-01	P01	Conference Room	D		317-04
325-01	P02	Conference Room	D		317-04
325-01	P03	Conference Room	D		317-04
325-01	P04	Conference Room	W	1	317-04
325-01	P05	Conference Room	D		317-04
325-01	P06	Conference Room	D		317-04
325-02	P01	Equipment (Training Aids)	D	1	317-04
325-03	P01	Kitchen/Work	W	1	317-04
325-04	P01	Classroom	W	1	317-04
325-04	P02	Classroom	D		317-04
325-05	P01	Storage/Conf	W	1	317-04
		Resource Management			
316-04	P04	Copy/Stor.,Admin/Files	W	1	317-04
316-04	P03	Copy/Stor.,Admin/Files	D		317-04
316-04	P02	Copy/Stor.,Admin/Files	D		317-04
316-04	P01	Copy/Stor.,Admin/Files	D		317-04
316-08	P01	Budget Officer	D	1	317-04
316-08	P02	Budget Officer	D		317-04
316-09	P01	Budget Analyst	D		317-04
316-09	P02	Budget Analyst	D	1	317-04
317-01	P01	Management Analyst	D	1	317-04
317-01	P02	Management Analyst	D		317-04
317-02	P01	Office, Clerk	D	1	317-04
317-02	P02	Office, Clerk	D		317-04
317-03	P01	Office, Shared	D	1	317-04
317-03	P02	Office, Shared	D	1	317-04
317-03	P03	Office, Shared	D		317-04
317-03	P04	Office, Shared	D	1	317-04
317-03	P05	Office, Shared	D	1	317-04
317-05	P01	Office, Shared	D	1	317-04
317-05	P02	Office, Shared	D	1	317-04
317-05	P03	Office, Shared	D	1	317-04
317-05	P04	Office, Shared	D		317-04
		Service Bays and Mechanical Rooms			
003-01	P01	Elevator Machinery	E	1	
003-03	P01	Mechanical	W		
009-02	P01	Elevator Machinery	E	1	
024-02	P01	Elevator Machinery	E	1	

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
025-01	P01	Mechanical	W		
029-02	P01	Elevator Machinery	E	1	
035-04	P01	Elevator Pump	E	1	
039-01	P01	Elevator Machinery	E	1	
044-01	P01	Mechanical	W		
104-01	P01	Mechanical	W		118-16
105-02	P01	Mechanical	W		118-16
106-01	P01	Mechanical	W		118-16
107-05	P01	Mechanical	W		117-23
114-01	P01	Mechanical	W		117-23
138-12	P01	Mechanical	W		129-05
140-08	P01	Mechanical	W		129-05
142-09	P01	Mechanical	W		134-02
142-09	P02	Mechanical	W		134-02
146-03	P01	Mechanical	W		
203-01	P01	Mechanical	W		
205-02	P01	Mechanical	W		
206-01	P01	Mechanical	W		
214-02	P01	Mechanical	W		
238-14	P01	Mechanical	W		
314-02	P01	Mechanical	W		317-04
320-01	P01	Mechanical	W		
424-02	P01	Mechanical	W		424-01
		Surgery			
209-03	P01	Comp Control	D	1	219-04
209-03	P02	Comp Control	D	1	219-04
209-03	P03	Comp Control	D	1	219-04
209-03	P04	Comp Control	D	1	219-04
209-03	P05	Comp Control	D	1	219-04
209-03	P06	Comp Control	D	1	219-04
209-04	P01	Office, H. N.	D		219-04
209-04	P02	Office, H. N.	D	1	219-04
209-05	P01	Office, NCOIC	D		219-04
209-05	P02	Office, NCOIC	D	1	219-04
209-08	P01	Inst.Storage (Endo)	W	1	219-04
209-10	P02	Lounge	W	1	219-04
209-10	P01	Lounge	D		219-04
209-11	P01	Corridor	W	1	219-04
210-04	P01	Review	D	1	219-04
210-04	P02	Review	D	1	219-04
210-06	P01	Soiled Inst Process (ENDO)	W	1	219-04
210-07	P01	Procedure (Endo)	W	1	219-04
210-07	P02	Procedure (Endo)	W		219-04
210-07	P03	Procedure (Endo)	GF		219-04
210-07	P04	Procedure (Endo)	GF		219-04
210-10	P01	Operating	W	1	219-04
210-10	P02	Operating	W		219-04
210-10	P03	Operating	GF		219-04
210-10	P04	Operating	GF		219-04

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
210-10	P05	Operating	W		219-04
210-12	P01	Substerile	W	1	219-04
210-13	P01	Operating	W		219-04
210-13	P02	Operating	W		219-04
210-13	P03	Operating	W	1	219-04
210-13	P04	Operating	GF		219-04
210-13	P05	Operating	GF		219-04
210-14	P01	Clean Work	W	1	219-04
210-14	P02	Clean Work	W	1	219-04
210-14	P03	Clean Work	W	1	219-04
210-14	P04	Clean Work	W	1	219-04
210-17	P01	Clean	W	1	219-04
210-18	P01	Soiled	W	1	219-04
210-19	P01	Film Proc.	W	1	219-04
211-01	P01	C-Section	W		219-04
211-01	P02	C-Section	W		219-04
211-01	P03	C-Section	W	1	219-04
211-01	P04	C-Section	GF		219-04
211-01	P05	C-Section	GF		219-04
211-02	P01	Substerile	W	1	219-04
211-04	P01	Equipment Storage	W	1	219-04
211-08	P01	Locker	W	1	219-04
211-09	P01	Locker	W	1	219-04
211-11	P01	File Reading Alcove	D	1	219-04
211-12	P03	Central Control	MK	1	219-04
211-12	P02	Central Control	D	1	219-04
211-12	P01	Central Control	W	1	219-04
216-25	P01	Clean	W	1	217-29
216-26	P01	Soiled Utility	W	1	217-29
216-27	P01	Patient Holding	H		217-29
217-01	P01	Patient Holding - Iso	H		217-29
217-02	P01	Patient Holding	H		217-29
217-03	P01	Patient Holding	H		217-29
217-04	P01	Patient Holding	H		217-29
217-05	P01	Patient Holding	H		217-29
217-08	P01	Patient Holding	H		217-29
217-09	P01	Patient Holding	H		217-29
217-10	P01	Patient Holding	H		217-29
217-19	P01	Charting	C	1	217-29
217-19	P02	Charting	C	1	217-29
217-11	P01	Nurse Work	C	1	217-29
217-11	P02	Nurse Work	C	1	217-29
217-11	P03	Nurse Work	C	1	217-29
217-11	P04	Nurse Work	JB2		217-29
217-11	P05	Nurse Work	M	1	217-29
217-11	P06	Nurse Work	M	1	217-29
217-11	P07	Nurse Work	JB2		217-29
217-11	P08	Nurse Work	M	1	217-29
217-11	P09	Nurse Work	M	1	217-29
217-11	P10	Nurse Work	M	1	217-29

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
217-12	P01	Corridor	JB1		
217-12	P02	Corridor	JB1		
217-13	P01	Patient Holding	H		217-29
217-15	P01	Patient Holding	H		217-29
217-16	P01	Patient Holding	H		217-29
217-17	P01	Patient Holding	H		217-29
217-20	P01	Patient Holding	H		217-29
217-21	P01	Patient Holding	H		217-29
217-22	P01	Patient Holding	H		217-29
217-23	P01	Patient Holding	H		217-29
217-24	P01	Patient Holding	H		217-29
217-25	P01	Patient Holding	H		217-29
217-26	P01	Patient Holding	H		217-29
218-03	P01	Patient Holding	H		217-29
218-04	P01	Patient Holding	H		217-29
218-06	P01	Patient Holding	H		217-29
218-07	P01	Patient Holding	H		217-29
218-10	P01	Treatment	W	1	217-29
218-10	P02	Treatment	D		217-29
218-11	P01	Storage	W	1	217-29
218-12	P01	Consult	D	1	217-29
218-13	P01	Consult	D	1	217-29
218-14	P01	Reception	M	1	217-29
218-14	P01	Reception	D	1	217-29
218-16	P01	Workroom - soiled	W	1	217-29
218-17	P01	Workroom - clean	W	1	217-29
218-18	P01	Office	D	1	217-29
218-18	P02	Office	D		217-29
218-19	P01	Office Ch.	D	1	
218-19	P02	Office Ch.	D		
219-01	P01	Lounge	W		217-29
219-01	P02	Lounge	D		217-29
219-02	P01	Physician Dictation	D	1	217-29
219-02	P02	Physician Dictation	D	1	217-29
219-03	P01	Storage	W		217-29
219-05	P01	Corridor	W		217-29
		Training and Security			
322-02	P01	Security Processing	W	1	317-04
322-03	P01	Secure room- operations	D		317-04
322-03	P02	Secure room- operations	D	1	317-04
322-04	P01	Copy/Supplies	W	1	317-04
322-04	P02	Copy/Supplies	D		317-04
322-06	P01	Files	W	1	317-04
322-09	P01	Office	D		317-04
322-09	P02	Office	D	1	317-04
322-10	P01	Op Sgt	D		317-04
322-10	P02	Op Sgt	D	1	317-04
322-11	P01	Admin Office	D		317-04
322-11	P02	Admin Office	D	1	317-04

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
322-12	P01	Office, Shared	D	1	317-04
322-12	P02	Office, Shared	D	1	317-04
322-12	P03	Office, Shared	D	1	317-04
323-05	P01	Lounge	W	1	317-04
323-05	P02	Lounge	D		317-04
		Tri-care			
129-15	P01	Case Manager	D	1	129-05
129-15	P02	Case Manager	D	1	129-05
130-02	P01	Office, Shared	D	1	129-05
130-02	P02	Office, Shared	D	1	129-05
130-02	P03	Office, Shared	D	1	129-05
130-02	P04	Office, Shared	IP1	2	129-05
130-04	P01	Copy / Fax/ records	W	1	129-05
130-04	P02	Copy / Fax/ records	D	1	129-05
130-05	P01	Office	D	1	129-05
130-05	P02	Office	D		129-05
130-15	P01	Office, Chief	D		129-05
130-15	P02	Office, Chief	D	1	129-05
130-15	P03	Office, Chief	D		129-05
130-16	P01	Office	D	1	129-05
130-16	P02	Office	D		129-05
130-17	P01	Office, Case Manager	D	1	129-05
130-17	P02	Office, Case Manager	D		129-05
		VA Clinic			
134-07	P01	Exam	D		134-02
134-07	P02	Exam	D	1	134-02
134-08	P01	Exam	D		134-02
134-08	P02	Exam	D	1	134-02
134-09	P01	Doctor	D	1	134-02
134-09	P02	Doctor	D		134-02
134-10	P01	Office	D	1	134-02
134-10	P02	Office	D	1	134-02
134-10	P03	Office	D	1	134-02
134-12	P01	Reception/Records	D	1	134-02
134-12	P02	Reception/Records	MK	1	134-02
134-12	P03	Reception/Records	MK	1	134-02
134-12	P04	Reception/Records	D	1	134-02
134-12	P05	Reception/Records	D	1	134-02
134-12	P06	Reception/Records	D	1	134-02
134-15	P01	Screening	D	1	134-02
134-15	P02	Screening	D		134-02
134-16	P01	Social Work	D	1	134-02
134-16	P02	Social Work	D	1	134-02
134-17	P01	Doctor	D	1	134-02
134-17	P02	Doctor	D		134-02
134-18	P01	Exam	D		134-02
134-18	P02	Exam	D	1	134-02

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
134-19	P01	Doctor	D	1	134-02
134-19	P02	Doctor	D		134-02
134-20	P01	Exam	D		134-02
134-20	P02	Exam	D	1	134-02
134-21	P01	Exam	D		134-02
134-21	P02	Exam	D	1	134-02
144-02	P01	Conference/Break	W	1	134-02
144-02	P02	Conference/Break	D		134-02
144-02	P03	Conference/Break	D		134-02
144-03	P01	Storage	W	1	134-02
144-04	P01	Soiled Utl/Trash	W	1	134-02
144-05	P01	Clean Utility	W	1	134-02
144-06	P01	Treatment	D		134-02
144-06	P02	Treatment	W	1	134-02
144-07	P01	Office, NCOIC	D	1	134-02
144-07	P02	Office, NCOIC	D		134-02
144-08	P01	Exam	D		134-02
144-08	P02	Exam	D	1	134-02
144-09	P01	Doctor	D	1	134-02
144-09	P02	Doctor	D		134-02
144-10	P01	Doctor	D	1	134-02
144-10	P02	Doctor	D		134-02
144-11	P01	Exam	D		134-02
144-11	P02	Exam	D	1	134-02
144-12	P01	Exam	D		134-02
144-12	P02	Exam	D	1	134-02
144-13	P01	Exam	D		134-02
144-13	P02	Exam	D	1	134-02
144-14	P01	Exam	D		134-02
144-14	P02	Exam	D	1	134-02
144-15	P01	Doctor	D	1	134-02
144-15	P02	Doctor	D		134-02

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
130-04	P02	Copy / Fax/ records	D	1	129-05
130-05	P01	Office	D	1	129-05
130-05	P02	Office	D		129-05
130-15	P01	Office, Chief	D		129-05
130-15	P02	Office, Chief	D	1	129-05
130-15	P03	Office, Chief	D		129-05
130-16	P01	Office	D	1	129-05
130-16	P02	Office	D		129-05
130-17	P01	Office, Case Manager	D	1	129-05
130-17	P02	Office, Case Manager	D		129-05
		VA Clinic			
134-07	P01	Exam	D		134-02
134-07	P02	Exam	D	1	134-02
134-08	P01	Exam	D		134-02
134-08	P02	Exam	D	1	134-02
134-09	P01	Doctor	D	1	134-02
134-09	P02	Doctor	D		134-02
134-10	P01	Office	D	1	134-02
134-10	P02	Office	D	1	134-02
134-10	P03	Office	D	1	134-02
134-12	P01	Reception/Records	D	1	134-02
134-12	P02	Reception/Records	MK	1	134-02
134-12	P03	Reception/Records	MK	1	134-02
134-12	P04	Reception/Records	D	1	134-02
134-12	P05	Reception/Records	D	1	134-02
134-12	P06	Reception/Records	D	1	134-02
134-15	P01	Screening	D	1	134-02
134-15	P02	Screening	D		134-02
134-16	P01	Social Work	D	1	134-02
134-16	P02	Social Work	D	1	134-02
134-17	P01	Doctor	D	1	134-02
134-17	P02	Doctor	D		134-02
134-18	P01	Exam	D		134-02
134-18	P02	Exam	D	1	134-02
134-19	P01	Doctor	D	1	134-02
134-19	P02	Doctor	D		134-02
134-20	P01	Exam	D		134-02
134-20	P02	Exam	D	1	134-02
134-21	P01	Exam	D		134-02
134-21	P02	Exam	D	1	134-02
144-02	P01	Conference/Break	W	1	134-02
144-02	P02	Conference/Break	D		134-02
144-02	P03	Conference/Break	D		134-02
144-03	P01	Storage	W	1	134-02
144-04	P01	Soiled Utl/Trash	W	1	134-02
144-05	P01	Clean Utility	W	1	134-02
144-06	P01	Treatment	D		134-02
144-06	P02	Treatment	W	1	134-02
144-07	P01	Office, NCOIC	D	1	134-02

ROOM	OUTLET ID	ROOM NAME	TYPE	PATCH	COMM ROOM
144-07	P02	Office, NCOIC	D		134-02
144-08	P01	Exam	D		134-02
144-08	P02	Exam	D	1	134-02
144-09	P01	Doctor	D	1	134-02
144-09	P02	Doctor	D		134-02
144-10	P01	Doctor	D	1	134-02
144-10	P02	Doctor	D		134-02
144-11	P01	Exam	D		134-02
144-11	P02	Exam	D	1	134-02
144-12	P01	Exam	D		134-02
144-12	P02	Exam	D	1	134-02
144-13	P01	Exam	D		134-02
144-13	P02	Exam	D	1	134-02
144-14	P01	Exam	D		134-02
144-14	P02	Exam	D	1	134-02
144-15	P01	Doctor	D	1	134-02
144-15	P02	Doctor	D		134-02

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16730

NURSE CALL TONE-VISUAL (NCTV) SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Continuous Duty Design
1.4.1.5 Power Supply Design
1.4.1.6 Shielding and Grounding
1.4.1.7 Station Connectors
1.4.1.8 User Room Numbers and Names
1.4.2 System Capability and Configuration
1.4.2.1 System Capability
1.4.2.2 System Configuration and Major Functional Components
1.4.2.3 NC Subsystems
1.4.2.4 System Network
1.4.2.5 System Server
1.4.3 Performance Requirements
1.4.3.1 NC Subsystem Functions and Features
1.4.3.2 Call Types and Points of Origin
1.4.3.3 Call Annunciation Modes
1.4.3.4 Call Annunciation Priorities
1.4.3.5 Call Routing
1.4.3.6 System Call Processing Rates
1.4.3.7 Radio Paging
1.4.3.8 Failure Modes, Alarms and Diagnostics
1.4.3.9 Call Logging
1.4.3.10 System Date and Time
1.4.4 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Products
1.5.2.2 Design and Installation Work
1.5.2.3 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection

1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.1.8 Software and License
2.1.9 Equipment Design for Wet Areas
2.2 NC SUBSYSTEMS MAJOR COMPONENTS
2.2.1 Emergency Pull Cord Stations
2.2.2 Emergency Push Button Stations
2.2.3 Code Blue Stations
2.2.4 Annunciator Panel Stations
2.2.5 Dome Lights
2.2.6 Zone Lights
2.2.7 Main Terminal/Equipment Panels
2.3 CENTRAL ANNUNCIATOR PANEL STATIONS
2.4 SYSTEM NETWORK
2.5 SERVERS
2.6 UPS
2.7 SYSTEM CABLING
2.8 EQUIPMENT MOUNTING RACKS AND CABINETS

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power and Grounds
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interfaces and Interconnections
3.3.3 Call Routing
3.3.4 Application Programming
3.3.5 Planning Data
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation

3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Zone Lights
3.5.3 Installation Setup
3.6 INSPECTION, TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing
3.6.3 System Readiness Checks
3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspections and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 NCTV System
3.11.2 Indicated Items
3.11.3 Main Terminal/Equipment Panels
3.11.4 UPS
3.11.5 Software
3.11.6 System Network
3.11.7 Servers
3.11.8 Pagers
3.11.9 Product Samples
3.12 ZONE LIGHTS ACTIVATION MATRICES

-- End of Section Table of Contents --

SECTION 16730

NURSE CALL TONE-VISUAL (NCTV) SYSTEM

PART 1 GENERAL

1.1 REFERENCES

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

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

47 CFR 15	Radio Frequency Devices

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Health Care Facilities

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

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

UNDERWRITERS LABORATORIES (UL)

UL 1069	(2001) Hospital Signaling and Nurse Call Equipment
UL 1778	(1994) Standard for Uninterruptible Power Supply

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-83-596	(1994) Fiber Optic Premises Distribution Cable

1.2 DEFINITIONS

1.2.1 General Definitions

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

1.2.2 Additional Acronyms

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

BACH	Bassett Army Community Hospital
CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit

FSS	Facility Security System
GFGI	Government Furnished, Government Installed
HIS	Hospital Information System (BACH)
IMO	Information Management Office (BACH)
LAN	Local Area Network
LON	Local Operating Network
NC	Nurse Call (Subsystems)
NCAV	Nurse Call Audio-Visual (System)
NCTV	Nurse Call Tone-Visual (System)
O&M	Operation and Maintenance (Manuals)
RF	Radio Frequency
UON	Unless Otherwise Noted
UPS	Uninterruptible Power Supply

1.2.3 Additional Terms

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

Call	Communications between patients and caregivers, and among caregivers, that are transmitted through the NCTV System and interconnected supplementary systems. Call communications modes for the NCTV System include alert tones, visual indicators, and digital display of alphanumeric messages.
Caregiver	A person who is directly involved in the care of patients.
Pager	Radio Page Receiver.
Software	Operating systems and application programs that enable a computer, or computer-based systems, to function as specified. Software shall include the documentation to describe, maintain and use the programs.
System	NCTV System, UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy all specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.
Telecommunications Systems	All low voltage, RF and power limited communications and security systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.
Telecommunications Rooms	Called Comm Rooms on the drawings. Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and

devices for all telecommunications systems.

24x7 Staffed — A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the NCTV System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all the system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements, dimensions, and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, software, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations; G

a. Analysis and calculations to define power supply requirements for each component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions, for power supplies that are not an integral part of the component.

b. Analysis and calculations to define the type and size of all cables connecting all system components in accordance with

Manufacturers instructions and power drop calculations.

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

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms.

e. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section HSPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

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

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.4.

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the NCTV System and all interfaced telecommunications systems and other systems, including the exact point and type of demarcation.

b. The layout and mounting of all NCTV equipment, and the routing

and mounting of cabling in Comm Rooms as coordinated with the layout of all other systems equipment in these rooms.

c. The layout and mounting of all annunciator panel stations.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

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

SD-09 Reports

Testing Reports; G

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

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

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

SD-14 Samples

Product Samples; G

Submit one sample unit of each type of station and light for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS.

O&M Manuals shall be available on-site before the start of any training.

Software Manuals; G

O&M manuals data shall include a Software Manual describing the functions of all software and including all other information necessary to enable proper loading, setup, testing, and operation.

The software manual shall include:

a. Definition of terms and functions.

b. Use of system and applications software.

c. Procedures for system installation, initialization and set-up, start-up, shutdown, migration to another computer, and DLL or driver dependencies if these exist.

d. Alarm reports.

e. Reports generation.

f. Database format and requirements for data entry.

g. Directory of all disk files.

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

Backup Software; G

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

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

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

1.4.1.2 Standard Products

The system application design shall utilize a standard, UL 1069 listed NCTV System that is the product of a Manufacturer regularly engaged in the manufacture of NCTV Systems. The system shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the BACH installation site.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Continuous Duty Design

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

1.4.1.5 Power Supply Design

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

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

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

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

1.4.1.6 Shielding and Grounding

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

1.4.1.7 Station Connectors

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

1.4.1.8 User Room Numbers and Names

a. At the start of submittals, the Government shall furnish to the System Contractor a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

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

1.4.2 System Capability and Configuration

1.4.2.1 System Capability

Note: Refer to UL 1069 for the definition of the terms "Fundamental Operation" and "Supplemental Operation" as used herein.

The NCTV System capabilities shall include the following:

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

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

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

d. Interface with Section 16731 NURSE CALL AUDIO-VISUAL (NCAV) SYSTEM for integrated use by the NCTV System of the supplemental enhanced operations provided by the NCAV System, including radio page, central code annunciation, call logging, and central maintenance station.

1.4.2.2 System Configuration and Major Functional Components

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

Nurse Call (NC) Subsystems
System Network
System Server
Central Annunciator Panel Stations

1.4.2.3 NC Subsystems

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

Telecommunications Drawings show the location and zone boundaries of the patient care areas listed.

NC Subsystem Number	Zone	Patient Care Area Served
1	1-03	Pathology
1	1-04	Radiology
2	1-09	Primary Care Clinic A and CSD
2	1-15	Primary Care Clinic B
3	1-19	Physical Therapy
4	1-20	Ortho/Surgery Clinic
4	1-21	EENT Clinic
4	1-25	VA Clinic
5	2-14	Dental Clinic

b. NC Subsystem Major Components.

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

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

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

UPS for ac powered equipment

1.4.2.4 System Network

a. An independent, dedicated NCTV System Network shall connect all Major Functional Components of the system into an integrated network for system wide data communications for the functions specified in this Section. Use of the BACH HIS LAN, or any Section 16710 PDS fiber optic cable shall not be allowed.

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

c. The system network design shall use industry standard Local Area Network (LAN) or Local Operating Network (LON) technology and protocols.

d. Integrate the NCTV System network with the Section 16731 NCAV SYSTEM network for data communications of NCTV System calls to the NCAV System Central Code Annunciator Panel Station, Call Logging Server, and Radio Page Server, and for communication of NCTV System maintenance functions with the NCAV System Maintenance Workstation.

1.4.2.5 System Server

A System Server shall be provided as required by the system application

design system operation and/or to interconnect the NCTV System network to the NCAV System network.

1.4.3 Performance Requirements

1.4.3.1 NC Subsystem Functions and Features

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

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

1.4.3.2 Call Types and Points of Origin

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

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

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

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

1.4.3.3 Call Annunciation Modes

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

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

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

d. Dome lights and zone lights shall be equipped with an electronic alert tone device that shall sound when a call is initiated.

e. On annunciator panel stations within a patient care area, the visual display shall indicate the call type and call origination room, and sound

an alert tone. The visual display shall indicate all calls simultaneously. The user room name and number shall identify the call origination room.

f. On the central code annunciator panel station that is provided as part of the NCAV System, the visual display shall indicate the code call and call origination patient care area and room, and sound an alert tone. The visual display shall either indicate all calls simultaneously, or simultaneously display at least 5 calls with a visual indicator that illuminates to indicate that there are more un-displayed calls that can be viewed by use of a manual scroll function that allows scroll one line at a time.

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

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

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

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

1.4.3.4 Call Annunciation Priorities

a. The annunciation of call types shall be sequenced in a two level priority rank order, from a high of Number 1 to a low of Number 2, as listed below.

Priority Level	Call Type
#1 Code	Code Blue
#2 Emergency	Emergency and Failure Alarm

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

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

(2) For annunciator panel stations that display calls in a list, the displayed list of calls shall be in priority order, with the highest priority calls at the top of the displayed list. Existing lower priority calls shall be displaced in the displayed list by the occurrence of a

higher priority call. For example, if a emergency call is first in the list and a code call occurs, the code call shall jump ahead of the emergency call in the displayed list.

(3) When more then one call is being processed at the same time through the NCAV System Radio Page Server, the highest priority call type shall take precedence and be transmitted ahead of lower priority calls.

1.4.3.5 Call Routing

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

a. Call Routing - Dome Lights

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

b. Call Routing - Zone Lights

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

(2) The Zone Light Activation Matrices Attachment lists the identification (ID) number of all zone lights indicated on the Telecommunications Drawings, and relates these to the patient care rooms where calls are originated that activate the zone lights.

c. Call Routing - Patient Care Area Annunciator Panel Stations

All calls from within a patient care area shall be routed to a master annunciator panel stations for the area. Reference the call routing matrix on the telecommunications drawings.

(1) The Radiology and Pathology areas shall be served by one NC Subsystem and the calls from both areas shall be routed to a single annunciator panel station at the common reception desk for both areas. The calls from Radiology are also routed to the annunciator panel station in the Work Area Room 110-18.

(2) The Primary Care A Clinic, including the CSD area, and the Primary Care B Clinic, shall be served by one NC Subsystem and the annunciator panel station in the reception area for each clinic shall be equipped to indicate calls from both clinics and the CSD area.

(3) The Ortho/Surgery Clinic, EENT Clinic, and the VA Clinic shall be served by one NC Subsystem. The annunciator panel stations in the north end of the Ortho/Surgery Clinic reception area and in the VA Clinic reception area shall be equipped to indicate calls from both the Ortho/Surgery and VA Clinics. The annunciator panel station in the south end of the Ortho/Surgery Clinic reception area shall be equipped to

indicate calls from the EENT Clinic only.

d. Call Routing - Central Code Annunciator Panel Station

In addition to the normal local annunciation in the patient care area, all code blue calls from all NC Subsystems that are equipped with code blue stations shall be routed to the central Code Annunciation Panel Station provided by the Section 16731 NCAV SYSTEM in the Emergency Services Nurse Station.

e. Call Routing - Central Failure Alarm Annunciator Panel Station

All failure alarm calls from all Major Functional Components of the system shall be locally indicated and also routed to the Failure Alarm Annunciator Panel Station.

f. Call Routing - Radio Paging

All calls from throughout the entire system shall be routed by selectable duty assignment programming to radio pagers, as described herein, via the Section 16731 NCAV SYSTEM Radio Page Server. All code blue calls shall be routed to pagers carried by the code response team. All after hours calls from the Radiology area shall be routed to the Emergency Service Staff. Failure alarm calls will be routed to pagers carried by the maintenance staff.

g. Call Routing - Call Logging Server

All calls from throughout the entire system shall be routed to the Section 16731 NCAV SYSTEM Call Logging Server.

h. Call Routing - Maintenance Workstation

All failure alarm calls from all Major Functional Components of the system shall also be routed to the Section 16731 NCAV SYSTEM Maintenance Workstation.

1.4.3.6 System Call Processing Rates

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

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

1.4.3.7 Radio Paging

a. The system shall be interfaced with the Section 16755 RADIO PAGE SYSTEM via the Section 16731 NCAV SYSTEM Radio Page Server so that calls are automatically transmitted to alphanumeric text pagers carried by the on-duty staff.

b. Information transmitted from the system to the Radio Page System and received by the radio pagers shall include the following alphanumeric data: call type, call priority, call origination point, and date and time stamp. The radio pagers shall be able to receive and annunciate all call information as described below.

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

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

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

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

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

e. The programming of all data for radio paging shall be entered from either a laptop computer that is provided as part of the radio page capability of the NCTV System, or via the Section 16731 NCAV Radio Page Server. Programming shall be easy to perform, be "user friendly", be menu based, use plain English prompts, and shall not require extensive technical training to perform. A system that requires hexadecimal programming or extensive, laborious programming procedures or complicated routines shall not be acceptable.

1.4.3.8 Failure Modes, Alarms and Diagnostics

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

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

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

d. Failure alarms shall be annunciated locally on the Major Functional Component, conveyed to the central Failure Alarm Annunciator Panel Station and the Maintenance Workstation, and transmitted to pagers carried by BACH maintenance staff.

1.4.3.9 Call Logging

The system shall be interfaced with Section 16731 NURSE CALL AUDIO-VISUAL SYSTEM for logging and reporting of call data. Call logging capability shall be identical to that specified for the NCAV System

1.4.3.10 System Date and Time

The date and time in any system database and/or indicated on any component of the system shall be synchronized at least once a day from a central system clock in the Section 16731 NCAV System Maintenance Workstation. The central system clock shall be automatically updated for daylight saving time and leap year.

1.4.4 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

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

b. Riser diagrams shall indicate the identification number (ID) for all equipment components as shown on the Telecommunications Drawings.

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

d. Installation details for equipment and cabling that is surface mounted on the back panel of GFGI modular furniture shall include the make and model of the surface mounted boxes and wireways, and details for any mounting hardware.

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

f. Legend of graphic symbols used on all drawings.

g. Details shall indicate anchoring and bracing provided for seismic protection in accordance with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

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

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

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

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and/or Installer in accordance with the qualifications specified in this Section.

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

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

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

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

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

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

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

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

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

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

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

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

1.5.1.2 System Contractor Qualifications

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

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

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

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

1.5.1.3 Installer Qualifications

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

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

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

1.5.1.4 Manufacturer Qualifications

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

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

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

1.5.2 Regulatory Requirements

1.5.2.1 Products

a. NCTV System

(1) Fundamental devices and operations of the NCTV System shall be UL 1069 listed and labeled.

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

b. UPS units shall comply with UL 1778.

1.5.2.2 Design and Installation Work

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

1.5.2.3 Electromagnetic Interference (EMI)

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

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

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

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

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

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

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

1.6.2 Delivery Coordination

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

1.6.3 Loss Liability

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

1.6.4 Delivery Restrictions

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

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

1.6.5 Contractor Responsibility

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

1.7 SEQUENCING AND SCHEDULING

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

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

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

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

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS and CLOSEOUT SUBMITTALS.

b. Warranty the operational and physical integrity of the provided system, including a warranty against all defects in design, equipment, materials, software, workmanship, and improper installation and adjustments, for a period of at least one year from the date the operating system is accepted by the Government after satisfactory completion of final inspection and

acceptance tests. This warranty shall not cover any malfunctions or damage caused by misuse, abuse or neglect. If the System Contractor or Manufacturer warranty is for a period longer than one year, the longest warranty period shall govern. The System Contractor shall furnish a warranty document with the Data submittal.

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

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

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

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

1.9.1.3 Post Acceptance Spare Parts

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

Quantity	Items
50	Each type of incandescent lamp bulbs
2	Each type of NC Subsystem Station
1	Each type of NC Subsystem Light
1	Each type of UPS
10	Dummy Plugs
2	Sets of Main Terminal/Equipment Panel plug-in modules

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

c. The System Contractor shall recommend any additional onsite spare parts

deemed necessary by the Manufacturer and or the System Contractor. Furnish to the Contracting Officer the cost of recommended additional spare components as a separate line item.

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

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

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. The System Contractor shall provide an on-line diagnostic maintenance support capability as specified herein.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

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

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

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

NC Subsystem
System Network
System Server

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

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

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

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified, or indicated on the Telecommunications Drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

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

2.1.4 Identical Products

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

2.1.5 Nameplates and Equipment Markings

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

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

c. Markings on any exposed surfaces shall not be destroyed by housekeeping

solutions normally used in BACH.

2.1.6 Mounting Alignment Capability

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

2.1.7 Model and Enhancements

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

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

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

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

2.1.8 Software and License

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

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

c. Software maintenance that is provided to any or all other customers without charge shall be provided to the Government.

2.1.9 Equipment Design for Wet Areas

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

2.2 NC SUBSYSTEMS MAJOR COMPONENTS

2.2.1 Emergency Pull Cord Stations

a. Flush mount units.

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

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

d. An LED call assurance indicator.

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

f. Waterproof gaskets for stations installed in wet areas.

2.2.2 Emergency Push Button Stations

a. Flush mount units.

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

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

d. An LED call assurance indicator.

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

f. Waterproof gaskets for stations installed in wet areas.

2.2.3 Code Blue Stations

a. Flush mount units.

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

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

d. An LED call assurance indicator.

2.2.4 Annunciator Panel Stations

a. Flush wall mount units.

b. Visual Indicator Display

(1) Electronic programmable visual indicator display. Acceptable visual

indicator display technologies include LED or LCD digital displays. Incandescent lamp displays are not acceptable.

(2) The font size of the alphanumeric text call information displayed shall be large enough, and have sufficient contrast, that a person with vision corrected to 20/20 shall be able to clearly read the display under both lights on and lights off conditions (in the workstation area) from the workstations in the area where the annunciator is located.

(3) The visual display shall either indicate all calls simultaneously, or simultaneously display at least 5 calls with a visual indicator that illuminates to indicate that there are more un-displayed calls that can be viewed by use of a manual scroll function that allows scroll one line at a time.

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

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

d. A system "POWER ON" indicator light.

2.2.5 Dome Lights

a. Flush mount units

b. Configured with indicator lamps and an electronic alert tone device.

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

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

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

2.2.6 Zone Lights

a. Flush mount units.

b. Configured with indicator lamps and an electronic alert tone device.

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

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

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

2.2.7 Main Terminal/Equipment Panels

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

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

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

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

e. A UPS shall automatically provide at least 30 minutes of full load uninterrupted power within 4 milliseconds of an ac power failure. Batteries used in the standby power supply shall be maintenance free, completely sealed, and continuously recharged during normal operation. Power calculations shall be included with design data submittal to verify power requirements.

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

2.3 CENTRAL ANNUNCIATOR PANEL STATIONS

a. Surface mount units.

b. May be designed and configured as an integral part of similar annunciator panel stations that are provided by the Section 16731 NCAV System.

c. Two (2) applications.

(1) A Central Code Annunciator Panel Station shall annunciate all code blue calls from throughout the entire system until they are canceled at the call origination point. Call information displayed shall include the type of call, and the call origination point by patient care area and room number.

(2) A Failure Alarm Annunciator Panel Station shall annunciate all failure alarms from throughout the entire system until they are canceled by corrective action for the failure. Call information displayed shall include the failed component.

d. Visual Indicator Display

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

(2) The font size of the alphanumeric text call information displayed shall be large enough, and have sufficient contrast, that a person with vision corrected to 20/20 shall be able to clearly read the display under both lights on and lights off conditions (in the workstation area) from the workstations in the area where the annunciator is located.

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

f. An electronic alert tone device. Activation of a momentary tone defeat switch shall temporarily silence the current call alert tone, with automatic reset so that the alert tone shall again sound when the next call is placed.

g. Electronic supervision of the stations to assure the annunciation of code and failure calls.

2.4 SYSTEM NETWORK

a. The system network shall be a dedicated network for the NCTV System. The system network may be an integral part of the Section 16731 NCAV SYSTEM network. Use of the BACH HIS LAN is not acceptable.

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

c. The system network shall be fault tolerant and include network administration with alarms that indicate any failures that would prevent the transmission of code calls and radio paging data. The alarms shall be indicated on the failed network hardware and transmitted to the Failure Alarm Annunciator Panel Station and to the Maintenance Workstation.

d. The system network shall use network cables that are standard for the networking technology used.

e. Equipment shall be rack mounted in a wall cabinet or open floor relay rack as specified herein.

2.5 SERVERS

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

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

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

(2) Minimum 381 mm (15 inch) trade size LCD monitor.

(3) UPS as specified herein.

c. Server operating system and application programs for each function

served.

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

e. All data communication across any interface shall delayed no more then 250 ms.

f. Equipment shall be rack mounted in an open floor relay rack as specified herein.

2.6 UPS

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

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

c. Upon ac power line outage, the UPS shall automatically transfer to battery power within 4.2 milliseconds of sensing ac power line loss, and provide at least 30 minutes of full power for operation of the equipment connected to the UPS. On-battery output voltage shall be 115 VAC, +/- 5 percent.

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

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

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

g. UPS units in Comm Rooms shall be configured for rack or cabinet mount.

2.7 SYSTEM CABLING

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

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

c. LAN UTP cables shall be Category 6 cables, conforming to ANSI/TIA/EIA-568-B and ANSI/TIA/EIA-568-B.2-1 standards for the Category of unshielded twisted pair (UTP). LAN fiber optic cables shall conform to ANSI/TIA/EIA-568-B and to ICEA S-83-596 standards.

2.8 EQUIPMENT MOUNTING RACKS AND CABINETS

a. Network, Server, and UPS equipment located in Comm Rooms shall be mounted in either floor racks or wall mounted cabinets.

b. Floor mounted open frame equipment racks shall be welded steel relay racks with uprights to mount equipment 480 mm (19 inches) wide. Uprights shall be 75 mm (3 inch) deep channel, 32 mm (1.25 inches) wide, drilled and tapped 12-24 in a 13 mm (0.5 inch) pattern. Racks shall be provided with a standard top crossmember, and predrilled base plate to allow floor fastening. Racks shall be constructed of the heaviest gauge steel commercially offered by the approved manufacturer. Racks shall be painted semi-gloss gray or black. All racks in the facility are to be of the same color and finish. Rack height shall be as required by the system application design.

c. Wall mount cabinets shall be swingout type with a hinged front panel and hinged center section to allow easy access to both the front and rear of equipment mounted in the center section of the cabinets. Cabinets shall be constructed of the heaviest gauge steel commercially offered by the approved manufacturer, and shall be prime painted and finished in a durable finish. The center section shall have perforated vents on the side panels, and be equipped with adjustable, front to rear mounting rails tapped with 10-32 holes on standard EIA 483 mm (19 inch) spacing. The rear section shall knockouts on the top and bottom surface panels.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of Comm Rooms are identified on the Telecommunications Drawings.

c. All flush and ceiling mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with

the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Junction box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

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

3.2.3 Electrical Power and Grounds

a. Existing electrical power on the emergency critical branch circuit has been provided by the facility construction project at a power junction box in Comm Rooms for system central equipment, the code blue annunciator panel station, and the failure alarm annunciator panel station. Reference the facility construction project Electrical Drawings for details.

b. Existing grounding buss bars have been provided as indicated on the Telecommunications Systems Drawings. Reference the facility construction project Electrical Drawings for details.

c. If any new electrical power circuits are required, the Telecommunications Systems Contractor shall define and submit the new power requirements to the Contracting Officer, who will coordinate the change with the existing Facility Contractor.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design

and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interfaces and Interconnections

a. Coordinate and define the details of all interfaces and interconnections with other systems and equipment as specified herein. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of Drawings and Data submittals.

b. Interfaces and interconnections shall include the Section 16731 NCAV SYSTEM network.

3.3.3 Call Routing

Obtain/verify the call routing requirements, including default settings.

3.3.4 Application Programming

Gather user data required to adequately program the system and set-up any unique functions as required by the system application design.

3.3.5 Planning Data

Gather data required to develop all required plans, including testing and training plans.

3.4 INSTALLATION

3.4.1 General

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

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

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

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

e. Provide surface mount metal wireways and boxes for master station outlets that are required to be surface mounted on the backpanel of GFGI free standing modular furniture, as indicated on the Telecommunications Drawings.

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

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

h. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT.

3.4.2 Equipment Installation

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

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

c. The system network, server, and UPS equipment housed in Comm Rooms shall be rack mounted. Under no circumstance shall any of this equipment be mounted on the floor.

d. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project.

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

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

g. Equipment mounting shall comply with the seismic bracing and anchorage requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

3.4.3 System Cabling Installation

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

b. All cables and the installation of cables shall be in accordance with NFPA 70 NEC.

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

d. System cabling shall be installed in cable trays, conduits and boxes.

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

f. Certify that system cable that are installed in the existing communications systems cable trays along with the cables from other systems shall not adversely affect the performance of this system or any other project system.

g. It is the responsibility of the System Contractor to notify the

Contracting Officer of any routing conflict prior to placement of cable.

h. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

i. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

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

3.5 APPLICATION

3.5.1 AC Power Connections

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

3.5.2 Zone Lights

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

b. Zone lights shall be programmed to indicate calls from patient care calling rooms as indicated in the attached Zone Light Activation Matrices.

3.5.3 Installation Setup

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

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

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

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

d. Default duty assignments.

e. Default pager lists and assignments.

3.6 INSPECTION, TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein,

and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

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

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

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

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

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, system readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

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

3.6.2 Periodic Inspection and Testing

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

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

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

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

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

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

without a major malfunction as specified above.

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements, system application design, and user setup requirements for the system. Each system operating mode shall be demonstrated to perform as required by operation of each individual system component under normal or simulated normal system conditions.

b. Testing shall include, but not be limited to, the following tests to demonstrate all requirements:

(1) Operation under ac power failure conditions. Include demonstration of UPS capability under normal power loading conditions, and operation under emergency power conditions.

(2) Signal quality under worst-case loading conditions of low voltage power supplies. Demonstrations shall include: show that there is no perceivable dimming of indicator lamp intensity.

(3) Operation of electronic supervision circuitry.

(4) Operation of 100% of all components used by the staff and patients in all modes of operation demonstrating that all functions and the proper sequence of events occur with each call.

(5) All interface functions.

(6) All system network and server operation.

(7) Call routing.

(8) Full capability of all application programs.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as required to demonstrate compliance with all specifications to the Contracting Officer.

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

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

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

the actual date of removal.

3.6.7 Warranty Period Inspections and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

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

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified operations and maintenance training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

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

3.7.2 General Preparations

During the week prior to the start of training for any system, check the

system to assure that it as been successfully commissioned and acceptance tested, and is in full-specified operational condition.

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated medical facility staff in the operation and maintenance of the provided system.

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

3.7.4 Training Instructions

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

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

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

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

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTING AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

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

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

c. Each course shall include classroom training and field training. Field training for medical facility staff shall take place in the area where the staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

d. Multiple instructional units for each onsite course shall be conducted

on a three shift, seven days a week basis as required to train all staff during their normal on-duty working hours.

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

3.7.7 User and Operational Staff Training

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

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system has been accepted by the Government, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

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

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

c. Nine (9) months after the system has been accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided at the Manufacturer's factory. Training shall include comprehensive instruction for complete setup, operation, maintenance and repair of the system, including the theory of operation, software installation and setup, maintenance programs, failure diagnostic programs, trouble shooting and repair. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training and certification.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 NCTV System

a. Provide a complete and operational NCTV System as specified in this Section, as indicated on the Telecommunications Drawings, as required by the system application design, and as further defined below.

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

3.11.2 Indicated Items

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

3.11.3 Main Terminal/Equipment Panels

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

3.11.4 UPS

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

3.11.5 Software

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

3.11.6 System Network

Provide all system network hardware, software and cabling throughout the system as required by the system application design. Install all system network hardware in Comm Rooms.

3.11.7 Servers

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

b. The Telecommunication Drawings indicate space in Comm Rooms that has been designated for the installation of system equipment. As required by the system application design, furnish and install the type and quantity of servers in these designated locations.

3.11.8 Pagers

Pagers shall be furnished by the Section 16755 RADIO PAGE SYSTEM. Coordinate pager specification with the Radio Page System Contractor. Obtain required number of pagers, as defined by the user, from the Contracting Officer.

3.11.9 Product Samples

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

3.12 ZONE LIGHTS ACTIVATION MATRICES

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

-- End of Section --

ZONE LIGHTS ACTIVATION MATRIX																														
NCTV SUBSYSTEM 1: PATHOLOGY AND RADIOLOGY																														
CALL	ZONE LIGHTS																													
FROM	ROOM	105-09	111-20	119-06		104-08	111-01	110-16	111-01	111-01	118-05																			
ROOM	ID#	V01	V02	V01		V01	V01	V07	V01	V05	V09																			
111-19		X		X																										
119-08		X	X																											
119-07		X	X																											
119-10		X	X																											
105-04							X	X			X																			
105-05							X	X			X																			
110-17						X			X		X																			
110-23						X			X		X																			
110-24						X			X		X																			
110-25						X			X		X																			
110-27						X			X		X																			
110-30						X			X		X																			
110-31						X			X		X																			
110-32						X			X		X																			
110-19						X		X		X																				
110-20						X		X		X																				
110-22						X		X		X																				
118-06						X		X		X																				
118-10						X		X		X																				
118-11						X		X		X																				
118-12						X		X		X																				
118-13						X		X		X																				
118-14						X		X		X																				
118-15						X		X		X																				

ZONE LIGHTS ACTIVATION MATRIX																												
NCTV SUBSYSTEM 2: PRIMARY CARE CLINIC A & CSD																												
CALL	ZONE LIGHTS																											
FROM	ROOM	107-10	107-10	107-10	107-10	115-26	108-21	108-31	108-31	109-12	109-12	109-16	109-16	109-16	109-26	109-26	109-27	117-27	117-30	117-28	117-29	110-11	110-11	110-11	110-11	117-29	117-29
ROOM	ID#	V01	V02	V06	V08	V01	V01	V01	V02	V01	V02	V01	V03	V04	V01	V03	V01	V01	V01	V01	V03	V01	V02	V03	V04	V01	V02
107-07						X	X	X		X		X							X	X	X			X			
107-08						X	X	X		X		X							X	X	X			X			
107-09						X	X	X		X		X							X	X	X			X			
115-02					X		X	X		X		X							X	X	X			X			
108-14						X	X	X		X		X							X	X	X		X				
108-15						X	X	X		X		X							X	X	X		X				
109-17			X	X		X						X					X	X					X				
110-13		X				X			X	X		X				X	X	X	X	X		X					X
117-07			X	X		X					X			X	X		X	X			X						X
118-01			X	X		X							X		X		X								X		
118-17			X	X		X					X			X												X	X
118-18			X	X		X					X			X												X	
117-03			X	X		X									X		X	X			X				X		
117-04			X	X		X									X		X	X			X				X		

ZONE LIGHTS ACTIVATION MATRIX																														
NCTV SUBSYSTEM 2: PRIMARY CARE CLINIC B																														
CALL	ZONE LIGHTS																													
FROM	ROOM	115-26	115-26	115-10	115-10	115-10	116-07	116-07	116-06	116-06	117-28	117-28	117-28	117-28	117-29		117-29	117-32	115-20	121-06	121-06	116-16								
ROOM	ID#	V04	V06	V01	V03	V05	V02	V05	V01	V03	V02	V03	V04	V06	V04		V05	V01	V01	V01	V02	V01								
115-06				X				X	X				X		X			X	X	X		X							
115-07				X				X	X				X		X			X	X	X		X							
115-14				X				X	X				X		X			X	X	X		X							
115-13		X						X	X				X		X			X	X	X		X							
115-22			X	X				X	X					X			X	X		X		X							
115-23			X	X				X	X					X			X	X		X		X							
115-08		X			X				X				X		X			X	X	X		X							
115-09		X			X				X				X		X			X	X	X		X							
115-04		X			X				X				X		X			X	X	X		X							
115-05		X			X				X				X		X			X	X	X		X							
115-03		X			X				X				X		X			X	X	X		X							
108-33		X			X		X				X				X			X	X		X	X							
116-02		X			X		X				X				X			X	X		X	X							
116-19		X						X	X				X		X				X	X		X							
116-28		X						X	X				X		X				X	X		X							
116-23		X				X		X		X					X			X		X		X							
117-14		X				X		X		X		X			X			X			X								
117-18		X				X		X		X		X			X			X			X								
117-19		X				X		X		X		X			X			X			X								
122-06		X				X		X		X					X			X		X		X							
122-07		X				X		X		X					X			X		X		X							

ZONE LIGHTS ACTIVATION MATRIX

NCTV SUBSYSTEM 3: PHYSICAL THERAPY

CALL	ZONE LIGHTS			
FROM	ROOM	132-01	132-01	132-01
ROOM	ID#	V10	V11	V12
131-19			X	
131-20		X		
131-26		X		
131-27			X	
132-01				
132-06				X

ZONE LIGHTS ACTIVATION MATRIX

NCTV SUBSYSTEM 4: ORTHO/SURGERY CLINIC & EENT CLINIC & VA CLINIC

CALL		ZONE LIGHTS													
FROM	ROOM	132-17	132-17	132-17	132-17	133-20	142-07		133-05	133-19		134-13	134-13	133-20	142-07
ROOM	ID#	V01	V02	V03	V05	V02	V02		V01	V01		V01	V03	V03	V05
132-10			X				X								
132-11			X				X								
132-16		X				X	X								
142-11				X			X								
142-17							X								
142-10					X										
142-18					X										
142-19					X										
133-06									X	X					
133-18									X	X					
134-14												X		X	X
143-12													X		
144-06															X

ZONE LIGHTS ACTIVATION MATRIX

NCTV SUBSYSTEM 5: DENTAL CLINIC

CALL	ZONE LIGHTS																										
FROM	ROOM	229-10	239-06	239-15	239-15																						
ROOM	ID#	V02	V03	V01	V02																						
229-19			X		X																						
239-02		X		X																							
239-03		X		X																							

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16731

NURSE CALL AUDIO-VISUAL (NCAV) SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Continuous Duty Design
1.4.1.5 Power Supply Design
1.4.1.6 Shielding and Grounding
1.4.1.7 Station Connectors
1.4.1.8 User Room Numbers and Names
1.4.2 System Capability and Configuration
1.4.2.1 System Capability
1.4.2.2 System Configuration and Major Functional Components
1.4.2.3 NC Subsystems
1.4.2.4 Voice Intercom Network
1.4.2.5 System Network
1.4.2.6 Central Annunciator Panel Stations
1.4.2.7 Maintenance Workstation
1.4.2.8 System Servers
1.4.3 Performance Requirements
1.4.3.1 NC Subsystems Functions and Features
1.4.3.2 Voice Intercom Features
1.4.3.3 Call Types and Points of Origin
1.4.3.4 Call Annunciation Modes
1.4.3.5 Call Annunciation Priorities
1.4.3.6 Call Routing
1.4.3.7 Call Processing Rates
1.4.3.8 Radio Paging
1.4.3.9 Failure Modes, Alarms and Diagnostics
1.4.3.10 System Date and Time
1.4.4 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Products
1.5.2.2 Design and Installation Work

1.5.2.3 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.1.8 Software and License
2.1.9 Equipment Design for Wet Areas
2.2 NC SUBSYSTEMS MAJOR COMPONENTS
2.2.1 Patient Stations
2.2.2 Bed Interface Outlet Stations
2.2.3 Remote Cord Sets Outlet Stations
2.2.4 Cord Sets
2.2.5 Device Alarm Jack Stations
2.2.6 Emergency Pull Cord Stations
2.2.7 Emergency Push Button Stations
2.2.8 Adult Code Blue Stations
2.2.9 Infant Distress Code Blue Stations
2.2.10 Staff Stations
2.2.11 Duty Stations
2.2.12 Dome Lights
2.2.13 Zone Lights
2.2.14 Master Stations
2.2.15 Main Terminal/Equipment Panels
2.3 CENTRAL ANNUNCIATOR PANEL STATIONS
2.4 MAINTENANCE WORKSTATION
2.5 SYSTEM NETWORK
2.6 SERVERS
2.6.1 General
2.6.2 Call Logging Server
2.6.3 HIS Server
2.6.4 Radio Page Server
2.7 UPS
2.8 SYSTEM CABLING
2.9 EQUIPMENT MOUNTING RACKS AND CABINETS

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power and Grounds
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interfaces and Interconnections
3.3.3 Call Routing
3.3.4 Application Programming
3.3.5 Planning Data
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation
3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Zone Lights
3.5.3 Installation Setup
3.6 INSPECTION,TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing
3.6.3 System Readiness Checks
3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspection and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 NCAV System
3.11.2 Indicated Items
3.11.3 Main Terminal/Equipment Panels
3.11.4 UPS
3.11.5 Software
3.11.6 Cord Sets and Wall Brackets
3.11.7 System Network
3.11.8 System Servers
3.11.9 Pagers
3.11.10 Product Samples
3.11.11 TV Interface Interconnection
3.11.12 Patient Stations
3.12 ZONE LIGHTS ACTIVATION MATRICES

-- End of Section Table of Contents --

SECTION 16731

NURSE CALL AUDIO-VISUAL (NCAV) SYSTEM

PART 1 GENERAL

1.1 REFERENCES

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

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

47 CFR 15	Radio Frequency Devices

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Health Care Facilities

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

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

UNDERWRITERS LABORATORIES (UL)

UL 1069	(2001) Hospital Signaling and Nurse Call Equipment
UL 1778	(1994) Standard for Uninterruptible Power Supply

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-83-596	(1994) Fiber Optic Premises Distribution Cable

1.2 DEFINITIONS

1.2.1 General Definitions

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

1.2.2 Additional Acronyms

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

ADT	Admission, Discharge, and Transfer (Computer Program)
BACH	Bassett Army Community Hospital
CFR	Code of Federal Regulations
CHCS	Composite Health Care System (Computer Program)
CL	Call Logging

COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
FSS	Facility Security System
GFGI	Government Furnished, Government Installed
IDF	Intermediate Distribution Frame
HIS	Hospital Information System (BACH)
IMO	Information Management Office (BACH)
KVM	Keyboard, Video Monitor, and Mouse
LAN	Local Area Network
LON	Local Operating Network
L&D	Labor & Delivery (Unit)
LDRP	Labor, Delivery, Recovery & Postpartum
NC	Nurse Call (Subsystems)
NCAV	Nurse Call Audio-Visual (System)
NCTV	Nurse Call Tone-Visual (System)
O&M	Operation and Maintenance (Manuals)
PDS	Premises Distribution System
RF	Radio Frequency
TV	Television
UON	Unless Otherwise Noted
UPS	Uninterruptible Power Supply

1.2.3 Additional Terms

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

Attendant	The person that is operating a master station.
Audio Call Station	Stations with voice intercom capability where patients or staff can originate calls. Includes patient stations, staff stations, and duty stations.
Call	Communications between patients and caregivers, and among caregivers, that are transmitted through the NCAV System and interconnected supplementary systems. Call communications modes for the NCAV System include alert tones, visual indicators, voice intercom, and digital display of alphanumeric data and text messages.
Caregiver	A person who is directly involved in the care of patients.
Pager	Radio Page Receiver.
SideCom	Registered trademark of the Hill-Rom Company, Inc. Hill-Rom bed side rails can be equipped with a SideCom unit which incorporates controls to place a nurse call, controls for the on/off control of overbed reading and room lights, and speakers for the TV sound.
Software	Operating systems and application programs that enable a computer, or computer-based system, to function as specified. Software shall include the documentation to describe, maintain and use the programs.
System	NCAV System, UON.
System Application Design	Contractor performed systems engineering to combine and

configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy the specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.

Telecommunications Systems — All low voltage, RF and power limited Communications and Security Systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.

Telecommunications Rooms — Called Comm Rooms on the drawings. Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and devices for all telecommunications systems.

24x7 Staffed — A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the NCAV System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all the system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

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

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

Design Analysis and Calculations ; G

a. Analysis and calculations to define power supply requirements for each component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions, for power supplies that are not an integral part of the component.

b. Analysis and calculations to define the type and size of all cables connecting all system components in accordance with Manufacturers instructions and power drop calculations.

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

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms.

e. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section HSPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

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

Maintenance Service; G

For maintenance service after the warranty period, the System

Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.4.

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the NCTV System and all interfaced telecommunications systems and other systems, including the exact point and type of demarcation.

b. The layout and mounting of all NCAV equipment, and the routing and mounting of cabling in Comm Rooms and the Comm Equipment Room as coordinated with the layout of all other systems equipment in these rooms.

c. The layout and mounting of all NCAV equipment, and the routing and mounting of cabling on Nurse Station modular furniture.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

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

SD-09 Reports

Testing Reports; G

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

and conditions have been satisfied.

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

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

SD-14 Samples

Product Samples; G

Submit one sample unit of each type of station, light, and cord set for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS.

O&M Manuals shall be available on-site before the start of any training.

Software Manuals; G;

O&M manuals data shall include a software manual describing the functions of all software and including all other information necessary to enable proper loading, setup, testing, and operation.

The software manual shall include:

a. Definition of terms and functions.

b. Use of system and applications software.

c. Procedures for system installation, initialization and set-up, start-up, shutdown, migration to another computer, and DLL or driver dependencies if these exist.

d. Alarm reports.

e. Reports generation.

f. Database format and requirements for data entry.

g. Directory of all disk files.

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

Backup Software; G

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

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

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

1.4.1.2 Standard Products

The system application design shall utilize a standard, UL 1069 listed NCAV System that is the product of a Manufacturer regularly engaged in the manufacture of NCAV Systems. The system shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the BACH installation site.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Continuous Duty Design

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

1.4.1.5 Power Supply Design

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

with the design data submittal.

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

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

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

1.4.1.6 Shielding and Grounding

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

1.4.1.7 Station Connectors

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

1.4.1.8 User Room Numbers and Names

a. At the start of submittals, the Government shall furnish to the System Contractor a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

b. For multi-bed patient bedrooms, the user room number shall also identify each bed in the bedroom.

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

1.4.2 System Capability and Configuration

1.4.2.1 System Capability

Note: Refer to UL 1069 for the definition of the terms "Fundamental Operation" and "Supplemental Operation" as used herein.

The NCAV System shall communicate patient and caregiver calls for assistance and information. The NCAV System capabilities shall include the following:

a. Fundamental operation for communication of patient and caregiver calls for assistance and information, medical device alarms, and patient safety alarms, from patient care spaces and areas.

b. Supplemental operation, as an enhanced adjunct to the fundamental operation, for communication of patient ADT data, networked call routing, call logging and reporting, and system maintenance.

c. Supplemental enhanced communication of call data and messages to alphanumeric pagers carried by appropriate BACH staff.

d. Interface with the Section 16730 NURSE CALL TONE-VISUAL (NCTV) SYSTEM for integrated use by the NCTV System of the supplemental enhanced operations provided by the NCAV System.

1.4.2.2 System Configuration and Major Functional Components

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

Nurse Call (NC) Subsystems
Central Annunciator Panel Stations
Maintenance Workstation
System Network
System Servers
Intercom Voice Network

1.4.2.3 NC Subsystems

a. Subsystems. A NC Subsystem shall serve each of the patient care areas listed below for the communication of patient and caregiver calls. The Telecommunications Drawings indicate the location and zone boundaries of the patient care areas listed.

NC Subsystem Number	Zone	Patient Care Area Served
1	1-07	Emergency Service
2	2-02	L&D Unit
3	2-04	Surgery
4	2-06	Inpatient Services Unit

b. Major NC Subsystem Components.

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

Patient Stations (with Emergency Pushbutton)
Bed Interface Outlet Stations
Code Blue Stations - Adult Type
Code Blue Stations - Infant Distress Type
Device Alarm Jack Stations
Dome Lights
Duty Stations
Emergency Push Button Stations
Emergency Pull Cord Stations
Master Stations
Remote Cord Sets Outlet Stations
Staff Stations
Zone Lights

Main Terminal/Equipment Panels

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

Cord Sets: Push Button, Pneumatic, and Pillow Speaker
Cord Set Wall Brackets
UPS for ac powered equipment

c. NC Subsystem Interfaces

The system shall provide the capability, interface protocols, and interconnections as required for interfacing with the following equipment and systems:

(1) GFGI Hill-Rom Bed SideCom and Bed Exit System Functions

Interface with the GFGI Hill-Rom Bed SideCom and Bed Exit System, via the GFGI bed communications cable provides the functions listed here and further described below. Controls on the SideCom shall allow initiation of a routine patient call and on/off control of room and read lights. Speakers on the SideCom shall allow reception of TV Set remote sound. The Bed Exit System shall initiate a safety alarm call if the patient exists the bed.

Planned types of GFGI Hill-Rom beds include the Versacare VC255, the Versacare with Air VC755, and the Affinity Birthing Bed AF550.

(2) Control of Overbed Lights

Interface with the existing low voltage controller for the overbed lights at each patient bed shall allow remote on/off control of the overbed reading light from a single push button toggle switch on the pillow speaker cord set and on the GFGI bed SideCom, and remote on/off control of the overbed indirect room light from a single push button toggle switch on the pillow speaker cord set and on the GFGI bed SideCom.

(3) Patient TV Control and Sound

Interface with the Section 16781 TELEVISION SYSTEM TV Set in each patient room shall allow TV Set control and remote sound from a pillow speaker cord set, and TV Set remote sound from a GFGI bed SideCom.

(4) System Network and Servers

Each NC Subsystem shall be a node on the dedicated NCAV System network for data communication between the NC Subsystems, and for data communications with the Central Code Annunciator Panel Stations, Failure Annunciator Panel Station, Maintenance Workstation, and the System Servers for Call Logging, HIS Interface, and Radio Page System Interface.

(5) Voice Intercom Network

Each NC Subsystem shall be interfaced with the system Voice Intercom Network for full-duplex voice intercom among all NC Subsystems.

1.4.2.4 Voice Intercom Network

A voice intercom network shall provide full-duplex voice communications among all NC Subsystems. Voice intercom network components shall be located as required by the system application design.

1.4.2.5 System Network

a. An independent, dedicated system network shall connect all Major Functional Components of the system into an integrated network for system wide data communications for the functions specified in this Section. Use of the BACH HIS LAN, or any Section 16710 PDS fiber optic cable shall not be allowed.

b. The system network shall be interfaced with the BACH HIS LAN (if allowed by the BACH IMO), via the Section 16710 PDS IDF panels, for the downloading of ADT information functions as specified in this Section.

c. The system network shall be interfaced with up to five (5) BACH HIS computers, via the Section 16710 PDS IDF panels, for call logging functions as specified in this section.

d. System network equipment shall be located as required by the system application design.

e. The system network design shall use industry standard Local Area Network (LAN) or Local Operating Network (LON) technology and protocols.

f. Integrate the NCAV System network with the Section 16730 NCTV SYSTEM network for data communications of NCTV System calls to the NCAV System Central Code Annunciator Panel Station, Maintenance Station, Call Logging Server, and Radio Page System Server.

1.4.2.6 Central Annunciator Panel Stations

a. A Master Code Annunciation Panel Station for the central annunciation of all adult Code Blue and all infant distress Code Blue calls from all NC Subsystems equipped with adult or infant distress code blue stations, and all NCTV NC Subsystems that are equipped with code blue stations. The Master Code Annunciator Panel Station shall be installed in the Emergency Service Nurse Station Room 102-10 location as indicated on the Telecommunications Drawings.

b. An Infant Code Annunciation Panel Station for the central annunciation of all infant distress Code Blue calls from NC Subsystems equipped with infant distress code blue stations. The Infant Distress Code Blue Annunciator Panel Station shall be installed in the Nursery Room 212-13 of the L&D Unit at the location as indicated on the Telecommunications Drawings.

c. A Failure Alarm Annunciator Panel Station for the central annunciation of all failures shall be installed in the Alarm Monitor Room 141-10 at the location as indicated on the Telecommunications Drawings.

1.4.2.7 Maintenance Workstation

A computer workstation for remote monitoring and troubleshooting of failures throughout the system, and for down loading and installation of software upgrades from the Manufacturer. The Maintenance Workstation shall

be installed in Room 140-09 and located as indicated on the Telecommunications Drawings.

1.4.2.8 System Servers

a. One or more servers, connected as nodes on the system network, shall be provided as required by the system application design for the following functions:

(1) Call Logging Server. Provides the central database for all call logging data from all NC Subsystems, and the data interface with up to five (5) BACH HIS computers to allow the HIS computers to access call logging data and reports.

(2) HIS Server. Provides an HL7 data interface with the BACH HIS for the downloading of patient ADT data from the CHCS to all NC Subsystems.

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

b. Each system server shall provide the protocols and interconnections as required for each specified interface function.

c. All servers shall be installed in Comm Room 217-29.

1.4.3 Performance Requirements

1.4.3.1 NC Subsystems Functions and Features

a. Communication of calls for assistance and information, medical device alarms, and patient safety alarms.

(1) Patient safety alarm calls are from the interfaced GFGI Bed Exit System.

(2) Call features shall be as specified herein.

b. Within each patient bedroom, operate and listen to the sound from the patient TV Set via a hardwired interface with the TV Set. This function shall utilize the control and speaker features of both the connected pillow speaker and bed SideCom simultaneously. The TV sound shall be muted during any voice intercom call.

c. Within each patient bedroom, on/off control of the overbed reading light and indirect room light. On/off control shall use a single push button toggle switch for the reading light, and a second single push button toggle switch for the indirect room light.

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

1.4.3.2 Voice Intercom Features

a. Master stations and audio call stations shall be equipped for voice intercom. Audio call stations include patient stations, staff stations, and duty stations.

b. Voice intercom shall be full-duplex to provide clear and distinct bi-directional, simultaneous two-way communications between the calling and answering stations throughout the system. Simplex talk/listen intercom systems that utilize voice activated (VOX) or other switching circuits that permit transmission in only one direction at a time, or which may clip portions of a two-way conversation, shall not be permitted.

c. Audio Call Stations: These stations shall provide a full-duplex intercom with the serving master station. The audio call station microphone shall be whisper-sensitive capable of picking up very soft-spoken conversations from anywhere in the room. The audio call station speaker shall be of permanent magnet design, of sufficient quality to provide low distortion voice reproduction anywhere in the room at reasonable volume levels.

d. Master Stations: Master stations shall be equipped with a telephone style handset with a self-coiling cord and cradle assembly with built-in hookswitch. The handset shall provide a natural, full-duplex, uninterrupted voice intercom with all audio call stations and master stations in the system. No voice activated switching or push to talk circuitry shall be permitted at the master station. The handset earpiece volume shall be adjustable. Master Stations shall include the capability to plug-in and utilize a headset in place of the handset. The headset shall include a noise canceling microphone, ear cushions, and a volume control, and shall provide the same quality natural, full-duplex voice intercom as provided by the handset. The headset shall be fully adjustable to fit the attendant.

e. A separate, system wide, full-duplex voice intercom path shall serve as a voice communications network among all NC Subsystems.

1.4.3.3 Call Types and Points of Origin

The NCAV System shall communicate the call types defined below from the noted points of origin.

a. Patient Routine Call. Patient call for routine assistance that is originated from a call cord or bed SideCom attached to a patient station. This may include voice intercom between the patient station and the master station handling the call.

b. Patient Priority Call. Patient call for priority assistance that is originated from a call cord or bed SideCom attached to a patient station that has been programmed for the patient priority call type. The patient priority call type is used to accommodate patients that cannot adequately communicate, or who require immediate assistance because of their medical condition. This may include voice intercom between the patient station and the master station handling the call.

c. Cord Disconnect Call. Disconnect of a call cord set from a patient station or a remote cord sets outlet station.

d. Bed Disconnected Call. Disconnect of the bed SideCom communications

cable from the bed interface outlet station.

e. Emergency Call. Patient or caregiver calls for emergency assistance from a patient station, emergency push button station, emergency pull cord station, or staff station that is equipped with an emergency push button.

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

g. Infant Distress Code Blue Call. Caregiver calls for infant distress code blue assistance from an infant distress code blue station.

h. Medical Device Service Alarm Call. Alarm calls from a medical device attached to a device alarm jack station indicating that the attached medical device needs service. This may be a routine priority level call or an emergency priority level call depending upon which jack the medical device is attached to.

i. Bed Exit Alarm Call. Alarm calls from a GFGI Hill-Rom Bed Exit System attached via the bed communications cable to the bed interface outlet station indicating that the patient has exited the bed.

j. Voice Intercom Call. A voice intercom call from a patient station, staff station, or duty station, to the master station handing the calls from the patient care area. Also, a voice intercom call from a master station to any other master station, and to any audio call station within the patient care area served by the master station.

k. Service Dispatch Call. When an attendant at a master station verbally responds to a patient or caregiver call via voice intercom with the caller, and determines that a caregiver needs to go to the calling location to perform a service, the attendant can initiate a service dispatch call that shall automatically route an alphanumeric service message to the pagers carried by the required caregivers indicating the specific type of assistance that is needed at the patient care location.

l. Information Message Call. Using a standard computer keyboard that is part of the master station, an attendant can manually originate a free form plain English alphanumeric text message, and dispatch it for transmission to pagers carried by on-duty staff.

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

1.4.3.4 Call Annunciation Modes

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

b. When a call is placed from any call station, including patient stations, adult code blue stations, infant distress code blue stations, device alarm jack stations, emergency stations, duty stations, or staff stations, a call assurance indicator lamp on the station shall illuminate to indicate that the call has been registered on the system. Also, when a call is placed from a pillow speaker or bed SideCom, a call assurance indicator lamp on these devices shall illuminate. This call assurance lamp

shall remain illuminated until the call is cancelled.

c. On dome lights and zone lights, a variety of colored lamps with steady or flashing illumination shall provide clear and absolute distinction between call priority levels. Visual call indications on zone lights shall be absolutely identical to the visual call indications on dome lights for each call type. The dome light for any patient toilet room that opens into a procedure room shall be equipped with an electronic call alert tone device that shall sound when a call is initiated.

d. On master stations:

(1) A call alert tone shall sound.

(2) The LCD monitor shall digitally display alphanumeric data and text message information identifying the call type, call origination room/bed, associated patient data, associated caregiver duty assignment data, and associated radio pager assignment data. The user room name/number shall identify the call origination room.

(3) Call data, information and status shall remain displayed on the monitor until the call is canceled.

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

f. On duty stations, LED lamp(s) with steady or flashing illumination shall indicate calls by the call priority level, and sound an alert tone. If multiple call indicator lamps are provided, the call indication patterns shall be identical to the call indication patterns on dome lights.

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

h. On pagers, an alert tone or vibration shall activate, and an alphanumeric data and text message shall indicate the identification of the room/bed where the call originated, and the call type. For routine calls that have first been answered by an attendant, the pager shall also indicate a service dispatch message that has been sent by the attendant. The user room name and number shall identify the call origination room/bed.

i. The alert tones and visual indication displays for all types and priorities of calls shall continue until the call has been answered and canceled. Except for routine calls, all calls shall be canceled at the originating call station. Routine calls can be canceled at either the originating station or the answering master station.

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

1.4.3.5 Call Annunciation Priorities

a. The annunciation of call types shall be sequenced in a four level priority rank order, from a high of Number 1 to a low of Number 4, as listed below.

Priority Level	Call Type
#1 Code	Adult Code Blue Infant Distress Code Blue
#2 Emergency	Emergency Bed Exit Alarm Medical Device Emergency Alarm Failure Alarm
#3 Priority	Patient Priority Call Cord or Bed Cable Disconnected
#4 Routine	Patient Routine Medical Device Routine Alarm Voice Intercom - Staff and Duty Stations

b. The system shall simultaneous process all calls regardless of the priority. However, when several different priority calls are present on the system at any one time, the highest priority call shall take precedence over lower priority calls.

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

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

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

1.4.3.6 Call Routing

Call routing throughout the system shall be software programmable to provide the selectable call routing defined below. All patient data and caregiver data associated with any call shall automatically accompany the call routing.

a. Call Routing - Dome Lights

All call types from any call station within a patient care room or cubicle shall annunciate on the dome light(s) located outside the entry into the

room or cubicle. Calls from patient toilet/shower rooms off of a patient bedroom shall annunciate on the dome light located outside the entry into the patient bedroom.

b. Call Routing - Zone Lights

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

(2) The Zone Light Activation Matrices at the end of this Section lists the identification (ID) number of all zone lights indicated on the Telecommunications Drawings, and relates these to the patient care rooms where calls are originated that activate the zone lights.

c. Call Routing - Master Stations

Master station features shall provide the attendant with the selectable call routing defined below. This shall include the routing of voice intercom between any master station and any audio call station.

(1) A default call routing scheme within each patient care area shall be established for calls between each call originating station and the master station(s) in a NC Subsystem. If there is more then one master station in a NC Subsystem, then the default call routing to each master station shall be user defined and approved by the Contracting Officer.

(2) Any call from any call originating station can be selectively routed to, and answered from, any master station in any NC Subsystem throughout the entire integrated NCAV System.

(3) Any one master station in any NC Subsystem shall be able to handle any combination of calls, or all of the calls, from any call originating station in any NC Subsystem.

(4) Any combination of master stations throughout all NC Subsystem can be programmed to operate in a parallel mode. In this parallel mode, all calls that would normally be routed to a master station shall now be routed to all master stations in the parallel mode at the same time. The parallel mode can be either a default setting or an attendant selectable mode at any master station.

(5) An attendant at any master station shall be able to perform a selective call capture function whereby any call originating station that has been default programmed for call routing to any other master station shall be rerouted to the capturing master station. The attendant shall be able to selectively capture single rooms, groups of rooms, or all the rooms that have been default assigned to another master station. The rerouting of calls from any room shall include all associated patient and caregiver data that has been programmed for the room, including caregiver duty assignments.

(6) Master stations that have relinquished reception of calls to another master station via the call capture function shall retain the capability to originate radio pages.

(7) An attendant at any master station shall be able to recapture calls from any NC Subsystem or any call station that has been captured by another master station by performing a selectable recapture function.

d. Call Routing - Code Annunciator Panel Stations

(1) All adult code blue and infant distress code blue calls from all NC Subsystems that are equipped with adult code blue stations or infant distress code blue stations shall be routed to a central Master Code Annunciation Station in addition to the normal local annunciation on a master station.All code blue calls from the Section 16730 NURSE CALL TONE-VISUAL SYSTEM shall be routed to the NCAV central Master Code Annunciator Panel Station.

(2) All infant distress code blue calls from all NC Subsystems that are equipped with infant distress code blue stations shall be routed to a central Infant Distress Code Blue Annunciation Station in addition to the central Master Code Annunciator Panel Station and the normal local annunciation on a master station.

e. Call Routing - Duty Stations

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

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

f. Call Routing - Call Logging Server

All call data from throughout the entire system, and the Section 16730 NCTV SYSTEM, shall be routed to the call logging database in the Call Logging Server. This call logging database can then be accessed from up to five(5) HIS computers that have been interfaced with the NCAV system network as coordinated with the BACH Information Management Office (IMO) and authorized by the Contracting Officer. Call logging application programs for accessing the call logging data base and for generating call data reports shall be installed and set-up on the designated HIS computers.

g. Call Routing - Failure Alarm Annunciator Panel Station

All failure alarm calls from all Major Functional Components of the system shall be locally indicted and also routed to the Failure Alarm Annunciator Panel Station.

h. Call Routing - Maintenance Workstation

All failure alarm calls from all Major Functional Components of the system shall be routed to the Maintenance Workstation.

i. Call Routing - Radio Paging Server and Paging

All calls, including failure alarms, from throughout the entire system shall be routed by selectable duty assignment programming to radio pagers via the Radio Page Server.

j. Call Routing - C-Section Room

In addition to the normal local call routing within the NC Surgery Subsystem, code blue and emergency calls from the Surgery C-Section Room 211-01 shall be routed at all times from the Surgery NC Subsystem to the L&D Unit NC Subsystem master station. All calls from the C-Section Room can be programmed for routing to the L&D Unit master station.

k. Call Routing - Operating Rooms 1 and 2, and Endo Room

Calls shall be normally routed to the master station in OR Central Control.

l. Call Routing - Surgery Prep/Hold/Recovery and Anesthesia Areas

During normal hours calls from these areas shall be routed to the master station in the Prep/Hold/Recovery area nurse station. After hours calls from this area can be programmed for routing to the Inpatient Services Area.

1.4.3.7 Call Processing Rates

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

b. The total elapsed time between the initiation of a call from a call station to the input of that call to the Section 16755 RADIO PAGE SYSTEM shall not exceed four (4) seconds.

1.4.3.8 Radio Paging

a. The system shall be interfaced with the Section 16755 RADIO PAGE SYSTEM so that calls can be manually or automatically transmitted to alphanumeric text pagers carried by the on-duty staff.

b. Information transmitted from the system to the Radio Page System and received by the radio pagers shall include the following alphanumeric data: call type, call priority, call origination point, call service message, and date and toime stamp. The radio pagers shall be able to receive and annunciate all call information as described below.

(1) Pagers shall have two distinct alert tones, one for routine and priority calls, and one for emergency and code calls. If the pager vibrator alert mode is used, there shall be no alert distinction between different priority calls.

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

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

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

d. The master stations in each NC Subsystem shall provide the capability to input, store and transmit at least 48 preprogrammed alphanumeric text

service messages for each NC Subsystem. Preprogrammed service messages can be added, changed or deleted, at any time prior to or after system activation, from any master station computer keyboard with a security log on procedure. These preprogrammed messages shall be accessible from any master station where one of the messages can be selected and linked to a call for transmission to a pager or group of pagers.

Typical examples of preprogrammed service messages are as follows:

BEDPAN REQUEST	DIZZINESS	NAUSEATED
BEDPAN REMOVAL	DRESSING CHANGE	PAIN MEDICATION
BLEEDING	IV PROBLEM	SLEEPING PILL
BREATH SHORTNESS	LAV ASSISTANCE	WATER
CHEST PAIN	MEAL ASSISTANCE	

Just prior to System Commissioning, the System Contractor shall coordinate with the BACH user the exact preprogrammed service messages to be installed by the System Contractor in the NC Subsystem for each patient care area.

e. Each master station shall provide the input capability for manual keyboard entry of alphanumeric text messages. This shall allow normal computer type keyboard entry of alphanumeric text messages that can be linked to a call for transmission to a pager or group of pagers, or transmitted directly to a specific pager without any link to a call on the system.

f. Duty assignments shall be programmed for each individual caregiver and each individual room/bed call origination point. Such caregiver duty assignment programming shall be entered from the master station(s) in the patient care area where the duty assignment is made. Programming that only allows duty assignment by zones or groups of rooms is not acceptable. Call capture functions shall include transfer of caregiver duty assignments along with the patient data.

g. Typically, duty assignment data programming shall occur at the start of each work shift. The data shall correlate the pager assigned to a caregiver with the caregiver name, and with their unique duty assignment by individual room/bed, level of care and work shift. The data shall also contain group pager numbers.

h. Caregivers can be assigned to a radio page group whereby all assigned members of the group shall simultaneously receive the same message. Groups shall be established with a single address/number per group for team response to calls such as emergency or code.

i. Duty assignments shall include primary and backup assignments. The primary assignment shall initially route calls to the caregivers primarily responsible for responding to the call. If the call has not been answered and canceled within a programmed length of time, the call shall be automatically transmitted a second time to the primary caregivers and the first tier backup caregivers. If the call still is not answered within a programmed length of time, the call shall then be automatically transmitted a third time to the primary caregivers and the second tier backup caregivers. Calls shall continue to be transmitted until they are answered and cancelled.

j. Any call from a patient care location can be relayed directly to the individual pager or group of pagers carried by the caregivers assigned to the call origination point and level of care on each shift. The system

shall automatically perform this direct relay function to the appropriate pagers by cross referencing each individual caregiver duty assignment data with each pager assignment, and address/number data.

k. Call relay function for all master stations shall be able to be initiated in any one of three ways.

(1) Attended, Semiautomatic Mode: When calls are being handled at a master station the attendant shall be able to relay a call to the appropriate pager by activating a transmit function while the call is still registered on the NC Subsystem. Before relaying the call, the attendant shall be able to add a service-required message of up to at least 16 characters to the call that is in addition to the room/bed number. Service messages could be any one of at least 48 preprogrammed messages or an alphanumeric text message that is manually entered from the master station computer keyboard.

(2) Unattended, Automatic Mode: When a master station is unattended, the station can be switched to an automatic transmission mode whereby all calls coming to the master station shall automatically be relayed to the appropriate pagers. The transmission shall include the room/bed number and call type.

(3) Preprogrammed, Automatic Mode: Specific call types can be programmed for automatic relay to the appropriate pagers even if the master station that normally handles the call is attended. This mode can typically include calls such as code and emergency calls, and all types of alarm and service calls. Additionally, each patient station can be individually programmed for patient priority call status whereby all patient calls shall be automatically relayed to the appropriate pager. Such automatic relayed calls shall include the room/bed number and the call type.

l. Radio pager messages can be originated from any master station. A preprogrammed or a manually entered alphanumeric text message can be originated by use of the master station computer keyboard. This can be routed via duty assignments by keying in the room/bed number, or directly to an individual or group by keying in their name or pager address number.

m. Master stations where calls have been captured by another master station in the system (call capture function) shall retain the capability to originate and transmit radio pages messages.

n. Whenever a fault is detected by the built-in fault diagnostics of the system, pagers assigned to the maintenance staff shall indicate a fault condition and the location of the faulty component.

1.4.3.9 Failure Modes, Alarms and Diagnostics

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

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

c. At a minimum, a failure alarm shall be automatically initiated by a total failure of the NCAV System, by failure of any Major Functional Component of the system, by failure of any power supply, by failure of any supervised circuit, and by failure of any circuit or component monitored by

built-in fault diagnostics.

d. If the installed system includes any other built-in fault diagnostics designed in by the Manufacturer, there shall be automatic failure alarm indications resulting from these built-in fault diagnostics.

e. Failure alarms shall be annunciated locally on the individual Major Functional Component, communicated to the failure alarm annunciator panel station and maintenance workstation, and transmitted to pagers carried by the BACH maintenance staff.

f. Overall system wide failure diagnostics, troubleshooting, and maintenance functions shall be performed from the central maintenance workstation.

1.4.3.10 System Date and Time

The date and time in any system database and/or indicated on any component of the system shall be synchronized at least once a day from a central system clock in the maintenance workstation. The central system clock shall be automatically updated for daylight saving time and leap year.

1.4.4 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

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

b. Riser diagrams shall indicate the identification number (ID) for all equipment components as shown on the Telecommunications Drawings.

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

d. Installation details for equipment and cabling that is surface mounted on the back panel of GFGI modular furniture shall include the make and model of the surface mounted boxes and wireways, and details for any mounting hardware.

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

f. Legend of graphic symbols used on all drawings.

g. Details shall indicate anchoring and bracing provided for seismic protection in accordance with the requirements of the Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

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

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

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

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and or Installer in accordance with the qualifications specified in this Section.

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

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

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

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

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

Training Personnel

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

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

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

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

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

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

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

1.5.1.2 System Contractor Qualifications

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

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

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

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

1.5.1.3 Installer Qualifications

a. The Installer shall be regularly engaged in the business of

installation of the type of system specified in this Section.

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

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

1.5.1.4 Manufacturer Qualifications

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

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

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

1.5.2 Regulatory Requirements

1.5.2.1 Products

a. NCAV System

(1) Fundamental devices and operations of the NCAV System shall be UL 1069 listed and labeled.

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

b. Wiring to Adult Code Blue Stations, Infant Distress Code Blue Stations, and Annunciator Panel Stations shall be electronically supervised in accordance with UL 1069, with any failure condition indicated at the associated master station, the maintenance station, the failure alarm annunciator panel station, and radio paged to maintenance staff.

c. UPS units shall comply with UL 1778.

1.5.2.2 Design and Installation Work

All design and installation work shall comply with UL 1069, UL 1778, NFPA 70 NEC, NFPA 99, and EIA ANSI/TIA/EIA-569-A.

1.5.2.3 Electromagnetic Interference (EMI)

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

b. Within the normal BACH environment, the installed system shall not generate nor be susceptible to any harmful electromagnetic emission, radiation, or induction that degrades, obstructs, or interrupts the

operation of the installed system, and any computer system, life safety system, or patient monitoring system in the facility.

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

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

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

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

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

1.6.2 Delivery Coordination

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

1.6.3 Loss Liability

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

1.6.4 Delivery Restrictions

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

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

1.6.5 Contractor Responsibility

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

1.7 SEQUENCING AND SCHEDULING

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

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

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

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

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS and CLOSEOUT SUBMITTALS.

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

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express shipped to BACH if not available locally within a 150 mile driving radius of BACH.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

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

1.9.1.3 Post Acceptance Spare Parts

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

Quantity	Items
50	Each type of incandescent lamp bulbs
2	Each type of NC Subsystem Station
2	Each type of NC Subsystem Light
1	Each type of UPS
10	Push Button Cord Sets
10	Pneumatic Cord Sets
6	Pillow Speaker Cord Sets
10	Dummy Plugs (if required by the system design)
2	Sets of Main Terminal/Equipment Panel plug-in modules

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

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

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

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

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. The System Contractor shall provide an on-line diagnostic maintenance support capability as specified herein.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor

malfunction.

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

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

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

Nurse Call (NC) Subsystems
Central Code Annunciator Panel Stations
Maintenance Workstation
System Network
System Servers

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

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

(4) Failure of any NC Subsystem master station, adult code blue station, infant distress code blue station, or emergency station.

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified or indicated on the Telecommunications Drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

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

2.1.4 Identical Products

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

2.1.5 Nameplates and Equipment Markings

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

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

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

2.1.6 Mounting Alignment Capability

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

2.1.7 Model and Enhancements

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

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

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

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

2.1.8 Software and License

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

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

c. Software maintenance that is provided to any or all other customers without charge shall be provided to the Government.

2.1.9 Equipment Design for Wet Areas

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

2.2 NC SUBSYSTEMS MAJOR COMPONENTS

2.2.1 Patient Stations

a. Flush mount units.

b. Two (2) types of patient stations as listed below. Each type shall have the required common characteristics, plus the defined additional characteristics.

Type 1: Common characteristics.
Type 2: Common characteristics plus call cord receptacles.

c. Common characteristic for all types of patient stations.

(1) A call push button switch that is clearly labeled with the term "CALL".

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

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

(4) Full-duplex intercom as specified herein, including microphone and speaker.

(5) An LED call assurance indicator lamp.

d. Additional Type 1 patient station characteristics.

(1) Circuitry for interface with a patient TV set, including automatic muting of TV audio during call voice intercom periods.

(2) Circuitry for interface with a bed SideCom for nurse call, TV sound, and bed exit alarm call, via the interconnected bed interface outlet station.

(3) Circuitry for connection of cord sets that are plugged into the interconnected remote cord sets outlet station simultaneous with the connection of a bed SideCom that is plugged into the interconnected bed

interface outlet station.

e. Additional Type 2 patient station characteristics.

(1) Cord set receptacle on the patient station faceplate that accepts any type of cord set as specified herein.

(2) If the cord set is removed from the receptacle, a disconnected call shall be initiated. Reinserting the cord set and then activating a reset switch shall cancel the call.

(3) Dummy plugs, is required by the system design, for the cord set receptacles, shall be attached with a chain to the station faceplate. If the cord set has been removed from the receptacle and the dummy plug inserted in its place, the disconnect call shall be cancelled. As an alternate to the dummy plug, fail proof built in cord out override circuitry that serves the same function as a dummy plug, is acceptable. If the alternate cord out override circuitry is provided, it shall include either an associated LED that illuminates when the override function has been activated, or an automatic override disable function when the cord has been plugged back into the system, or both.

(4) As an alternate to the Type 2 patient station, use of the Type 1 patient station with a separate remote cord set outlet station, as specified herein, is acceptable. If this alternate is implemented, the System Contractor shall provide any additional rough-in required for this alternative.

2.2.2 Bed Interface Outlet Stations

a. Flush mount units.

b. A stainless steel faceplate.

c. A receptacle for a standard bed SideCom communications cable connector.

d. If a bed SideCom communications cable is removed from the receptacle, a bed disconnected call shall be initiated. Reinserting the communication cable and then activating a reset switch shall cancel the call.

e. Dummy plugs, if required by the system design for the cord set receptacles, shall be attached with a chain to the station faceplate. If the cord set has been removed from the receptacle and the dummy plug inserted in its place, the disconnect call shall be cancelled.

f. As an alternate to the dummy plug, fail proof built in cord out override circuitry that serves the same function as a dummy plug, is acceptable. If the alternate cord out override circuitry is provided, it shall include either an associated LED that illuminates when the override function has been activated, or an automatic override disable function when the cord has been plugged back into the system, or both.

2.2.3 Remote Cord Sets Outlet Stations

a. Flush mount units.

b. A stainless steel faceplate.

c. Receptacles that shall accept any of the types of cord sets specified

herein.

d. It shall be possible to connect and operate both a pneumatic cord set and a pillow speaker cord set simultaneously.

e. If a cord set is removed from a receptacle, a cord disconnected call shall be initiated. Reinserting the cord set and then activating a reset switch shall cancel the call.

f. Dummy plugs, if required by the system design for the cord set receptacles, shall be attached with a chain to the station faceplate. If the cord set has been removed from the receptacle and the dummy plug inserted in its place, the disconnect call shall be cancelled.

g. As an alternate to the dummy plug, fail proof built in cord out override circuitry that serves the same function as a dummy plug is acceptable. If the alternate cord out override circuitry is provided, it shall include either an associated LED that illuminates when the override function has been activated, or an automatic override disable function when the cord has been plugged back into the system, or both.

2.2.4 Cord Sets

a. Three (3) types of cord sets shall be provided:
Push Button
Pneumatic
Pillow Speaker

b. Common characteristics for all types of cord sets.

(1) Fits into and operates from a receptacle on the patient station faceplate or the remote cord sets outlet station.

(2) Station connector plug includes built-in strain relief.

(3) Highly flexible cable at least 12 feet long with an integral sheet attachment clamp.

(4) Shock proof, alcohol resistant, and withstand gas sterilization without discoloration or deterioration.

c. Push button type cord sets shall be configured for placing a call by momentarily activating a push button in a plastic housing at the cable end.

d. Pneumatic type cord sets shall be configured for placing a call through very slight squeezing or pressing of a pressure sensitive pneumatic bulb at the cable end. The plug end of the pneumatic cord set shall not require any specific orientation in order to function properly when connected to the receptacle on the patient station or remote cord sets outlet station.

e. Pillow speaker type cord set shall be configured with the features listed below.

(1) A "NURSE CALL" push button for placing a routine or priority call as programmed for the associated patient station.

(2) A single "READ" push button toggle switch for on/off control of the overbed reading light, and a single "ROOM" push button toggle switch for on/off control of the overbed indirect room light.

(3) Switches for TV set control and a remote speaker for the TV set in the patient room. TV controls shall be fully compatible with the make and model of the patient TV set installed in patient bedrooms. TV controls shall include separate push button switches for each of the following TV functions: a single "TV ON/OFF" toggle push button; a channel "UP" push button; a channel "DOWN" push button; a single "CLOSED CAPTION (CC)" toggle push button; a single "RADIO" toggle push button; and a "MENU" push button.

(4) An LED call assurance indicator lamp.

f. A wall bracket that shall be wall mounted next to each patient station to hold the call end of cord sets when not in use.

2.2.5 Device Alarm Jack Stations

a. Flush mount units.

b. A stainless steel faceplate or a high impact thermoplastic material faceplate.

c. Three 6.35 mm (1/4 inch) phone jack receptacles per station to accept connectors on remote alarm signal cables from medical devices.

(1) Two jacks shall be labeled "ALARM" and shall signal a routine level device alarm call when an alarm signal is received from an attached medical device.

(2) One jack shall be labeled "EMERGENCY" and shall signal an emergency level device alarm call when an alarm signal is received from an attached medical device.

d. Attached medical devices will provide a maintained contact closure when an alarm event occurs, through which no direct current flows from the medical device. When there is no alarm event, the alarm circuit in the medical device alarm will provide a normally open contact. The medical device alarm signal will continue until the alarm condition is corrected and cancelled on the attached medical device.

e. An LED call assurance indicator lamp shall be located adjacent to each jack.

f. A dummy plug shall be provided for each jack and attached with a chain to the station faceplate.

g. If a dummy plug, or an attached cable is removed from a jack, a medical device alarm call shall be placed. Reinserting the dummy plug or cable shall cancel the call.

2.2.6 Emergency Pull Cord Stations

a. Flush mount units.

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

c. A call cancel push button switch that is clearly labeled either

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

d. An LED call assurance indicator.

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

f. Waterproof gaskets for stations installed in wet areas.

2.2.7 Emergency Push Button Stations

a. Flush mount units.

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

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

d. An LED call assurance indicator.

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

f. Waterproof gaskets for stations installed in wet areas.

2.2.8 Adult Code Blue Stations

a. Flush mount units in independent enclosures. Code blue stations that are physically part of any other call station shall not be acceptable.

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

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

d. An LED call assurance indicator.

e. Electronic supervision per 1.5.2.1.b.

2.2.9 Infant Distress Code Blue Stations

a. Flush mount units in independent enclosures. Infant distress code blue stations that are physically part of any other call station shall not be acceptable.

b. A pink color infant distress code blue push button call switch with the term "CODE" OR "INFANT CODE" located on or directly adjacent to the call switch.

c. A call cancel push button switch that is clearly labeled "CANCEL".

Alternatively, the cancel function may be a toggle of the infant distress code blue call switch.

d. An LED call assurance indicator.

e. Electronic supervision per 1.5.2.1.b.

2.2.10 Staff Stations

a. Flush mount units.

b. Full-duplex voice intercom as specified herein, including microphone and speaker.

c. A staff routine call push button switch with the term "CALL" located on or directly adjacent to the push button.

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

e. An LED call assurance indicator lamp.

2.2.11 Duty Stations

a. Flush mount units.

b. Full-duplex voice intercom as specified herein, including microphone and speaker.

c. A staff routine call push button switch with the term "CALL" located on or directly adjacent to the push button.

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

e. An LED call assurance indicator lamp.

f. System monitor LED lamp(s) to indicate calls on the system.

g. An electronic alert tone device.

2.2.12 Dome Lights

a. Flush mount units

b. Two (2) configurations:

Type 1: Light only
Type 2: Light with an electronic alert tone device

c. Indicator lamps and color filters for each type of call, with heat resistant barriers between multiple lamps. All indicator lamps shall be electronically supervised.

d. Where required, the dome lights shall include an electronic alert tone device. The alert tone device may be integral to the dome light or a separate unit mounted within the dome light enclosure.

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

2.2.13 Zone Lights

a. Flush mount units.

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

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

2.2.14 Master Stations

a. Each master station shall be configured with a LCD touch screen monitor, computer type keyboard, full-duplex voice intercom with handset and plug-in headset, and all software for master station operation as required by the specified performance and the system application design. If the master station is locally ac powered, then a UPS is required.

b. Equipped capacity of each master station shall correspond to the maximum system application design capacity of the total system.

c. The LCD touch screen monitor shall indicate all programming, functional and transaction data.

(1) Data shall include call room/bed data, call priority level, calls pending, call reminder data, patient data, call elapsed time, service dispatch data, caregiver duty assignment data, caregiver pager assignment data, and pager preprogrammed and manually entered text service messages, operational mode, patient care area programming data, and system failure diagnostics data.

(2) At least 4 calls shall be simultaneously viewable on the monitor screen. All other active calls that are not simultaneously viewable on the monitor screen shall be available for viewing by use of a screen scrolling function.

(3) The LCD touch screen monitor shall have a 432 mm (17 inch) minimum diagonal trade size.

d. At least two full-duplex voice intercom paths as specified herein for voice communications as follow:

(1) Non-blocking intercom path for local voice intercom between the master station and all associated audio stations being served by the master station. This shall include all captured call stations.

(2) Non-blocking system wide voice intercom network for voice communications among all master stations in the system.

e. Attendants operating a local NC Subsystem and any other captured NC Subsystem shall be able to:

(1) Program and review patient priority call status of each patient

station.

(2) Initialize, review and update all programmable system features, variable data, caregiver duty assignment data, pagers assignments, and patient data.

(3) Program and select call routing.

(4) Bypass the normal call sequence and manually answer calls in any order.

(5) Dispatch a patient call with an added service message to pagers.

(6) Manually initiate alphanumeric text messages directly to pagers.

(7) Have full-dedicated use of all system features and voice intercom paths.

(8) Select operating modes.

f. Whenever a fault is detected by the built-in electronic supervision or the fault diagnostics in a NC Subsystem, the fault type and location data shall be displayed on the master station video monitor and automatically forwarded to the maintenance workstation, the failure alarm annunciator panel station, and to pagers carried by the maintenance staff.

2.2.15 Main Terminal/Equipment Panels

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

b. Any of the logic or programming features specified below for the main terminal/equipment panel may be provided as part of the master station if this is the standard product design of the system.

c. Equipment shall provide control, switching, logic, memory, programming, timing, signaling, voice intercom, power and interconnection circuitry as required for the patient care areas served. All functions may be implemented through hardware and/or software.

d. Equipment shall be of modular construction with all components as plug-in modules. Equipment components may be housed in one or more cabinets.

e. System shall operate at or below 30V level, with overload and electronic short circuit protection for primary and secondary circuits.

f. Interruption or loss of ac line power, or the failure of a power supply shall not cause loss of any stored programs that control operation or user programmed features, and any call registered prior to loss of power. When power is restored, all normal operations shall continue and all registered calls and associated signals automatically restored.

g. A UPS shall automatically provide at least 30 minutes of full load uninterrupted power within 4 milliseconds of an ac power failure. Batteries used in the standby power supply shall be maintenance free, completely sealed, and continuously recharged during normal operation.

Power calculations shall be included with the design data submittal to verify power requirements.

h. Electronic supervision circuitry shall activate a failure alarm call in the event of a station or line failure, power supply failure, total NC Subsystem failure, and any system network interface failure. Other diagnostic circuitry that is a standard part of the installed system shall be provided. The failure alarm call shall be communicated to a master station connected to the panel, to the failure alarm annunciator panel station, to the maintenance workstation, and to pagers carried by the maintenance staff.

i. System network interface circuitry, software and ports as required to communicate data/information for the central code annunciation functions, call logging functions, maintenance functions, HIS interface functions, and radio page interface functions.

j. Failure diagnostic circuitry for remote failure diagnosis.

k. Equipped capacity for each patient care area shall provide for at least a 25 percent expansion in the installed quantity of call points in the patient care area, with a minimum of four expansion call points, whichever is greater. These call points shall include all patient stations, staff stations, duty stations and any other type of call station that operates from the panel.

2.3 CENTRAL ANNUNCIATOR PANEL STATIONS

a. Surface mount units.

b. Three (3) applications.

(1) A Central Code Annunciator Panel Station shall annunciate all adult code blue and infant distress code blue calls from throughout the entire system until they are canceled at the call origination point.

(2) A Central Infant Distress Code Blue Annunciator Panel Station shall annunciate infant distress code blue calls from throughout the entire system until they are canceled at the call origination point.

(3) A Failure Alarm Annunciator Panel Station shall annunciate all failure alarms from throughout the entire system until they are canceled by corrective action for the failure.

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

d. Visual Indicator Display

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

(2) The font size of the alphanumeric text call information displayed shall be large enough, and have sufficient contrast, that a person with vision corrected to 20/20 shall be able to clearly read the display under both lights on and lights off conditions (in the workstation area) from the workstations in the area where the annunciator is located.

(3) The visual display shall either indicate all calls simultaneously, or simultaneously display at least 5 calls with a visual indicator that illuminates to indicate that there are more un-displayed calls that can be viewed by use of a manual scroll function that allows scroll one line at a time.

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

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

f. Electronic supervision of the stations to assure the annunciation of code and failure calls.

2.4 MAINTENANCE WORKSTATION

a. Hardware configuration shall include a computer, computer keyboard, mouse, video monitor, printer, and UPS.

(1) The computer hardware shall include on-line storage capacity for one years data, high speed modem, network interface card, and input/output drives as required for setup programming, date archiving, and maintenance.

(2) A 432 mm (17 inch) trade size LCD monitor.

(3) A laser printer with a print rate of at least six pages per minute, and a paper tray that holds at least 250 sheets of paper.

(4) UPS as specified herein.

b. Software application programs shall be provided as required to allow on-line system wide maintenance functions, troubleshooting and failure diagnostics, on-line data communications, data and time synchronization for all NCAV System and NCTV System components, and modem dial-up.

c. A multitasking operating system with a windowing environment shall allow continuous on-line, real time collection and storage of failure data in the background while simultaneously performing maintenance procedure, troubleshooting and printout tasks in the foreground. Security log on and password features are required.

d. The workstation shall provide a modem connection to the telephone system for the functions listed below. A contract for a commercial ISP service shall be provided from the start of system readiness checks and continuing throughout the testing and warranty period.

(1) Under log on and password control features, the Manufacturer or NCAV System Contractor can establish a dial-up connection into the system and remotely perform troubleshooting routines throughout the system in order to identify the cause of a failure.

(2) Correct software problems.

(3) Download software upgrades from the system Manufacturer.

2.5 SYSTEM NETWORK

a. The SYSTEM shall be a dedicated network for the NCAV System. Except for interface functions as specified herein, use of the BACH HIS LAN is not acceptable.

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

c. The system network shall use network cables that are standard for the networking technology used.

d. The system network shall be fault tolerant and include network administration with alarms that indicate any failures which would prevent the transmission of code calls, and radio paging data. The alarms shall be indicated on the failed system network hardware and transmitted to the Maintenance Workstation, the Failure Alarm Annunciator Panel Station, and to pagers carried by maintenance staff.

e. Equipment shall be rack mounted in a wall cabinet or open floor relay rack as specified herein.

2.6 SERVERS

2.6.1 General

a. One or more system servers shall be provided as required by the system application design, and connected to the system network.

b. Each server shall include a server computer, computer keyboard, video monitor, mouse, UPS, and software. A KVM switch can be used to share the computer keyboard, monitor and mouse amongst multiple servers in the same location.

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

(2) A 381 mm (15-inch) trade size LCD video monitor.

(3) UPS as specified herein.

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

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

e. All data communication across any interface shall be delayed no more than 250 ms.

f. Equipment shall be rack mounted in an open floor relay rack as specified herein.

2.6.2 Call Logging Server

a. Physical connection, protocol, and data communications as required for

collecting and processing call logging data from the entire system and the Section 16730 NCTV SYSTEM.

b. Interface, via the system network, with authorized BACH HIS computers so that the call logging function can be accessed from the computers. The interface shall include security controls for screening and limiting access to this database by appropriate staff.

c. Patient call data that is collected, processed, and stored shall include:

(1) Patient data that is in the system, including the patients name, sex, and age.

(2) Room/bed number where the call originated.

(3) Call type.

(4) Date and time each call is placed, answered at the master station, sent to the Radio Page System, transmitted by the Radio Page System, set on service reminder, and call canceled.

d. Software application programs shall allow sorting of all call data by any parameter, generation of call reports of any sorted data, and printout of call data by any parameter, any patient care area, and globally for the entire system.

e. The server shall provide on-line storage capacity for at least 1 year of logging data.

f. The server shall provide the hardware and software for archiving of data on a periodic basis.

g. The NCAV System shall be interfaced with the Section 16730 NURSE CALL TONE-VISUAL (NCTV) SYSTEM for call recording and reporting for the specified NCTV system.

2.6.3 HIS Server

a. Physical connection, protocol, and data communications as required for interfacing with the BACH HIS. Define as part of design data submittal.

b. The HIS Server shall receive ADT information from the BACH HIS CHCS. The server shall provide any filtering of ADT data required for use by the system.

c. The HIS Server shall be 100 percent compatible with the interface requirements of the BACH HIS CHCS.

2.6.4 Radio Page Server

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

b. Capacity for at least 500 pager addresses.

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

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

2.7 UPS

Each UPS required for the system shall have the following characteristics:

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

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

c. Upon an ac power line outage, the UPS shall automatically transfer to battery power within 4.2 milliseconds of sensing ac power line loss, and provide at least 30 minutes of full power for operation of the equipment connected to the UPS. On-battery output voltage shall be 115 VAC, +/- 5 percent.

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

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

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

g. UPS units in Comm Rooms shall be configured for rack or cabinet mount.

2.8 SYSTEM CABLING

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

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

c. LAN UTP cables shall be Category 6 cables, conforming to ANSI/TIA/EIA-568-B and ANSI/TIA/EIA-568-B.2-1 standards for the Category of unshielded twisted pair (UTP). LAN fiber optic cables shall conform to ANSI/TIA/EIA-568-B and to ICEA S-83-596 standards.

2.9 EQUIPMENT MOUNTING RACKS AND CABINETS

a. System network, Server, and UPS equipment located in Comm Room shall be mounted in either floor racks or wall mounted cabinets.

b. Floor mounted open frame equipment racks shall be welded steel relay

racks with uprights to mount equipment 480 mm wide. Uprights shall be 75 mm deep channel, 32 mm wide, drilled and tapped 12-24 in a 13 mm pattern. Racks shall be provided with a standard top crossmember, and predrilled base plate to allow floor fastening. Racks shall be constructed of the heaviest gauge steel commercially offered by the approved manufacturer. Racks shall be painted semi-gloss gray or black. All racks in the facility are to be of the same color and finish. Rack height shall be as required by the system application design.

c. Wall mount cabinets shall be swingout type with a hinged front panel and hinged center section to allow easy access to both the front and rear of equipment mounted in the center section of the cabinets. Cabinets shall be constructed of the heaviest gauge steel commercially offered by the approved manufacturer, and shall be prime painted and finished in a durable finish. The center section shall have perforated vents on the side panels, and be equipped with adjustable, front to rear mounting rails tapped with 10-32 holes on standard EIA 483 (19 inch) spacing. The rear section shall knockouts on the top and bottom surface panels.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of Comm Rooms are identified on the Telecommunications Drawings.

c. All flush and ceiling mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or

plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

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

3.2.3 Electrical Power and Grounds

a. Existing electrical power on the emergency critical branch circuit has been provided by the facility construction project at a power junction box in Comm Rooms for system central equipment, and at a power receptacle adjacent to each master station, the system maintenance station, the code blue annunciator panel station, and the failure alarm annunciator panel station. Reference the facility construction project Electrical Drawings for details.

b. Existing grounding buss bars have been provided as indicated on the Telecommunications Systems Drawings. Reference the facility construction project Electrical Drawings for details.

c. If any new electrical power circuits are required, the Telecommunications Systems Contractor shall define and submit the new power requirements to the Contracting Officer, who will coordinate the change with the existing Facility Contractor.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and

room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interfaces and Interconnections

a. Coordinate and define the details of all interfaces and interconnections with other systems and equipment as specified herein. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of Drawings and Data submittals.

b. Interfaces and interconnections shall include:

Low Voltage Controller for Overbed Lights
Patient TV Sets
Hill-Rom SideCom and Bed Exit System
NCTV System Network
Radio Page System Encoder/CPU
BACH HIS - for ADT download
BACH HIS Computers - for Call Logging Network
BACH Telephone System

3.3.3 Call Routing

Obtain/verify the call routing requirements, including default settings.

3.3.4 Application Programming

Gather user data required to adequately program the system and set-up any unique functions as required by the system application design.

3.3.5 Planning Data

Gather data required to develop all required plans, including testing and training plans.

3.4 INSTALLATION

3.4.1 General

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

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

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

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

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

f. Provide surface mount metal wireways and boxes for master station outlets that are required to be surface mounted on the backpanel of GFGI free standing modular furniture, as indicated on the Telecommunications Drawings.

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

h. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

3.4.2 Equipment Installation

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

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

c. The system network, server, and UPS equipment housed in Comm Rooms shall be rack mounted. Under no circumstance shall any of this equipment be mounted on the floor.

d. Master station equipment that does not require attendant access for programming or call activities (such as the CPU and UPS) shall be wall mounted in a protected area under the counter top at the master station location. If the under counter mounted equipment can be kicked and damaged by staff sitting at the counter, then a protective shield shall be provided for the equipment.

e. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project.

f. Mounted equipment shall be firmly secured in place, plumb, square, and level.

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

h. Equipment mounting shall comply with the seismic bracing and anchorage requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

3.4.3 System Cabling Installation

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

b. All cables and the installation of cables shall be in accordance with NFPA 70 NEC.

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

d. System cabling shall be installed in cable trays, conduits and boxes.

e. Coordinate the system cable routing with the cable routing of other

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

f. Certify that system cable that are installed in the existing communications systems cable trays along with the cables from other systems shall not adversely affect the performance of this system or any other project system.

g. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

h. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

i. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

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

3.5 APPLICATION

3.5.1 AC Power Connections

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

3.5.2 Zone Lights

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

b. Zone lights shall be programmed to indicate calls from patient care calling rooms as indicated in the attached Zone Light Activation Matrices

3.5.3 Installation Setup

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

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

b. Time and date setup.

c. Default call routing for patient care areas that have multiple master stations.

d. Setup and default settings for system networking, and for interfaces with the BACH HIS ADT module, separate interface with BACH HIS computers for call logging reports, and the Section 16755 RADIO PAGING SYSTEM.

e. Preprogrammed pager service messages for each patient care area.

f. Default duty assignments, including primary and backup assignments.

g. Default pager listing and assignments.

h. Display layout configuration for systems that show a graphic representation of the patient care area floor plan on each master station monitor.

3.6 INSPECTION,TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

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

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

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

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

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, system readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

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

3.6.2 Periodic Inspection and Testing

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

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

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready

for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

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

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

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

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements, system application design, and user setup requirements for the system. Each system operating mode shall be demonstrated to perform as required by operation of each individual system component under normal or simulated normal system conditions.

b. Testing shall include, but not be limited to, the following tests to demonstrate all requirements:

(1) Operation under ac power failure conditions. Include demonstration of UPS capability under normal power loading conditions, and operation under emergency power conditions.

(2) Signal quality under worst-case loading conditions of low voltage power supplies. Demonstrations shall include: no perceivable dimming of indicator lamp intensity, and no change in intercom voice quality.

(3) Operation of electronic supervision circuitry.

(4) Operation of 100% of all components used by the staff and patients in all modes of operation demonstrating that all functions and the proper sequence of events occur with each call.

(5) All interface functions.

(6) All system network and server operation.

(7) Full duplex voice intercom capability, quality and sensitivity.

(8) Call routing.

(9) Full capability of all application programs.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as necessary to demonstrate compliance with all requirements to the Contracting Officer.

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

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

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

3.6.7 Warranty Period Inspection and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

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

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified demonstration and training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting

Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to the BACH staff in accordance with the approved Training Plan.

3.7.2 General Preparations

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

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated BACH staff in the operation and maintenance of the provided system.

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

3.7.4 Training Instructions

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

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

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

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

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

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

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

c. Each course shall include classroom training and field training. Field training for BACH staff shall take place in the area where the staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

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

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

3.7.7 User and Operational Staff Training

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

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system is installed and accepted by the Government, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

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

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

c. Nine (9) months after the system is installed and accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided at the Manufacturer's factory. Training shall include comprehensive instruction for complete setup,

operation, maintenance and repair of the system, including the theory of operation, software installation and setup, maintenance programs, failure diagnostic programs, troubleshooting and repair. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training for factory certification as a maintenance technician.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 NCAV System

a. Provide a complete and operational NCAV System as specified in this Section, as indicated on the Telecommunications Drawings, as required by the system application design, and as further defined below.

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

3.11.2 Indicated Items

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

3.11.3 Main Terminal/Equipment Panels

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

3.11.4 UPS

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

3.11.5 Software

a. Provide all software programs as required for all specified capabilities and performance, and pertinent software manuals. Include all operating systems, utility programs, application programs, and a complete set of backup software.

b. Provide Call Logging application software for installation on up to five (5) BACH HIS computers, in coordination with the BACH IMO..

3.11.6 Cord Sets and Wall Brackets

a. Furnish one (1) pillow speaker cord set for each patient station that is located in a patient bedroom equipped with a patient TV Set.

b. Furnish one (1) push button cord set for each patient station that is located in a patient care room which in not equipped with a patient TV Set.

c. Furnish pneumatic cord sets for 25% of all patient stations.

d. Provide one (1) cord set wall bracket for each patient station.

3.11.7 System Network

a. Provide all system network hardware, software and cabling as required by the system Manufacturer and the system application design. All system network equipment shall be installed in Comm Rooms.

b. Interconnect the system network with the BACH HIS LAN at a demarcation point on the Section 16710 PDS IDF panel in Comm Room 217-29, as coordinated with the PDS Contractor and the BACH IMO.

3.11.8 System Servers

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

b. The Telecommunication Drawings indicate space in Comm Rooms that has been designated for the installation of system equipment.

c. As required by the system application design, furnish and install the type and quantity of system servers in Comm Room 217-29. All servers shall be rack mounted.

d. Interface the HIS Server with the BACH HIS ADT program.

e. Interconnect and interface the Call Logging Server with designated BACH HIS computers, and install call logging application software on the HIS computers.

f. Interconnect and interface the Radio Page Server to an input port on the Section 16755 RADIO PAGE SYSTEM in the Comm Equipment Room 424-01, as coordinated with the Radio Page System Contractor.

3.11.9 Pagers

Pagers shall be furnished by the Section 16755 RADIO PAGE SYSTEM. Coordinate pager specifications with the radio page System Contractor. Obtain required number of pagers, as defined by the user, from the

Contracting Officer.

3.11.10 Product Samples

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

3.11.11 TV Interface Interconnection

In patient bedrooms, provide wires with 300 mm (12 inch) pigtails into the TV Outlet box for interconnect with the TV Outlet by the Section 16781 TELEVISION SYSTEM for the remote TV control and sound interface.

3.11.12 Patient Stations

a. Provide a Type 1 Patient Station in all inpatient rooms that have an associated bed interface outlet station and/or a remote cord set outlet station.

b. Provide a Type 2 Patient Station in all patient rooms or cubicles that do not have an associated bed interface outlet station and/or a remote cord set outlet station.

3.12 ZONE LIGHTS ACTIVATION MATRICES

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

b. Calls from a patient toilet room, that is entered from within a patient bedroom, are consolidated with all other calls from the patient bedroom and are therefore not indicated separately on the matrices.

-- End of Section --

ZONE LIGHTS ACTIVATION MATRIX

NCAV SUBSYSTEM 1: EMERGENCY SERVICE

CALL		ZONE LIGHTS								
FROM	ROOM	101-06	101-06	102-12	102-12	108-01	108-01	108-03	108-06	108-06
ROOM	ID#	A03	A08	A01	A05	A01	A02	A01	A01	A02
102-02				X			X	X	X	
102-03				X			X	X	X	
102-04				X			X	X	X	
102-06				X			X	X	X	
102-07		X					X	X	X	
102-08				X			X	X	X	
102-09				X			X	X	X	
102-11		X					X	X	X	
102-13		X					X	X	X	
102-14		X					X	X	X	
103-04		X			X	X		X		
103-05		X			X	X		X		X
103-06		X			X	X				X
107-04			X	X			X		X	

ZONE LIGHTS ACTIVATION MATRIX																								
NCAV SUBSYSTEM 2: L & D UNIT																								
CALL	ZONE LIGHTS																							
FROM	ROOM	212-09	212-21	212-21	212-21	219-14																		
ROOM	ID#	A04	A03	A06	A10	A01																		
212-07			X			X																		
212-16			X			X																		
213-02			X			X																		
213-05		X				X																		
213-08		X				X																		
213-09		X				X																		
212-25		X				X																		
212-13		X		X		X																		
212-15		X		X		X																		
220-01		X				X																		
220-04		X				X																		
219-08		X				X																		
219-07		X			X																			
219-09		X			X																			
219-12		X			X																			
220-07		X			X																			
220-09		X			X																			
219-15		X			X																			
219-17		X			X																			

ZONE LIGHTS ACTIVATION MATRIX																							
NCAV SUBSYSTEM 3: SURGERY PROCEDURE AREAS																							
CALLING	ZONE LIGHTS																						
FROM	ROOM	210-09	210-09	210-15	210-15	210-15	211-05	210-24	210-24	210-22	218-15	218-15	218-08	218-08	218-02	218-02	217-12	217-12	217-07	217-18			
ROOM	ID#	A03	A04	A03	A02	A01	A02	A01	A02	A01	A02	A04	A01	A02	A03	A02	A02	A04	A01	A07			
209-09		X	X				X			X	X		X			X	X		X	X			
210-07		X	X				X			X	X		X			X	X		X	X			
210-10						X	X			X	X		X		X		X		X	X			
210-13						X	X			X	X		X		X		X		X	X			
211-01		X		X						X	X		X		X		X		X	X			
218-10		X			X		X	X	X	X		X		X	X			X	X	X			

ZONE LIGHTS ACTIVATION MATRIX																								
NCAV SUBSYSTEM 3: SURGERY HOLD/PREP AND POST OP AREAS																								
CALL	ZONE LIGHTS																							
FROM	ROOM	217-07	217-07	217-12	217-12	217-12	217-18	217-18	218-02	218-02	218-08	218-15												
ROOM	ID#	A01	A11	A04	A05	A06	A04	A07	A01	A03	A03	A03												
210-16					X		X		X			X												
217-01					X		X		X			X												
217-02					X		X		X			X												
217-03					X		X		X			X												
217-04					X		X		X			X												
217-05					X		X		X			X												
217-06					X		X		X			X												
217-08					X		X		X			X												
217-09					X		X		X			X												
217-10					X		X		X			X												
216-24			X		X		X		X			X												
216-27			X			X			X			X												
217-20			X			X			X			X												
217-21			X			X			X			X												
217-22			X			X			X			X												
217-23			X			X			X			X												
217-24			X			X			X			X												
217-25			X			X			X			X												
217-26			X			X			X			X												
217-17		X						X	X			X												
217-16		X						X	X			X												
217-15		X						X	X			X												
217-13		X		X				X				X												
218-03		X		X				X				X												
218-04		X		X				X				X												
218-06		X		X				X				X												
218-07		X		X				X				X												
217-27		X		X				X		X	X	X												

ZONE LIGHTS ACTIVATION MATRIX																								
NCAV SUBSYSTEM 4: IMPATIENT SERVICES UNIT																								
CALL	ZONE LIGHTS																							
FROM	ROOM	208-03	215-13	215-13	216-08	221-01	221-01																	
ROOM	ID#	A04	A01	A09	A01	A04	A13																	
208-01			X			X																		
208-05			X			X																		
208-07			X			X																		
208-08			X			X																		
208-10			X			X																		
208-11			X			X																		
216-20			X			X																		
215-01		X				X																		
215-04		X				X																		
215-05		X				X																		
215-08		X				X																		
215-15		X				X																		
215-12		X				X																		
215-16		X				X																		
215-11		X		X	X																			
221-03		X		X	X																			
221-04		X		X	X																			
221-07		X		X	X																			
221-08		X		X	X																			
216-07		X		X	X																			
222-03		X		X	X																			
222-05		X		X	X																			
222-08		X		X	X																			
222-10		X		X	X																			
223-02		X		X	X																			
223-03		X		X	X																			
223-06		X		X	X																			
217-30		X		X	X																			
217-32		X		X	X																			
217-31		X		X	X		X																	

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16755

RADIO PAGING SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Continuous Duty Design
1.4.1.5 Power Supply Design
1.4.1.6 Shielding and Grounding
1.4.1.7 Station Connectors
1.4.1.8 User Room Numbers and Names
1.4.2 System Capability and Configuration
1.4.2.1 System Capability
1.4.2.2 System Configuration and Major Functional Components
1.4.3 Performance Requirements
1.4.3.1 Page Initiation
1.4.3.2 Signal Processing Rates
1.4.3.3 Priority
1.4.3.4 Reception
1.4.3.5 System Management
1.4.4 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Products
1.5.2.2 Design and Installation Work
1.5.2.3 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.1.8 Software and License
2.2 OPERATOR STATIONS
2.3 ENCODER/CPU
2.4 TELEPHONE INTERFACE COUPLERS
2.5 TRANSMITTER
2.6 TRANSMISSION LINE
2.7 ANTENNA
2.8 PAGERS
2.8.1 Operational Description
2.9 BATTERY CHARGERS
2.10 RFTS Interface
2.11 UPS

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power and Grounds
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interfaces and Interconnections
3.3.3 Call Groups
3.3.4 Application Programming
3.3.5 Planning Data
3.3.6 Operating Frequency
3.3.7 GFGI RCC Data
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation
3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Not Used
3.5.3 Installation Setup
3.6 INSPECTION,TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing
3.6.3 System Readiness Checks

3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspection and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 RPS System
3.11.2 Indicated Items
3.11.3 Central Equipment
3.11.4 UPS
3.11.5 Software
3.11.6 LAN
3.11.7 Servers
3.11.8 Pagers
3.11.9 Antenna
3.11.10 Operator Stations
3.11.11 RFTS Interface
3.11.12 Interconnecting Cables

-- End of Section Table of Contents --

SECTION 16755

RADIO PAGING SYSTEM

PART 1 GENERAL

1.1 REFERENCES

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

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

47 CFR 15	Radio Frequency Devices
47 CFR 95	Personal Radio Services

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Health Care Facilities

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

EIA-374-A	(1981) Land Mobile Signalling Standards
ANSI/TIA/EIA-569-A	(2001) Commercial Building Standards for Telecommunications Pathways and Spaces
ANSI/TIA/EIA-603	(1993, 603-1 1998) Land Mobile FM or PM Communication Equipment Measurement and Performance Standards

UNDERWRITERS LABORATORIES (UL)

UL 1069	(2001) Hospital Signaling and Nurse Call Equipment
UL 1778	(1994) Standard for Uninterruptible Power Supply

1.2 DEFINITIONS

1.2.1 General Definitions

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

1.2.2 Additional Acronyms

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

BACH	Bassett Army Community Hospital
CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
FSS	Facility Security System
GFGI	Government Furnished, Government Installed
MURS	Multi-use Radio Service as defined by 47 CFR 95.1301-1309
NC	Nurse Call (Systems - Includes both NCAV and NCTV Systems)
NCAV	Nurse Call Audio-Visual (System)
NCTV	Nurse Call Tone-Visual (System)
PDS	Premises Distribution System
RFTS	RF Transponder System
O&M	Operation and Maintenance (Manuals)
RF	Radio Frequency
RPS	Radio Paging System
UON	Unless Otherwise Noted
UPS	Uninterruptible Power Supply

1.2.3 Additional Terms

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

Pager	Radio Page Receiver.
Software	Operating systems and application programs that enable a computer, or computer-based systems, to function as specified. Software shall include the documentation to describe, maintain and use the programs.
System	Radio Paging System or RPS, UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy all specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.
Telecommunications Systems	All low voltage, rf, and power limited communications and security systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.
Telecommunications Rooms	Called Comm Rooms on the drawings. Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and devices for all telecommunications systems.
24x7 Staffed	A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the Radio Page System (RPS) Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

The Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements, dimensions and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, software, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations ; G

a. Analysis and calculations to define power supply requirements for each component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions, for power supplies that are not an integral part of the component.

b. Analysis and calculations to define the type and size of all cables connecting all system components in accordance with Manufacturers instructions and power drop calculations.

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

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms.

e. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section HSPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

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

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.4.

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the RPS and all interfaced telecommunications systems and other systems. including the exact point and type of demarcation.

b. The layout and mounting of all RPS equipment, and the routing and mounting of cabling in comm rooms and the comm equipment room as coordinated with the layout of all other systems equipment in these rooms.

c. The layout and mounting of all RPS equipment, and the routing

and mounting of cabling on nurse station modular furniture.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

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

SD-09 Reports

Testing Reports; G

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

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

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

SD-14 Samples

Product Samples; G

Submit one sample page receiver with operator's manual for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS.

O&M Manuals shall be available on-site before the start of any training.

Software Manuals; G;

O&M manuals data shall include a software manual describing the functions of all software and including all other information necessary to enable proper loading, setup, testing, and operation.

The software manual shall include:

a. Definition of terms and functions.

b. Use of system and applications software.

c. Procedures for system installation, initialization and set-up, start-up, shutdown, migration to another computer, and DLL or driver dependencies if these exist.

d. Alarm reports.

e. Reports generation.

f. Database format and requirements for data entry.

g. Directory of all disk files.

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

Backup Software; G

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

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

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

1.4.1.2 Standard Products

The system application design shall utilize a standard Paging System that is the product of a Manufacturer regularly engaged in the manufacture of paging systems. The System shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the BACH installation site.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Continuous Duty Design

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

1.4.1.5 Power Supply Design

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

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

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

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

1.4.1.6 Shielding and Grounding

All products shall be shielded and grounded as required by the system design, Manufacturer's instructions, 47 CFR 15 listing, and regulatory requirements.

1.4.1.7 Station Connectors

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

1.4.1.8 User Room Numbers and Names

At the start of submittals, the Government shall furnish to the System Contractor a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

a. For multi-bed patient bedrooms, the user room number shall also identify each bed in the bedroom.

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

1.4.2 System Capability and Configuration

1.4.2.1 System Capability

The RPS shall provide selective signaling and message communications throughout the project facility. The system shall consist of locally and/or remotely controlled paging terminal/encoder, VHF radio transmitter, radio page receivers (pagers), NCAV System interface, NCTV System interface, FSS interface, RFTS interface, TAP interface and telephone interface to accomplish the specified functions. The system shall provide the ability to alert and to transmit messages to either individuals or groups.

1.4.2.2 System Configuration and Major Functional Components

The RPS shall be an integrated configuration of the components listed below designed to provide the required system capability and performance.

Encoder/CPU
Transmitter
Operator Stations
Page Receivers
Feed line
Interface components

1.4.3 Performance Requirements

This system is comprised of two major component groups, control equipment and radio equipment.

The control equipment shall provide all operational, reporting and interface capabilities listed herein. Equipment shall comply with the requirements set forth in the applicable subparts of 47 CFR 15.

The radio equipment shall provide full legal design power and modulation

consistent with the system design and the applicable subparts of 47 CFR 95, subparts 1301 through 1309 inclusive.

The fully engineered system shall be capable of meeting these performance requirements:

1.4.3.1 Page Initiation

a. Paging shall be initiated from any telephone by entering the radio page access number. When the access connection is made the system shall respond with a connection tone. The paging party shall then enter the address of the pager or group of pagers. The paging party shall then enter up to [10] numeric digits and then hang up. The system shall immediately disconnect from the telephone connection. An automatic time out shall disconnect the call after a preset time limit in the event that the paging party does not complete the page or does not hang up.

b. Paging shall be initiated from an Operator Station by pressing those buttons corresponding to a pager code. The address shall be visually displayed on the operator station. The message characters shall then be entered via the keyboard. The message shall be visually displayed on the operator station. A transmit key shall then be activated to transmit the signal. Simultaneous pages from operator stations shall be queued at the encoder and transmitted by the programmed message priority.

c. Paging shall be initiated from the Section 16730 NCTV System and the Section 16731 NCAV System. Paging can be initiated automatically as a result of system actions, or manually by activating the appropriate function keys on an NCAV System master station. Data and messages conveyed to the Radio Paging System shall include pager address, encoding data for at least 2 priority alert signals, one for routine calls and one for code blue calls, emergency and priority calls, alphanumeric messages containing patient room/bed number, type of call and service required, and the time and date of the call. Pagers shall respond with two distinct alert signals for the different priority messages.

d. Paging shall be automatically initiated from the Section 16788 FSS by certain alarm events within the FSS. Data and messages conveyed to the Radio Paging System shall include pager address, alphanumeric messages that have been preprogrammed within the FSS, and time and date of the alarm event.

e. In addition to the above functions which are performed on hospital owned pagers, the encoder shall be capable of routing these same types of calls to pagers operated by a GFGI Radio Common Carrier through the TAP interface provided as part of this system.

1.4.3.2 Signal Processing Rates

System processing rates for paging signals shall not exceed 6 seconds for any message type.

1.4.3.3 Priority

If there is more than one page input being processed at any one time, the highest priority page shall take precedence and shall be transmitted ahead of any lower priority page in the system. Within any one priority, all pages shall be sequenced on a first-in, first-out queue. Pages shall be processed by priority according to the rank order listed below.

a. Code Blue from Telecommunications Systems
b. Automated alarm or signal input from other systems such as FSS
c. Dial up pages from the Telephone System

1.4.3.4 Reception

A tone or silent pager vibration and an LED indication shall alert the user that a message is being received. If tone notification is used it shall be mutable. A button shall allow messages to be viewed.

1.4.3.5 System Management

In addition to the page initiation tasks above, each Operator Station shall be capable of assigning a new pager into service, reallocating an existing pager, changing a pager assignment, print traffic reports, print management reports, and run system diagnostics. All data related to pager assignments and to all reports shall be stored on the Operator Station hard disk. The printing of reports shall be on-demand.

1.4.4 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

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

b. Riser diagrams shall indicate the identification number (ID) for all equipment components as shown on the Telecommunications Drawings.

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

d. Installation details for equipment and cabling that is surface mounted on the back panel of GFGI modular furniture shall include the make and model of the surface mounted boxes and wireways, and details for any mounting hardware.

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

f. Legend of graphic symbols used on all drawings.

g. Details shall indicate anchoring and bracing provided for seismic protection in accordance with the requirements of the Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

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

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

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

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and or Installer in accordance with the qualifications specified in this Section.

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

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

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

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

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

Training Personnel

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

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

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

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

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

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

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

1.5.1.2 System Contractor Qualifications

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

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

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

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

1.5.1.3 Installer Qualifications

a. The Installer shall be regularly engaged in the business of

installation of the type of system specified in this Section.

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

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

1.5.1.4 Manufacturer Qualifications

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

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

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

1.5.2 Regulatory Requirements

1.5.2.1 Products

a. Control Components

Fundamental electronic and control devices shall be 47 CFR 15 listed and labeled.

b. Transmitter

The transmitter shall be 47 CFR 95 listed and labeled.

c. UPS units shall comply with UL 1778.

1.5.2.2 Design and Installation Work

All design and installation work shall comply with 47 CFR 95, UL 1778, NFPA 70 NEC, and EIA ANSI/TIA/EIA-569-A.

1.5.2.3 Electromagnetic Interference (EMI)

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

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

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

the Class B limit of the FCC Rules, such CFR standards shall apply in lieu of those set forth herein.

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

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

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

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

1.6.2 Delivery Coordination

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

1.6.3 Loss Liability

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

1.6.4 Delivery Restrictions

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

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

1.6.5 Contractor Responsibility

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

1.7 SEQUENCING AND SCHEDULING

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

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

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

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

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS and CLOSEOUT SUBMITTALS.

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

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express shipped to BACH if not available locally within a 150 mile driving radius of BACH.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

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

1.9.1.3 Post Acceptance Spare Parts

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

Quantity	Items

1	Each type of interface unit
1	Each type of telephone coupler
1	Each type of encoder plug-in modules
1	Transmitter

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

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

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

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

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. The System Contractor shall provide an on-line diagnostic maintenance support capability as specified herein.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

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

c. Repair of a major malfunction shall be accomplished within 24 hours of

the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

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

Nurse Call Interface
FSS Interface
Transmitter
Encoder

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

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified or indicated on the Telecommunications Drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

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

2.1.4 Identical Products

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

2.1.5 Nameplates and Equipment Markings

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

indicated on the nameplate or on adjacent labels.

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

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

2.1.6 Mounting Alignment Capability

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

2.1.7 Model and Enhancements

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

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

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

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

2.1.8 Software and License

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

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

c. Software maintenance that is provided to any or all other customers without charge shall be provided to the Government.

2.2 OPERATOR STATIONS

a. Operator Stations shall be installed in the following rooms:

Emergency Services Comm Room, 102-15
Internal Distribution Room, 228-01
Command Control Center, 321-10

b. The Operator Station shall be a desk mounted unit having an alphanumeric keyboard with function keys to initiate and control paging functions and an LCD digital display to show all characters entered and alarm messages from system diagnostics.

c. The Operator Stations located in Room 228-01 shall have the ability to program pager address (cap codes)and features.

d. All Operator Stations shall have the ability to program staffing assignments, issue pagers, run management reports and run traffic reports.

e. A laser printer with a print rate of at least six pages per minute, and a paper tray that holds at least 250 sheets of paper shall be provided at each operator station.

2.3 ENCODER/CPU

a. The Encoder shall be a Zetron 2200 or equivalent. The Encoder shall conform to the requirements of EIA-374-A and 47 CFR 15.

b. The Encoder shall be modular in construction utilizing plug-in modules and stored program control for system features, receiver address and page grouping programming, and automatic supervision of system, cable or transmitter failure. The Encoder shall provide all necessary programming, memory, processing, encoding, call prioritization, nurse call interface and self checking diagnostics for the radio paging system. Wired capacity shall be at least 8 data input lines capable of operating simultaneously. Display message storage shall be provided for at least 16 messages of up to 32 characters per message. Stored Code Blue message shall be processed to the transmitter on a top priority basis. Interruption or loss of ac power to the encoder shall not cause loss of or change to stored programs. The Nurse call system interface shall be in compliance with UL 1069.

2.4 TELEPHONE INTERFACE COUPLERS

a. Telephone interface couplers shall contain the necessary circuitry to provide proper paging access from the telephone system. The audio section of the interface shall present a balanced 600 ohm load to the telephone system. The unit(s) shall provide automatic disconnect upon paging party hang-up, back-up timer to automatically disconnect on no input after an adjustable period of 7 to 20 seconds.

b. TAP Telephone interface couplers shall contain the necessary circuitry to provide proper paging access from the paging encoder to the GFGI RCC. The audio section of the interface shall present a balanced 600 ohm load to the telephone system. The unit(s) shall provide automatic disconnect, hang-up supervision, and back-up timer function to automatically disconnect on no input. TAP interface is to support alphanumeric protocols and is to be configurable to the service level provided by the GFGI RCC.

2.5 TRANSMITTER

Transmitter shall conform to the requirements of 47 CFR 9595-1301-95.1309 inclusive, EIA ANSI/TIA/EIA-603, EIA-374-A, and to the following:

a. Frequency: MURS VHF Personal Radio Service. Contractor shall coordinate the specific operating frequency with the RFTS Contractor.

b. Frequency stability over operating temperature range: plus or minus 1 PPM.

c. Modulation deviation: adjustable not to exceed plus or minus 5 kHz.

d. Spurious and harmonic emissions: 85 dB down, minimum

e. RF power output: 2 watts nominal into a 50 ohm load.

f. Output impedance: 50 ohms.

2.6 TRANSMISSION LINE

No Transmission Line is provided as part of this project.

2.7 ANTENNA

No external antenna is provided as part of this system. The transmitter shall provide sampled output to the RFTS, which will attend to signal distribution within the facility.

2.8 PAGERS

2.8.1 Operational Description

a. Pagers shall conform to the requirements of EIA ANSI/TIA/EIA-603, and EIA-374-A. Pagrs shall have an alphanumeric digital display with selectable tone or vibration alert and factory aligned to operate on the coordinated frequency referenced in Paragraph 2.5.a of this Specification.

b. Pagers shall have capacity to store at least 8 messages of at least 32 characters. Stored messages in memory shall be recallable as often as desired by pressing a recall button. A protected memory location shall be available to store messages at the user's discretion.

c. A back light shall be provided to allow reading of messages under low ambient light.

d. Tone alert shall have two distinct signals to distinguish between page priorities. Minimum volume levels shall be programmable.

e. Pagers shall be programmable to prevent user from switching off the vibration alert and data reception.

f. Codes for receiver address shall be programmable/reprogrammable using programmable firmware or replaceable code module.

g. Pagers shall be assignable to at least two paging groups.

h. Pager power source shall be disposable alkaline batteries.

i. Battery Low indicator.

j. Time and Date stamping.

k. Selectable display contrast level.

2.9 BATTERY CHARGERS

Page receivers are powered by disposable alkaline batteries. No chargers are to be provided.

2.10 RFTS Interface

A sampling power divider shall be installed at the transmitter output in Comm Equipment Room 424-01 which will pass full design power minus diverted power to a dummy load and divert 1 watt to the sampling port for connection to the RFTS. The sampling port shall be terminated into a dummy load for testing.

2.11 UPS

Each UPS required for the system shall have the following characteristics:

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

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

c. Upon an ac power line outage, the UPS shall automatically transfer to battery power within 4.2 milliseconds of sensing ac power line loss, and provide at least 30 minutes of full power for operation of the equipment connected to the UPS. On-battery output voltage shall be 115 VAC, +/- 5 percent.

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

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

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

g. UPS units in Comm Rooms shall be configured for rack or cabinet mount.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of comm rooms are identified on the Telecommunications Drawings.

c. All flush and ceiling mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Junction Box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

e. Coordinate all design and installation efforts with those of related trades that have provided the rough-in in the facility construction project to accommodate the installation of the system. In the event of any conflicts, delayed or improper preparatory work by others, notify the

Contracting Officer for resolution. The Contracting Officer decision shall be binding.

3.2.3 Electrical Power and Grounds

a. Existing electrical power on the emergency critical branch circuit has been provided by the facility construction project at a power junction box in Comm Rooms for system central equipment. Operator Stations have electrical power adjacent to the Communications Outlets serving that work position. Reference the facility construction project Electrical Drawings for details.

b. Existing grounding buss bars have been provided as indicated on the Telecommunications Systems Drawings. Reference the facility construction project Electrical Drawings for details.

c. If any new electrical power circuits are required, the Telecommunications Systems Contractor shall define and submit the new power requirements to the Contracting Officer, who will coordinate the change with the existing Facility Contractor.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interfaces and Interconnections

a. Coordinate and define the details of all interfaces and interconnections with other systems and equipment as specified herein. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of Drawings and Data submittals.

b. Interfaces and interconnections shall include:

Telephone System Interface, Incoming Lines
Telephone System Interface, TAP for RCC connection
NCAV/NCTV System Interface
FSS System Interface
RFTS System Interface

3.3.3 Call Groups

Obtain/verify the Group Call requirements.

3.3.4 Application Programming

Gather user data required to adequately program the system and set-up any

unique functions as required by the system application design.

3.3.5 Planning Data

Gather data required to develop all required plans, including testing and training plans.

3.3.6 Operating Frequency

Coordinate operating frequency with RFTS Contractor

3.3.7 GFGI RCC Data

Coordinate implementation of TAP interface protocol with the GFGI RCC representative.

3.4 INSTALLATION

3.4.1 General

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

b. Installation shall comply with the requirements of NFPA 70, 47 CFR 95, and ANSI/TIA/EIA-569-A.

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

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

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

f. Not used for this system.

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

h. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

3.4.2 Equipment Installation

a. Not used for this system.

b. The Encoder, Transmitter and related UPS(s) shall be surface mounted in the Comm Equipment Room 424-01 as indicated on the Telecommunications Drawings. Mounting of these panels in any other room, area or above finished ceilings shall not be acceptable.

c. Under no circumstance shall any of this equipment be mounted on the floor.

d. Not used for this system.

e. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project.

f. Mounted equipment shall be firmly secured in place, plumb, square, and level.

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

h. Equipment mounting shall comply with the seismic bracing and anchorage requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

3.4.3 System Cabling Installation

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

b. All cables and the installation of cables shall be in accordance with NFPA 70 NEC.

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

d. System cabling shall be installed in cable trays, conduits and boxes.

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

f. Certify that system cable that are installed in the existing communications systems cable trays along with the cables from other systems shall not adversely affect the performance of this system or any other project system.

g. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

h. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

i. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

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

3.5 APPLICATION

3.5.1 AC Power Connections

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

3.5.2 Not Used

3.5.3 Installation Setup

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

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

b. Time and date setup.

c. Cap (Pager) Assignment.

d. [THIS PARAGRAPH DELETED]

e. Paging Groups.

f. Assignment of Coverage.

g. Assignment of RCC paging equipment.

3.6 INSPECTION,TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

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

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

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

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

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, system readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

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

3.6.2 Periodic Inspection and Testing

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

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

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

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

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

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

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements, system application design, and user setup requirements for the system. Each system operating mode shall be demonstrated to perform as required by operation of each individual system component under normal or simulated normal system conditions.

b. Testing shall include, but not be limited to, the following tests to demonstrate all requirements:

(1) Operation under ac power failure conditions. Include demonstration of UPS capability under normal power loading conditions, and operation under emergency power conditions.

(2) Signal quality under worst-case loading conditions of low voltage power supplies.

(3) Operation of electronic supervision circuitry.

(4) Operation of 100% of all components used by the staff in all modes of operation demonstrating that all functions and the proper sequence of events occur with each page.

(5) All NCAV, NCTV, RFTS and FSS interface functions.

(6) All Telephone and RCC functions.

(7) All page receiver functions.

(8) Pager assignment, coverage and group call functions.

(9) All management and traffic reports.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as necessary to demonstrate compliance with all requirements to the Contracting Officer.

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

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

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

3.6.7 Warranty Period Inspection and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

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

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the

requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified demonstration and training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to the BACH staff in accordance with the approved Training Plan.

3.7.2 General Preparations

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

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated BACH staff in the operation and maintenance of the provided system.

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

3.7.4 Training Instructions

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

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

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

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

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

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

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

c. Each course shall include classroom training and field training. Field training for BACH staff shall take place in the area where the staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

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

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

3.7.7 User and Operational Staff Training

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

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system is installed and accepted by the Government, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

a. Before the system is turned over to the Government for operational use,

training shall be provided for maintenance technicians designated by the Contracting Officer.

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

c. Nine (9) months after the system is installed and accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided at the Manufacturer's factory. Training shall include comprehensive instruction for complete setup, operation, maintenance and repair of the system, including the theory of operation, software installation and setup, maintenance programs, failure diagnostic programs, troubleshooting and repair. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training for factory certification as a maintenance technician.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 RPS System

a. Provide a complete and operational RPS as specified in this Section and indicated on the Telecommunications Drawings, and as further defined below.

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

3.11.2 Indicated Items

Provide the quantity and type of system components, such as cables, interconnecting adapters or devices, and outlets, as indicated on the Telecommunications Drawings.

3.11.3 Central Equipment

The telecommunication drawings indicate space in Comm Equipment Room 424-01 that has been designated for the installation of system components. As required by the system application design, furnish and install the type and quantity of cabinets in these designated locations.

3.11.4 UPS

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

3.11.5 Software

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

3.11.6 LAN

Provide any LAN hardware, software and cabling as required by the system application design. Install any required LAN hardware only within Comm Rooms.

3.11.7 Servers

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

b. The telecommunication drawings indicate space in the Comm Equipment Room 424-01 that has been designated for the installation of system equipment. As required by the system application design, furnish and install the type and quantity of server(s) in this location.

3.11.8 Pagers

187 Pagers with the specified batteries shall be furnished by the Radio Page System Contractor to the Contracting Officer.

3.11.9 Antenna

No antenna is provided as part of this system.

3.11.10 Operator Stations

a. An Operator Station shall be furnished and installed in room 102-15 Communications.

b. An Operator Station shall be furnished and installed in room 228-01 Internal Distributing. This terminal will be the normal control point for issuance of paging equipment, traffic and management reports.

c. An Operator Station shall be furnished and installed in room 321-10 Command Control Center. This station is to be on a plug-in connector and is to be removable from the system without inhibiting or alarming the system in any manner.

3.11.11 RFTS Interface

A 1 watt tap sampling power divider shall be furnished and installed at the transmitter output in Comm Equipment Room 424-01. Both the tap (1 watt) and load port shall be connected to a dummy load furnished and installed by the RPS contractor.

3.11.12 Interconnecting Cables

a. A copper distribution system exists throughout the facility. For control cables with signal meeting wireline guides (<1 mw @ 600 ohms, balanced, with levels less than 0 dBm), the contractor may apply to the Contracting Officer for pair assignment through the Premises Distribution System. Any other signal and control lines are to be provided by the Contractor.

b. Coaxial cable for connection of the RFTS interface is to be provided and installed by the RFTS Contractor.

c. Patch Panel cables for connection of the various telephone interfaces at the IDF are to be provided and installed by the RPS Contractor.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16756

RF TRANSPONDER SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Continuous Duty Design
1.4.1.5 Power Supply Design
1.4.1.6 Shielding and Grounding
1.4.2 System Capability and Configuration
1.4.2.1 System Capability
1.4.2.2 System Configuration and Major Functional Components
1.4.3 Performance Requirements
1.4.3.1 System Initiation
1.4.3.2 Signal Processing Rates
1.4.3.3 Priority
1.4.3.4 Signal Strength
1.4.3.5 Reception
1.4.4 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 UL Listing
1.5.2.2 Design and Installation Work
1.5.2.3 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software

1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.1.8 Software and License
2.2 BIDIRECTIONAL AMPLIFIERS
2.3 DIRECTIONAL DECOUPLER(S)
2.4 RADIO PAGE INTERFACE COUPLER
2.5 OPERATING FREQUENCIES
2.6 TRANSMISSION LINE
2.7 ANTENNAS
2.8 PORTABLE EQUIPMENT

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power and Grounds
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interfaces and Interconnections
3.3.3 Call Routing
3.3.4 Application Programming
3.3.5 Planning Data
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation
3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Transmission Line
3.5.3 Installation Setup
3.6 INSPECTION,TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing
3.6.3 System Readiness Checks
3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspection and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel

3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 RFTS System
3.11.2 Indicated Items
3.11.3 Central Equipment
3.11.4 UPS
3.11.5 Antenna
3.11.6 RFTS Interface

-- End of Section Table of Contents --

SECTION 16756

RF TRANSPONDER SYSTEM

PART 1 GENERAL

1.1 REFERENCES

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

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

47 CFR 15	Radio Frequency Devices
47 CFR 95	Personal Radio Services

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Health Care Facilities

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

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

1.2 DEFINITIONS

1.2.1 General Definitions

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

1.2.2 Additional Acronyms

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

ALMR	Alaska Land Mobile Radio System
BACH	Bassett Army Community Hospital
CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
FSS	Facility Security System
GFGI	Government Furnished, Government Installed
NC	Nurse Call (Subsystems)
NCAV	Nurse Call Audio-Visual (System)
NCTV	Nurse Call Tone-Visual (System)
RFTS	RF Transponder System
RPS	Radio Page System
O&M	Operation and Maintenance (Manuals)

RF	Radio Frequency
UON	Unless Otherwise Noted
UPS	Uninterruptible Power Supply

1.2.3 Additional Terms

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

Pager	Radio Page Receiver.
Software	Operating systems and application programs that enable a computer, or computer-based systems, to function as specified. Software shall include the documentation to describe, maintain and use the programs.
System	RF Transponder System or RFTS, UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy all specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.
Telecommunications Systems	All low voltage, rf, and power limited communications and security systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.
Telecommunications Rooms	Called Comm Rooms on the drawings. Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and devices for all telecommunications systems.
24x7 Staffed	A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the RFTS System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification

item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

The Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements, dimensions and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, software, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations ; G

a. Analysis and calculations to define power supply requirements for each component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions, for power supplies that are not an integral part of the component.

b. Analysis and calculations to define the type and size of all cables connecting all system components in accordance with Manufacturers instructions and power drop calculations.

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

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms.

e. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section HSPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

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

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.4.

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the RFTS System and all interfaced telecommunications systems and other systems. including the exact point and type of demarcation.

b. The layout and mounting of all RFTS equipment, and the routing and mounting of cabling in comm rooms and the comm equipment room as coordinated with the layout of all other systems equipment in these rooms.

c. The layout and mounting of all NCAV equipment, and the routing and mounting of cabling on nurse station modular furniture.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

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

SD-09 Reports

Testing Reports; G

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

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

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

SD-14 Samples

Product Samples; G

Submit one sample unit of each type of station, light, and cord set for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS.

O&M Manuals shall be available on-site before the start of any

training.

Software Manuals; G;

There is no software component to this System.

Backup Software; G

There is no backup software component to this System.

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

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

1.4.1.2 Standard Products

The system application design shall utilize standard system components that are the product of a Manufacturer regularly engaged in the manufacture of RFTS, and that have been in satisfactory use for at least six months. The System shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the BACH installation site.

It is represented that this contract is for certain hardware components as identified by a complete and engineered design, and that the Contractor is representing that his submitted design is properly engineered for the operational requirements, and that all components required to meet these specifications are included in this design OTHER THAN a change in or addition to the operating frequencies identified herein.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Continuous Duty Design

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

1.4.1.5 Power Supply Design

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

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

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

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

1.4.1.6 Shielding and Grounding

All products shall be shielded and grounded as required by the system design, Manufacturer's instructions, 47 CFR 15 listing, and regulatory requirements.

1.4.2 System Capability and Configuration

1.4.2.1 System Capability

The RF Transponder System shall provide two-way radio service from the Alaska Land Mobile Radio Service, reception from a GFGI RCC, and distribution of the Radio Page System within the project facility.

This system shall provide complete, clear and fully intelligible two-way communications capability on all of the specified frequencies to and from anywhere within the facility and complete radio page coverage on all specified page frequencies to anywhere in the facility..

1.4.2.2 System Configuration and Major Functional Components

The system shall consist of automatically controlled bi-directional signal amplifier(s), antenna(s), decoupling cavities, radiating and non-radiating coaxial cables, and interference related filtering cavities or devices engineered into one tuned system that will accomplish the specified functions.

1.4.3 Performance Requirements

The equipment shall provide total coverage of the facility without degradation of the transmitted message. Equipment shall comply with the requirements set forth in the applicable subparts of 47 CFR 15.

1.4.3.1 System Initiation

No user controlled features are permitted on this system. System is to be active on power up and perform as specified without guard channel, tones or any form of control, either manual or automatic.

1.4.3.2 Signal Processing Rates

System processing rates are real time. Transmissions on different frequencies can occur simultaneously, and shall occur without interference. Proper engineering shall be applied to remove intermodulation effects, interference within system components, echo or disparity reception caused by active or passive components or by the transmission media.

1.4.3.3 Priority

It is recognized that all devices co-exist on the RF Transponder system, and that any priority arrangements are controlled by the participating systems which utilize the Transponder. No channel control is permitted within this system.

1.4.3.4 Signal Strength

Signal levels throughout the facility on the Alaska Land Mobile two way frequencies shall exceed .30 microvolts/meter.

Signal levels at the ALMR repeater site from the RFTS shall exceed .30 microvolts/meter across the assigned Alaska Land Mobile repeater recieve frequency range.

Signal levels throughout the facility on the Hospital Radio Page System and the GFGI RCC assigned frequency shall exceed 8.0 microvolts/meter.

1.4.3.5 Reception

Any and all procedures for operating receiving apparatus is governed by the operation of the utilizing system. No special procedures are required as a result of traffic appearing over this system.

Reception within this facility is to be complete and without shadow, interference or dead spots (areas exhibiting less signal level than required by 1.4.3.4).

1.4.4 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

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

b. Riser diagrams shall indicate the identification number (ID) for all equipment components as shown on the Telecommunications Drawings.

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

d. Installation details for equipment and cabling that is surface mounted on the back panel of GFGI modular furniture shall include the make and model of the surface mounted boxes and wireways, and details for any mounting hardware.

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

f. Legend of graphic symbols used on all drawings.

g. Details shall indicate anchoring and bracing provided for seismic protection in accordance with the requirements of the Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

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

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

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

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and or Installer in accordance with the qualifications specified in this Section.

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

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

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

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

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

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

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

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

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

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

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

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

1.5.1.2 System Contractor Qualifications

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

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

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

d. The System Contractor shall maintain a full complement of repair parts

for the provided system and shall be able to furnish on-call maintenance service 24 hours per day, 365 days per year as specified herein.

1.5.1.3 Installer Qualifications

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

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

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

1.5.1.4 Manufacturer Qualifications

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

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

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

1.5.2 Regulatory Requirements

1.5.2.1 UL Listing

No listing is required for this system.

1.5.2.2 Design and Installation Work

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

1.5.2.3 Electromagnetic Interference (EMI)

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

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

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

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

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

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

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

1.6.2 Delivery Coordination

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

1.6.3 Loss Liability

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

1.6.4 Delivery Restrictions

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

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

1.6.5 Contractor Responsibility

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

1.7 SEQUENCING AND SCHEDULING

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

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

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

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

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS and CLOSEOUT SUBMITTALS.

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

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express shipped to BACH if not available locally within a 150 mile driving radius of BACH.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

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

1.9.1.3 Post Acceptance Spare Parts

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

Quantity	Items
1	Each type and frequency amplifier

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

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

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

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

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. The System Contractor shall provide an on-line diagnostic maintenance support capability as specified herein.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

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

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

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

Bidirectional Amp

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

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified or indicated on the Telecommunications Drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

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

2.1.4 Identical Products

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

2.1.5 Nameplates and Equipment Markings

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

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

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

2.1.6 Mounting Alignment Capability

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

2.1.7 Model and Enhancements

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

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

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

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

2.1.8 Software and License

There is no software requirement for this system.

2.2 BIDIRECTIONAL AMPLIFIERS

a. The primary bidirectional amplifiers will be located in the Comm Equipment Room 424-01.

b. Any additional amplifiers required by the System Application Design shall be located in Comm Rooms. Floor space and a 120 volt electrical outlet will be provided. Any special cabinetry or shielded enclosures are the responsibility of the contractor and are to be provided and installed as part of this system.

c. Bidirectional amplifiers shall have preselectors and/or filters designed to limit incoming signals to 1.5 mHz or less. Gain shall be in excess of 70dB with a system noise level at minimum attenuation of 13 dB or better.

d. Bidirectional amplifiers shall have level controls that shall be preset as required by System Application Design in order to maintain compliance with the operating requirements of 47 CFR 95.

2.3 DIRECTIONAL DECOUPLER(S)

Directional decouplers as may be required by System Application Design shall be located in Comm Rooms throughout the facility. All mounting locations are to be coordinated with the Contracting Officer, and all mounting materials are to be provided and installed as part of this system. Any decouplers or other components, excluding coaxial cables and antenna, that are installed in the facility at locations other than the Comm Equipment Room or Comm Rooms shall be installed in locked steel cabinets, keyed alike and provided and installed as part of this system.

2.4 RADIO PAGE INTERFACE COUPLER

A suitably engineered port will be provided in the Comm Equipment Room 424-01 by the RPS Contractor to sample transmitted RF from the Section 16755 RADIO PAGE SYSTEM. The RPS Contractor will provide the source signal at a level of 1 watt, 50 ohm terminated, at the Radio Page Transmitter site in the Comm Equipment Room, 424-01. RG-214/U Connecting cable and any required levels engineering, pads, or attenuators for the interface is to be provided by the RFTS Contractor.

2.5 OPERATING FREQUENCIES

a. This system is to receive from outside the Project Facility on all ALMR Repeater Transmit frequencies from 154 mHz to 157 mHz. All transmissions within this band are to be transmitted within the facility on their respective frequencies, unaltered.

b. This system is to receive from inside the Project Facility on all ALMR Repeater Receive frequencies from 138 mHz to 142 mHz. All transmissions within this band are to be transmitted outside the facility on their respective frequencies, unaltered.

c. This system is to receive from the GFGI RCC outside the Project Facility on 152.24 mHz. All transmissions on this frequency are to be transmitted within the facility at that frequency, unaltered.

d. This system is to receive from the RPS within the Project Facility on a MURS coordinated VHF frequency. No transmissions on this frequency are to be transmitted outside the facility. This frequency is to be coordinated by the RFTS System Application Design with the RPS Contractor, and take into consideration both amplifier bandpass opportunities and intermodulation studies.

2.6 TRANSMISSION LINE

a. It is recognized that the type and parameters of the transmission lines are dependent on the System Application Design.

b. It is the responsibility of the Contractor to assure that the types and styles of radiating or non-radiating coaxial cables are engineered with regard to the correct performance of the system.

c. It is the responsibility of the Contractor to assure that the engineered cables meet all fire and environmental regulations, as engineered and installed, within the Contractors design.

2.7 ANTENNAS

a. Antenna and antenna structure shall conform to ANSI/TIA/EIA-222-F and ANSI/EIA/TIA-329-B. The antennas shall be engineered to the proper system performance for the bands indicated in this specification with respect to gain, polarization and radiation pattern.

b. It is the responsibility of the Contractor to assure that the types and styles of radiating or non-radiating coaxial cables are engineered with regard to the correct performance of the system.

c. Lightning protection and equipment for separate grounding of the antenna mast shall be provided.

2.8 PORTABLE EQUIPMENT

No portable receivers, transmitters, or radio devices are to be provided as part of this system.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of comm rooms are identified on the Telecommunications Drawings.

c. All flush and ceiling mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or

plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Junction Box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

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

3.2.3 Electrical Power and Grounds

a. Existing electrical power on the emergency critical branch circuit has been provided by the facility construction project at a power junction box in comm rooms for system central equipment, and at a power receptacle adjacent to each master station, the system maintenance station, the code blue annunciator panel station, and the failure alarm annunciator panel station. Reference the facility construction project Electrical Drawings for details.

b. Existing grounding buss bars have been provided as indicated on the Telecommunications Systems Drawings. Reference the facility construction project Electrical Drawings for details.

c. If any new electrical power circuits are required, the Telecommunications Systems Contractor shall define and submit the new power requirements to the Contracting Officer, who will coordinate the change with the existing Facility Contractor.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interfaces and Interconnections

a. Coordinate and define the details of all interfaces and interconnections with other systems and equipment as specified herein. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of Drawings and Data submittals.

b. Interfaces and interconnections shall include:

RPS - operating frequency
RPS - RF interface
ALMR - signal levels and operation within and without the facility
RCC - signal levels and operation within the facility

3.3.3 Call Routing

No requirement for this system.

3.3.4 Application Programming

No requirement for this system.

3.3.5 Planning Data

Gather data required to develop all required plans, including testing and training plans.

3.4 INSTALLATION

3.4.1 General

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

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

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

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

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

f. Provide surface mount metal wireways and boxes for master station outlets that are required to be surface mounted on the backpanel of GFGI

free standing modular furniture, as indicated on the Telecommunications Drawings.

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

h. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

3.4.2 Equipment Installation

a. Appropriate waterproof gaskets shall be used for equipment installations in exposed areas.

b. The central equipment shall be rack mounted in the Comm Equipment Room as indicated on the Telecommunications Drawings. Mounting of system components in any room other than a Comm Room or above finished ceilings shall not be acceptable without written authorization by the Contracting Officer.

c. The system components shall be rack mounted. Under no circumstance shall any equipment be mounted on the floor.

d. Mounted equipment shall be firmly secured in place, plumb, square, and level.

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

f. Equipment mounting shall comply with the seismic bracing and anchorage requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

3.4.3 System Cabling Installation

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

b. All cables and the installation of cables shall be in accordance with NFPA 70 NEC.

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

d. System cabling shall be installed in cable trays, conduits and boxes.

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

f. Certify that system cable that are installed in the existing communications systems cable trays along with the cables from other systems shall not adversely affect the performance of this system or any other project system.

g. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

h. Cabling shall include adequate expansion loops at building seismic or

expansion joints to accommodate seismic displacements.

i. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

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

3.5 APPLICATION

3.5.1 AC Power Connections

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

The system shall be connected to the existing Emergency Power System, Life Safety Branch according to the Health Care Facility Standard. Power is available in all Comm Rooms. It shall be the responsibility of the Contractor to coordinate any other power requirements to active devices not located in Comm Rooms with the Contracting Officer.

The Contractor may utilize "line"("simplex/coaxial") powered devices in the design. Power distributed over system cables to such devices shall be low voltage and power limited in accordance with NFPA 70.

It shall be the responsibility of the Contractor to insure that the active devices requiring power are connected on the indicated electrical branch.

3.5.2 Transmission Line

The transmission line(s) to the roof shall be installed in the provided wireway, with the outer conductor and lighting arrestor grounded to the provided grounds. Installation shall comply with NFPA 70. Any additional grounding required shall be by the Contractor.

3.5.3 Installation Setup

Contractor shall make all adjustments as necessary to setup the system to function in accordance with specific user requirements for the overall system.

3.6 INSPECTION,TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

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

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

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

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

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, system readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

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

3.6.2 Periodic Inspection and Testing

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

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

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

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

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

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

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in

full accordance with all specified requirements, system application design, and user setup requirements for the system. Each system operating mode shall be demonstrated to perform as required by operation of each individual system component under normal or simulated normal system conditions.

b. Testing shall include, but not be limited to, the following tests to demonstrate all requirements:

(1) Operation under ac power failure conditions. Include demonstration of UPS capability under normal power loading conditions, and operation under emergency power conditions.

(2) Signal quality under worst-case loading conditions of low voltage power supplies.

(3) Operation of electronic supervision circuitry.

(4) Operation of 100% of all components.

(5) All interface functions.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as necessary to demonstrate compliance with all requirements to the Contracting Officer.

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

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

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

3.6.7 Warranty Period Inspection and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

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

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified demonstration and training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to the BACH staff in accordance with the approved Training Plan.

3.7.2 General Preparations

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

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated BACH staff in the operation and maintenance of the provided system.

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

3.7.4 Training Instructions

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

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

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

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

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

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

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

c. Each course shall include classroom training and field training. Field training for BACH staff shall take place in the area where the staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

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

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

3.7.7 User and Operational Staff Training

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

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system is installed and accepted by the Government, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

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

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

c. Nine (9) months after the system is installed and accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided on site and focusing on failure diagnosis and field repair.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES3.11.1 RFTS System

a. Provide a complete and operational RFTS as specified in this Section and indicated on the Telecommunications Drawings, and as further defined below.

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

3.11.2 Indicated Items

Provide the quantity and type of system components, such as cables, interconnecting adapters or devices, and outlets, as indicated on the Telecommunications Drawings.

3.11.3 Central Equipment

The telecommunication drawings indicate space in Comm Equipment Room 424-01 that has been designated for the installation of system components. One rack is provided as indicated in the drawings. Provide any and all other racks, mounting hardware or enclosures as required by System Applications Design.

3.11.4 UPS

Provide an UPS for all equipment that operates directly off of ac line power. At any location where the installed equipment includes both a computer and a monitor, the UPS shall be used to power both the computer and the monitor. The UPS shall function for a minimum of 30 minutes of power interruption.

3.11.5 Antenna

a. Provide an antenna deemed appropriate by System Application Design for two-way service on the ALMR Frequency.

b. Provide an antenna deemed appropriate by System Application Design for reception on the GFGI RCC Frequency.

3.11.6 RFTS Interface

Provide cable and engineering, including any required filters, pads or attenuators, for the RFTS interface in Comm Equipment Room 424-01. Secure the dummy load at the sampling port, and surrender to Contracting Officer with spares.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16770

PUBLIC ADDRESS (PA) SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Continuous Duty Design
1.4.1.5 Power Supply Design
1.4.1.6 Shielding and Grounding
1.4.1.7 User Room Numbers and Names
1.4.2 System Configuration
1.4.3 System Functionality
1.4.4 Paging Zones and Prioritization
1.4.4.1 Paging Priorities
1.4.4.2 Functional Paging Zones
1.4.5 Multi-Channel Zoned System
1.4.6 Functional Zone System
1.4.7 System Performance
1.4.8 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Design and Installation Work
1.5.2.2 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts

1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.2 MIXER-PREAMPLIFIERS
2.3 POWER AMPLIFIERS
2.4 MIXER AMPLIFIERS
2.5 AMPLIFIER POWER RATINGS
2.6 MIXER, MIXER-AMPLIFIER INPUT MODULES
2.6.1 Microphone Input Modules
2.6.2 Line Level Input Module
2.6.3 Aux Input Module
2.7 MICROPHONES
2.7.1 Desk Microphone
2.7.2 Microphone - Level Sensing
2.7.3 Microphone Jack
2.8 LOUDSPEAKERS
2.8.1 203mm Cone Speaker
2.8.2 Weather Resistant 203mm Cone Speaker
2.8.3 Horn Speaker
2.8.4 Wall Speaker Enclosures
2.8.5 Ceiling Speaker Enclosures
2.8.6 Surface Mount Speaker Baffle
2.8.7 Ceiling Baffles - Type C
2.8.8 Ceiling Baffles - Type C2 & C3
2.9 FM EQUIPMENT
2.9.1 FM Tuner
2.10 COMPACT DISC PLAYER
2.11 DISTRIBUTION AMPLIFIERS
2.12 AMBIENT NOISE CONTROL AMPLIFIER
2.13 GRAPHIC EQUALIZERS
2.14 TELEPHONE INTERFACE COUPLERS
2.15 PRIORITY PAGING CONTROLS
2.16 SWITCHES AND CONTROLS
2.16.1 Remote Loudspeaker Volume Controls - Type VR
2.16.2 Remote Loudspeaker Volume Controls - Type VS
2.17 EQUIPMENT CABINETS
2.18 CABLES
2.18.1 Speaker Cable
2.18.2 Microphone/Line Level Cable
2.18.3 Antenna Cable
2.19 TERMINAL BLOCKS AND STRIPS
2.20 TERMINALS
2.21 POWER & SURGE PROTECTION
2.21.1 Power Line Surge Protection
2.21.2 Signal Surge Protection

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power and Grounds
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interfaces and Interconnections
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation
3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Installation Setup
3.6 INSPECTION, TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing
3.6.3 System Readiness Checks
3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspections and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 PA System
3.11.2 Indicated Items
3.11.3 Terminal Blocks
3.11.4 Product Samples

-- End of Section Table of Contents --

SECTION 16770

PUBLIC ADDRESS (PA) SYSTEM

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 basic designation only.

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

47 CFR 15	Radio Frequency Devices

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Health Care Facilities

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

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

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C62.41	(1991; R 1995) Surge Voltages in Low-Voltage AC Power Circuits

UNDERWRITERS LABORATORY (UL)

UL 1449	(1996; Rev thru Feb 1998) Transient Voltage Surge Suppressors

1.2 DEFINITIONS

1.2.1 General Definitions

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

1.2.2 Additional Acronyms

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

BACH	Bassett Army Community Hospital
CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
FSS	Facility Security System
GFGI	Government Furnished, Government Installed
HIS	Hospital Information System (BACH)

LAN	Local Area Network
MO	Music Only
O&M	Operation and Maintenance (Manuals)
PA	Public Address (System)
RF	Radio Frequency
SR	Sound Reinforcement (System)
UON	Unless Otherwise Noted

1.2.3 Additional Terms

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

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

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the PA System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description all of the system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements, dimensions, and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations; G

a. Analysis and calculations to define power supply requirements for each component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions, for power supplies that are not an integral part of the component.

b. Analysis and calculations to define the type and size of all cables connecting all system components in accordance with Manufacturers instructions and power drop calculations.

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

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms.

e. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section H; SPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

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

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.6

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the PA System and all interfaced telecommunications systems and other systems, including the exact point and type of demarcation.

b. The layout and mounting of all PA equipment, and the routing and mounting of cabling in Comm Rooms and the Comm Equipment Room as coordinated with the layout of all other systems equipment in these rooms.

c. The layout and mounting of all PA equipment, and the routing and mounting of cabling on nurse station modular furniture.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

Preprinted material from the Manufacturer describing installation

requirements and safety precautions. Manufacturer's requirements for the use of specific products.

SD-09 Reports

Testing Reports; G

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

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

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

SD-14 Samples

Product Samples; G

Submit one sample unit of each type of speaker baffle for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H; OPERATION AND MAINTENANCE MANUALS.

O&M Manuals shall be available on-site before the start of any training.

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

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

1.4.1.2 Standard Products

The system application design shall utilize standard audio components that are the product of a Manufacturer regularly engaged in the manufacture of audio equipment.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Continuous Duty Design

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

1.4.1.5 Power Supply Design

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

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

1.4.1.6 Shielding and Grounding

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

1.4.1.7 User Room Numbers and Names

a. At the start of submittals, the Government shall furnish to the System Contractor a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

1.4.2 System Configuration

The Public Address (PA) System shall consist of an multichannel, zoned

audio distribution network to include amplifiers, mixers, microphones, volume controls, zone control and switching, audio monitor panel, telephone interface couplers, power supplies, cabling, speakers, speaker enclosures and baffles, equipment cabinets, and any ancillary components necessary to provide the required functional capability, system performance, and system configuration.

1.4.3 System Functionality

The PA System shall provide prioritized zoned loudspeaker paging and zoned music program distribution throughout all facility areas. Prime system functions include the following:

a. Emergency Paging, by microphone only, to all paging, music only and Sound Reinforcement(SR)speakers throughout the facility. Emergency over ride relays shall transfer Music Only (MO) and SR speakers to the emergency amplifier.

b. All Call loudspeaker paging to all paging zones throughout the facility and to departments without departmental paging.

c. Departmental loudspeaker paging zones for paging and announcements in zones that normally coincide with departments or areas which share a common purpose or are similar in function.

d. General loudspeaker paging for paging in general circulation areas, including The Green, waiting areas, corridors, lobbies, public toilets, stairwells and elevators. The Circulation zone shall be considered a type of Departmental zone.

e. Background music distribution over paging loudspeakers, and in areas where only music is desired. In rooms with Music Only loudspeakers, the priority volume control shall have a Program Selector Switch, providing the local choice of either music program.

f. One channel of music distributed to the telephone system for music on hold.

1.4.4 Paging Zones and Prioritization

1.4.4.1 Paging Priorities

There shall be four priority paging levels, ranked from highest to lowest as follows:

Top Priority	Emergency Paging
Second Priority	All Call Paging
Third Priority	Departmental Paging
Fourth Priority	Background Music

The fourth priority shall be the default priority until overridden by a Departmental, All Call, or Emergency page. If, during a Departmental Page, an All Call or Emergency page is initiated, then the Departmental page shall be overridden by the All Call or Emergency page. If, during an All Call Page, an Emergency page is initiated, then the All Call page shall be overridden by the Emergency page.

All Call and Departmental Paging shall be accessed by any telephone in the department by dialing up the associated telephone interface coupler.

Emergency Paging shall be by microphone only. If an All Call or Emergency Page is initiated during a Departmental Page, then the Departmental Page telephone coupler shall be disconnected, indicating to the Departmental Page caller that the page was not completed.

1.4.4.2 Functional Paging Zones

The table below indicates how loudspeakers shall be grouped together in zones, as provided by the existing installation of the speaker enclosures and backboxes for volume controls. Each zone shall be a stand alone group of loudspeakers controlled by local priority volume controls, only background music levels shall be locally adjustable. Sub-scripts on each speaker symbol on the TC4 series Telecommunications Drawings indicates how each speaker is connected to the corresponding volume control for that group. Sub-scripts with letters after circuit number, indicate additional groups of the same zone. Sub-script one (1) indicates speaker are part of Circulation Zone and shall be distributed from nearest Communications Room. Contractor shall field verify all existing conduit groupings. Paging categories and program sources shall have the capability of being modified in the PA Headend at any time.

The Circulation Zone shall be for paging patients and visitors in all circulation areas, including The Green, Scramble Area, elevators, stairs, public toilets, waiting areas and corridors; Departmental Zones shall be for individual paging of staff and doctors in each of the listed departments and Emergency Paging to Music Only loudspeakers and departmental areas not requiring zoned or All Call paging.

Reference the TC3 series Telecommunications Drawings Zone Plans for location and coverage of zones listed below.

Functional Paging Zones

Circulation Zone:	The Green, Scramble, Waiting Areas, Corridors, Stairways, Elevators and Public Toilets
Departmental Zones (Dial-up Paging)	
PAD	1-02
Pathology	1-03
Radiology	1-04
Emergency Service/Amb Garage	1-07/08
Primary Care Clinic A	1-09
Primary Care Clinic B	1-15
Food Service (non-public areas)	1-16
Logistics	1-17
Pharmacy	1-18
Ortho/Surg	1-20
EENT	1-21
Primary Care/Path/Rad Wait	1-24
VA	1-25
CEP	1-30A/B
Labor & Delivery	2-02
Central Sterile	2-03
Surgery	2-04
Inpatient Services	2-06
Dental Care	2-14

Information Management	3-01
Command Suite/Nursing Admin/ Training & Security	3-02/03

All Call - (Circulation and Departmental Zones)
(Combination of Departments, comprising All Call)

CSD	1-06 (Note 1)
Tri-Care	1-22
Alarm Monitor Room	141-10

Emergency Page/Music Only Zone - (Microphone Paging)

All Music Only Rooms	Over Ride
Physical Therapy	1-19
Company Command	2-08
Personnel	2-10
Logistics HQ	2-11
Resource Center	2-12
Resource Management	3-04
Quality Assurance	3-05
Conference Center (EP only)	3-08

Wide Area Zones

Primary Clinics A & B	1-09 & 1-15
Ortho/Surg/EENT/VA	1-20, 1-21 & 1-25

Note 1: CSD 1-06 shall have the option of being combined with PCC A 1-15 in Communications Room. Switch shall be a double pole-double throw toggle switch, clearly labeled and mounted near Public Address Terminal Blocks.

Dedicated Departmental Zones shall function individually or as one, in combination with Zones listed under All Call. Departmental Zones not receiving dedicated zone paging, however, shall be included in All Call pages, with priority over the background music and shall be accessed via dial-up access from designated phones throughout the facility.

Areas listed under the Emergency Page Zone shall function as one with only background music (with the exception of The Conference Center, Zone 3-08), adjustable with local volume controls. In the event of an emergency, the microphone located in the Command Suite 321-09, shall page all Departmental Zones, the Emergency Paging Zone, (including Music Only loudspeakers) and transfer loudspeakers in the Conference Center from the local sound reinforcement system to the Emergency Paging Zone amplifier for the duration of the page. In the event the Command Control Center 321-10 is activated, then the emergency microphone shall be moved from 321-09 to the Command Control Center 321-10.

The two pairs of zones listed under Wide Area Zones shall require an additional telephone interface adapter each, each with a unique dial-up number for combined department paging.

1.4.5 Multi-Channel Zoned System

The system shall include microphones, microphone outlet receptacles, microphone inputs with preamplifiers, line level inputs for telephone interfaces and Program Music Distribution sources. Mixers, power amplifying equipment, distribution amplifiers, equalizers, priority paging relays or solid state logic system and accessories required to output the

public address and program music distribution to the Functional Zone Systems through selected portions of the audio distribution network as indicated.

1.4.6 Functional Zone System

The system shall control and amplify an audio program for distribution within the areas indicated. Components of the system shall include a mixer-amplifier, telephone interface coupler, cabling and other associated hardware.

1.4.7 System Performance

The system shall provide even sound distribution throughout the designated area, plus or minus 3 dB for the 1/1 octave band centered at 4000 Hz. The system shall provide uniform frequency response throughout the designated area, plus or minus 3 dB as measured with 1/3-octave bands of pink noise at locations across the designated area selected by the Contracting Officer. The system shall be capable of delivering 75 dB average program level with additional 10 dB peaking margin sound pressure level (SPL) in the area without causing the associated amplifier to exceed normal operating specifications for power or distortion. Unless otherwise specified the sound pressure reference level is 20 micro Pascal (0.00002 Newtons per square meter). Minimum audio SPL to ambient noise ratio shall be at least +15 dB in all areas. System shall have no audible hum, noise, buzz or rattles at any loudspeaker. Electrical/acoustic signal-to-noise ratio for the entire system shall be at least 66 dB.

1.4.8 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

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

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

c. To scale details of the custom assembly of equipment shall indicate the assembly configuration, elevations and dimensions. Typical custom assembly details include annunciator panel stations, equipment panels, and equipment mounted in a rack or cabinet.

d. Legend of graphic symbols used on all drawings.

e. Details shall indicate anchoring and bracing provided for seismic protection in accordance with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

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

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

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

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and/or Installer in accordance with the qualifications specified in this Section.

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

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

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

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

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

Training Personnel

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

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

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

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

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

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

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

1.5.1.2 System Contractor Qualifications

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

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

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

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

1.5.1.3 Installer Qualifications

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

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

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

1.5.1.4 Manufacturer Qualifications

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

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

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

1.5.2 Regulatory Requirements

1.5.2.1 Design and Installation Work

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

1.5.2.2 Electromagnetic Interference (EMI)

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

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

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

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

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

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

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

1.6.2 Delivery Coordination

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

1.6.3 Loss Liability

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

1.6.4 Delivery Restrictions

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

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

1.6.5 Contractor Responsibility

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

1.7 SEQUENCING AND SCHEDULING

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

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

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

d. Final inspection and acceptance testing of each system shall be performed after the system installation has been completed and all pre-testing checks and commissioning has been successfully completed.

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

b. Warranty the operational and physical integrity of the provided system, including a warranty against all defects in design, equipment, materials, workmanship, and improper installation and adjustments, for a period of at least one year from the date the operating system is accepted by the Government after satisfactory completion of final inspection and acceptance

tests. This warranty shall not cover any malfunctions or damage caused by misuse, abuse or neglect. If the System Contractor or Manufacturer warranty is for a period longer than one year, the longest warranty period shall govern. The System Contractor shall furnish a warranty document with the Data submittal.

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express delivered to BACH if not available locally.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

The System Contractor shall keep an adequate quantity of installation spare parts onsite to preclude work stoppages and to meet other contingencies that might arise prior to the final inspection and acceptance of the system.

1.9.1.3 Post Acceptance Spare Parts

a. After the system has been acceptance tested and turned over to the Government for operation, furnish the minimum type and quantity of onsite spare parts as itemized below.

Quantity	Items
6	203mm Cone Speakers
1	Weather Resistant 203mm Cone Speaker
1	Horn Speaker
1	Telephone Interface Coupler

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

c. The System Contractor shall recommend any additional onsite spare parts deemed necessary by the Manufacturer and or the System Contractor. Furnish to the Contracting Officer the cost of recommended additional spare components as a separate line item.

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

c. Deliver all special maintenance tools, equipment and software to the Government upon successful completion of the final inspection and acceptance testing of the system.

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. As authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been factory trained for maintenance of the provided system, for the first level of response to a call for service.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

b. A 24-hour telephone answering service shall be provided to receive after hour maintenance service calls and dispatch on-call service personnel within the required response time.

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

(1) Complete failure of the total system

(2) Failure of the All Call Zone.

(3) Failure of 20% or more of all zones.

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified, or indicated on the Telecommunications Drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

Modification of products that nullifies the UL listing or other agency approval is not permitted.

2.1.4 Identical Products

Products of the same classification shall be identical. This requirement includes all component equipment, modules, assemblies, parts, and materials.

2.1.5 Nameplates and Equipment Markings

a. Each major equipment component shall have the Manufacturer's name, model, and serial number on a plate secured to the equipment. Also, all compliance with regulatory requirements, such as UL and CFR, shall be indicated on the nameplate or on adjacent labels.

b. All controls on equipment shall be plainly and permanently labeled with the identification of the function served. Stick on marker tapes is not acceptable.

c. Markings on any exposed surfaces shall not be destroyed by housekeeping solutions normally used in BACH.

2.1.6 Mounting Alignment Capability

Wall mounted components shall have an adjustable mounting alignment capability to compensate for improperly aligned backboxes and to insure a level installation.

2.1.7 Model and Enhancements

a. The system and all product components shall be the Manufacturer's latest model, design, version, and quality in production at time of delivery and installation.

b. Any product enhancement that becomes available after delivery and installation, and up to time of system acceptance, shall be brought to the attention of the Contracting Officer upon announcement by the Manufacturer and shall be made available to BACH. If such enhancements customarily are provided at no additional cost, the Government shall automatically be entitled to such enhancements. If such enhancements customarily are provided at additional cost, the Contracting Officer has the option to accept or reject such enhancements.

c. Submit a letter to the Contracting Officer from the Manufacturer guaranteeing that the Manufacturer shall inform the Government of, and make available to the Government, all commercially available enhancements to the system at the then current price. Include the letter with the Data submittal.

d. Substitutions, modifications, or improvements to the system are permissible provided that such substitution, modifications, or improvements shall not reduce or degrade the performance or product requirements, nor violate regulatory requirements. No such substitutions, modifications, or improvements shall be made without the written consent of the Manufacturer and Contracting Officer. Such consent shall not be unreasonably withheld or delayed.

2.2 MIXER-PREAMPLIFIERS

Mixer-preamplifier shall as a minimum conform to the following specifications:

Rated Output:	18 dB
Frequency Response:	Plus or Minus 1 dB, 20 - 20,000 Hz
Distortion:	Less than 0.2 percent, 20 - 20,000 Hz
Signal to noise:	Microphone - 60 dB Aux - 70 dB
Inputs:	6 modular inputs, function as required.
Modules:	See paragraph 2.6
Input Channel Isolation:	80 dB minimum
Tone Controls:	Plus or Minus 10 dB range at 50 and 15,000 Hz
Power Requirement:	110-125 Vac 60 Hz

2.3 POWER AMPLIFIERS

Power amplifiers shall as a minimum conform to the following specifications:

Rated power output:	See paragraph 2.5

Frequency Response:	Plus or Minus 1 dB, 20-20,000 Hz
Distortion:	Less than 0.5% percent at RPO, 600-13,000 Hz
Input Impedance:	600 balanced
Output Impedance:	Balanced 4 and 8 ohms
Output voltage:	25 and 70.7 volts
Power Requirement:	110-125 Vac 60 Hz

2.4 MIXER AMPLIFIERS

Mixer amplifiers shall be the same manufacturer and as a minimum conform to the same specifications as individual mixers and power amplifiers.

2.5 AMPLIFIER POWER RATINGS

Provide a mixer amplifier or mixer power amplifier combination for each zone listed below with a power rating equal to or greater than 140%, of the specified load. Load values shall be based on all line matching transformers being tapped at 1 watt unless otherwise noted. Power ratings listed under "AMP" are for minimum common, commercially available sizes.

Amplifier Power Requirements

Department	Zone	Load	AMP
Circulation Zone (Circ):	Levels 0 & 1	107w	150w
(Note 1)	Levels 2, 3 & 4	91w	150w
PAD	1-02	18w	30w
Pathology	1-03	26w	60w
Radiology	1-04	21w	30w
Emergency Service/Amb Garage	1-07/08	22w	30w
Primary Care Clinic A	1-09	32w	60w
Primary Care Clinic B	1-15	34w	60w
Food Service (Note 1)	1-16	36w	60w
Logistics	1-17	26w	60w
Pharmacy	1-18	9w	30w
Ortho/Surg	1-20	13w	30w
EENT	1-21	12w	30w
Primary Care/Path/Rad Wait	1-24	21w	30w
VA	1-25	10w	30w
CEP	1-30A/B	11w	30w
Labor & Delivery	2-02	16w	30w
Central Sterile	2-03	6w	10w
Surgery	2-04	35w	60w
Inpatient Services	2-06	25w	60w
Dental Care	2-14	14w	30w
Information Man. (Note 1)	3-01	10w	30w
Command Suite/Nursing Admin/ Training & Security	3-02/03	10w	30w
All Call - (Departmental Zones)(Note 2)			
CSD	1-06		

Tri Care	1-22		
Alarm Monitor Room	1-26	7w	30w
Emergency Page/Music Only Channels - (Microphone Paging) (Note 3)			
All Music Only Rooms			
Physical Therapy	1-19		
Company Command	2-08		
Personnel	2-10		
Logistics HQ	2-11		
Resource Center	2-12		
Resource Management	3-04		
Quality Assurance	3-05		
Conf. Center (EP only)	3-08	100w	150w (Two)

Note 1: Reference TC4 series Telecommunication Plans Keyed Note 12 for speakers tapped at Two(2) watts, in environments with high ambient noise.

Note 2: Amplifier intentionally oversized for future expansion of All Call Zone.

Note 3: Two Mixer/Amplifiers required, one for each program music source, both function as emergency Paging Amplifiers.

2.6 MIXER, MIXER-AMPLIFIER INPUT MODULES

2.6.1 Microphone Input Modules

Microphone input modules shall as a minimum conform to the following specifications:

Gain:	40 dB nominal
Sensitivity:	1.0 mV nominal
Frequency Response:	Plus or Minus 2 dB, 20 - 20,000 Hz
Distortion:	Less than 0.5 percent 20 - 20,000 Hz
Inputs:	Transformer-coupled balanced 50 - 250 ohms
Signal to noise:	70 dB minimum

2.6.2 Line Level Input Module

Line Level input modules shall as a minimum conform to the following specifications:

Gain:	0 dB nominal
Sensitivity:	125 mV nominal
Frequency Response:	Plus or Minus 2 dB, 20 - 20,000 Hz
Distortion:	Less than 0.5 percent 20 - 20,000 Hz
Inputs:	Transformer-coupled balanced 600 ohms

Signal to noise:	90 dB minimum

2.6.3 Aux Input Module

Aux input modules shall as a minimum conform to the following specifications:

Gain:	0 dB nominal
Sensitivity:	100 mV nominal
Frequency Response:	Plus or Minus 2 dB, 20 - 20,000 Hz
Distortion:	Less than 0.5 percent 20 - 20,000 Hz
Inputs:	Unbalanced 220K ohms
Signal to noise:	90 dB minimum

2.7 MICROPHONES

2.7.1 Desk Microphone

Microphones shall as a minimum conform to the following specifications:

Element:	Dynamic
Pattern:	Cardioid
Frequency Response:	50 - 12,000 Hz
Impedance:	Low impedance mic (150-400 ohms)
Front-to-back Ratio:	20 dB
Switches:	Push-to-Talk switch shall be integral to microphone. Switch shall control priority paging relays to over ride volume settings and to disconnect local SR overhead speakers and enable paging.

2.7.2 Microphone - Level Sensing

Microphones shall as a minimum conform to the following specifications:

Element:	Dynamic
Application:	Flush ceiling mounted omni-directional Pick-up unit for level sensing amplifier
Pattern:	Cardioid
Frequency Response:	50 - 12,000 Hz
Impedance:	Low impedance mic (150-400 ohms)

2.7.3 Microphone Jack

Each outlet for desk microphones shall consist of a standard outlet box,

flush-mounted, and fitted with a three-conductor, polarized, locking-type, female microphone jack for audio, a two-conductor, polarized, locking-type connector for low-voltage priority relay control and a corrosion resistant-steel device plate. Balanced line level signals only to Headend equipment.

2.8 LOUDSPEAKERS

2.8.1 203mm Cone Speaker

The cone speaker shall as a minimum conform to the following specifications:

Application:	Ceiling & Wall; Type C, C2, W# & WS
Frequency range:	60 to 12,000 Hz
Power Rating:	10 watts RMS
Voice Coil Impedance:	8 ohms
Magnet:	10 ounces or greater
Line Matching Transformer Type:	25/70.7 volt line
Capacity:	4 watts
Primary Taps:	0.5, 1, 2 and 4 watts
Primary Impedance:	25 volts - 1250, 625, and 312 ohms 70.7 volts - 10k, 5k, and 2.5k ohms
Frequency Response:	30 - 20,000 Hz
Insertion Loss:	Less than 1 dB

2.8.2 Weather Resistant 203mm Cone Speaker

The cone speaker shall as a minimum conform to the following specifications:

Application:	Outdoor Ceiling; Type C3
Frequency range:	60 to 12,000 Hz
Power Rating:	10 watts RMS
Voice Coil Impedance:	8 ohms
Magnet:	10 ounces or greater
Cone Material:	Treated or polypropylene
Line Matching Transformer Type:	25/70.7 volt line
Capacity:	4 watts
Primary Taps:	0.5, 1, 2 and 4 watts

Primary Impedance:	25 volts - 1250, 625, and 312 ohms 70.7 volts - 10k, 5k, and 2.5k ohms
Frequency Response:	30 - 20,000 Hz
Insertion Loss:	Less than 1 dB

2.8.3 Horn Speaker

The horn speaker shall as a minimum conform to the following specifications:

Application:	Outdoor
Frequency Response:	400 - 14,000 Hz
Power Taps:	70 volt line - .9, 1.8, 3.8, 7.5, and 15 watts
Impedance:	Adjustable 5000, 2500, 1300, 670, 330, 90 and 45 ohms
Power Rating:	15 watts
Dispersion:	110 degrees

2.8.4 Wall Speaker Enclosures

Soundolier Enclosures T195-8 for loudspeaker type W, have been provided as part of the Construction Contract rough-in.

2.8.5 Ceiling Speaker Enclosures

Soundolier Enclosures EZ195-8 for loudspeaker type C & MO and Soundolier Enclosures T195-8 for loudspeaker type C2, C3& MO, have been provided as part of the Construction Contract rough-in.

2.8.6 Surface Mount Speaker Baffle

Soundolier 415-8W directional surface mount wall baffle or equivalent for 203mm (8") cone speaker type WS in stairways. Rough-in box and conduit provided by Facility Contract.

2.8.7 Ceiling Baffles - Type C

Baffles for mounting Type C loudspeakers shall be Soundolier T730-8 torsion spring baffles or equivalent and must be compatible with Soundolier EZ195-8 enclosures provided.

2.8.8 Ceiling Baffles - Type C2 & C3

Baffles for mounting Type C2 & C3 loudspeakers shall be Soundolier T730-8 torsion spring baffles or equivalent and must be compatible with Soundolier T195-8 enclosures provided.

2.9 FM EQUIPMENT

2.9.1 FM Tuner

FM tuner shall be rack-mounted and shall as a minimum conform to the

following characteristics:

Tuning Range:	FM - 88 to 108 MHz
Selectivity:	60 dB on FM
Sensitivity:	FM - 1.5 microvolts
Capture Ratio:	1.0 dB
Readout/selection:	Digital
Other features:	Phased Lock Loop (PLL)
Power Requirement:	110-125 Vac, 60Hz

2.10 COMPACT DISC PLAYER

Player shall have three beam laser pickup, dual Digital-to-Analog converters, random access and random mode programmable playback. Player shall have capability to play a minimum of 50 discs automatically. Player shall as a minimum conform to the following:

Frequency:	10 - 20,000 Hz Plus or Minus 1 dB
Signal-to-Noise:	Minimum of 100 dB
Dynamic Range:	Minimum of 96 dB
Total Harmonic Distortion:	Maximum of 0.005% at 1 KHZ
Channel Separation:	Minimum 100 dB at 1 KHZ
Quantization:	Minimum of 18 Bits Linear per channel
Conversion Rate:	Minimum 8 x Oversampling
Disc Sizes:	5 inch and mini disks
Formats:	Audio CD's and MP3 Files
Power Requirement:	110-125 Vac, 60Hz

2.11 DISTRIBUTION AMPLIFIERS

Line level distribution amplifiers, one 600 ohm balanced input to minimum of eight isolated and buffered, 600 ohm balanced outputs, rack mountable and shall as a minimum conform to the following specifications:

Gain:	Adjustable from 0 to + 10 dBm, nominally.
Noise:	-80 dBm maximum
THD:	0.01% maximum
Frequency Response:	+0 dB, -1 dB, 20 to 20,000 Hz

2.12 AMBIENT NOISE CONTROL AMPLIFIER

Ambient Noise Controlled Amplifier (ANCA) to control paging and music levels in the Main Dining area. Level sensing microphones pick-up ambient noise levels and feed ANCA circuitry that expands the program signal in direct proportion to the ambient noise level and shall as a minimum conform to the following specifications:.

Level expansion: Up to +20 db above ambient noise levels.

Program input specifications:
- Balanced, transformer isolated
- Impedance: 30K ohms or greater
- Sensitivity: 0.775V rms for full output
- S/N: 80 db at maximum gain

Microphone input specifications:
- Balanced, transformer isolated
- Impedance: 200 Ohms nominal

Output: 600 Ohms, +30 dBm maximum

Frequency Response: 50 Hz - 15K Hz ±1 db

2.13 GRAPHIC EQUALIZERS

Rack mount unit with security cover (tamper proof screws) for front panel and shall as a minimum conform to the following specifications:

Equalization:	2/3 octave eq at 15 ISO center frequency from 25 Hz to 16 kHz.
Attenuation:	plus or minus 12 dB at each frequency.
Distortion:	< 0.01% @ 1 kHz
Frequency Response:	20Hz to 20kHz (Eq out): ±0.5 dB
Signal to Noise:	<-90 dBm
Maximum Output Level:	+22 dBm
Low Pass Filter:	15Hz to 300Hz: 12 dB/octave
High Pass Filter:	2.5kHz to 30kHz: 12 dB/octave

2.14 TELEPHONE INTERFACE COUPLERS

Telephone Interface Coupler shall provide one way departmental, and all call paging access from designated telephones to the PA system. Paging shall be accomplished by the building telephone system instruments interconnected to the PA system via an interface module to allow telephone dial up access to the paging amplifier. Telephone interface coupler shall be a Circuit Werkes AC-12 Frame with HC3 AutoCouplers or equivalent, provide 26 cards and 3 frames for the Circulation Zone, All Call Zone, 2 Wide Area Zones and 22 Departmental Zones, as a minimum conform to the following specifications:

Impedance: 600 ohms

Frequency response:	100Hz to 10KHz
Input Power Requirement:	12-24Vdc (from power supply)
Access requirement:	Twenty-five dial access trunk lines.
Functional requirements:	Automatic disconnect as soon as paging party hangs up. Voltage free contacts for muting of audio inputs required. Individual card mount system. Rack mounted card frame, and power supply.

2.15 PRIORITY PAGING CONTROLS

Priority relays and controls required to accomplish operations specified shall be provided. Mechanical relays shall be completely enclosed with a plastic dust cover for maximum protection against foreign matter, and shall be plug-in type. Mechanical relays shall be provided with a diode wired across the relay coil for transient suppression and shall be installed utilizing factory-prewired, rack-mounted receptacle strips. Coil shall be maximum 24 volts dc.

A solid state Digital Logic Controller shall be an acceptable alternative control system, as long as it provides the exact control functions as specified in sections 1.4.2.1 and 1.4.2.2.

2.16 SWITCHES AND CONTROLS

2.16.1 Remote Loudspeaker Volume Controls - Type VR

Remote volume controls shall be an auto transformer type with detented 3 dB steps and an OFF position. The controls shall be wall-mounted in double-gang outlet boxes and furnished with engraved switching plates finished to match approved finish of electrical wall switches. Insertion loss of the controls shall not exceed 0.6 dB and the power-handling capacities of the control shall be either 10, 35 or 75 watts, as required by the load attached, as indicated by circuited sub-scripts on TC4 Series Telecommunications Drawings. Integral sealed low-voltage priority override relays shall be furnished as part of these controls with all wiring to the racks to allow override of the volume controls for priority announcements.

2.16.2 Remote Loudspeaker Volume Controls - Type VS

Type VS volume controls shall have identical specifications as Type VR, with the addition of a double pole double throw music program selector switch preceding the connection to the volume control. Custom mount switch and engrave plates with PROGRAM 1 and PROGRAM 2 in proper relation to operation of switch.

2.17 EQUIPMENT CABINETS

Equipment cabinets shall be provided by the Section 16710 PDS Contractor as indicated on drawing TC5.07, Detail 1, Item 2. If additional rack space shall be required, the PA System Contractor shall provide identical equipment cabinets as provided by the PDS Contractor.

2.18 CABLES

2.18.1 Speaker Cable

All speaker cable shall be run in existing conduits provided by the

facility construction project. Cables shall be of the gauge required depending upon the cable run length. System Contractor shall calculate gauge for each homerun to provide no appreciable loss. In no case shall cable be used which is smaller than 18 AWG. Insulation on the conductors shall be plenum rated CMP not less than 0.009 inch. Cables shall be jacketed with a plenum rated CMP compound. The jacket thickness shall be 0.02 inch minimum.

2.18.2 Microphone/Line Level Cable

Cable conductor shall be stranded copper 20 AWG. Insulation on the conductors shall be plenum rated CMP not less than 0.009 inch. Cable shall be shielded 100% of aluminum polyester foil with a bare 22 gauge stranded soft copper drain conductor. Cables shall be jacketed with a plenum rated CMP compound. The jacket thickness shall be 0.02 inch minimum.

2.18.3 Antenna Cable

Antenna coaxial cable shall have 75 ohm plus or minus 2 ohm. Attenuation of the coaxial cable span between the antenna and amplifier shall not exceed 2.5 dB at 108 MHz.

2.19 TERMINAL BLOCKS AND STRIPS

Terminal blocks shall be provided for the termination and interconnection of all riser cables and homerun cables from volume controls. The term Terminal Blocks, as referenced on the Telecommunications Drawings, shall de defined as the combination of the terminal strips and the existing wall mounted enclosures provided by the facility construction project. Provide screw terminal barrier strips with enough capacity for all cables, interconnections and an additional 50% spare capacity. Terminal strips shall be mounted in the existing wall mounted enclosures. Contractor shall verify all existing riser conduits and homerun conduits from volume controls that have been provided by the facility construction project.

2.20 TERMINALS

Terminals used in the termination of cables on equipment or terminal strips shall be tool-crimped pressure type.

2.21 POWER & SURGE PROTECTION

2.21.1 Power Line Surge Protection

Major components of the system such as power amplifiers, mixer-preamplifiers, and tuners, shall have a device, whether internal or external, which provides protection against voltage spikes and current surges originating from commercial power sources per IEEE C62.41 B3 combination waveform and NFPA 70. Fuses shall not be used for surge protection. The surge protector shall be rated for a maximum let thru voltage of 350 Volts ac (line-to-neutral) and 350 Volt ac (neutral-to-ground). Surge protection device shall be UL listed and labeled as having been tested in accordance with UL 1449.

2.21.2 Signal Surge Protection

Major components of the system shall have internal protection circuits which protects the component from mismatched loads, direct current, and shorted output lines. Communication cables/conductors shall have surge

protection installed at each point where it exits or enters a building.

PART 3 EXECUTION

3.1 EXAMINATION

System Contractor shall perform a site survey to verify all field conditions, become familiar with the details of the work and working conditions, verify dimensions in the field, and advise the Contracting Officer of any discrepancies before performing the work.

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of Comm Rooms are identified on the Telecommunications Drawings.

c. All flush and ceiling mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Junction box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

e. Coordinate all design and installation efforts with those of related trades that have provided the rough-in in the facility construction project to accommodate the installation of the system. In the event of any conflicts, delayed or improper preparatory work by others, notify the Contracting Officer for resolution. The Contracting Officer decision shall be binding.

3.2.3 Electrical Power and Grounds

a. Existing electrical power on the emergency critical branch circuit has been provided by the facility construction project at a power junction box in Comm Rooms for system central equipment, and at a power receptacle adjacent to each master station, the system maintenance station, the code blue annunciator panel station, and the failure alarm annunciator panel station. Reference the facility construction project Electrical Drawings for details.

b. Existing grounding buss bars have been provided as indicated on the Telecommunications Systems Drawings. Reference the facility construction project Electrical Drawings for details.

c. If any new electrical power circuits are required, the Telecommunications Systems Contractor shall define and submit the new power requirements to the Contracting Officer, who will coordinate the change with the existing Facility Contractor.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interfaces and Interconnections

a. Coordinate and define the details of all interfaces and interconnections with other systems and equipment as specified herein. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of Drawings and Data submittals.

b. Interfaces and interconnections shall include:

SR System - Two program music feeds

SR System - Emergency Paging Relays
BACH Telephone System - Telephone Interface Couplers
BACH Telephone System - Music On Hold
TV System - FM Antenna

3.4 INSTALLATION

3.4.1 General

a. Installation shall be accomplished as indicated and specified, and in accordance with acknowledged industry and professional standards and practices, and the Manufacturer's instructions.

b. Installation shall comply with the requirements of NFPA 70, NFPA 99, and ANSI/TIA/EIA-569-A.

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

d. During the entire installation the System Contractor shall maintain onsite a supervisor as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications.

e. Provide all tools and equipment needed to install the system.

f. All ac power plugs shall be tightly strapped to the ac power receptacle to prevent accidental unplugging of the ac power.

g. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT.

3.4.2 Equipment Installation

a. Equipment Racks

Racks shall be provided by the Section 16710 PDS Contractor, installation of PA equipment shall be as follows. Items of the same function shall be grouped together, either vertically or side-by-side. Controls shall be symmetrically arranged at a height as shown in approved drawings. CD, Cassette & Tuner shall be at a height above the floor as shown in approved drawing. Audio input and interconnections shall be made with approved shielded cable and plug connectors; output connections may be screw terminal type. All connections to power supplies shall utilize standard male plug and female receptacle connectors with the female receptacle being the source side of the connection. Inputs, outputs, interconnections, test points, and relays shall be accessible at the rear of the equipment rack for maintenance and testing. Each item shall be removable from the rack without disturbing other items or connections. Empty space in equipment racks shall be covered by blank panels so that the entire front of the rack is occupied by panels.

b. Terminal Blocks shall be surface mounted in the Comm Rooms indicated on the Telecommunications Drawings. Mounting of these blocks in any other room, area or above finished ceilings shall not be acceptable. Terminal blocks shall be marked indicating the paging zone served.

c. Mount equipment firmly secured in place, plumb and square.

d. Provide adequate equipment ventilation and adequate equipment accessibility for service and repair.

e. Equipment mounting shall comply with the seismic bracing and anchorage requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

3.4.3 System Cabling Installation

a. Installation of system cabling shall be by the qualified Installer.

b. All cables and the installation of cables shall be in accordance with NFPA 70 NEC.

c. High voltage (70.7v) loudspeaker wiring shall be installed in conduit only. Low voltage wiring for grounding, line level, and power cables shall be isolated from each other by physical isolation and metallic shielding. Shielding shall be terminated and grounded at only one end.

d. Low voltage level cables shall utilize the S partition in the cable tray system as indicated on the Telecommunications Drawing TC6.51, for cables to remote locations.

e. System cables shall be installed without kinks, sharp bends or deformations, in a manner to prevent abrasion.

f. Coordinate the system cable routing with the cable routing of other systems to assure that there will not be any EMI problems that will adversely affect the performance of this system or any other specified project system.

g. Certify that system cable that are installed in the existing communications systems cable trays along with the cables from other systems shall not adversely affect the performance of this system or any other project system.

h. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

i. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

j. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

Equipment enclosures and all other non-current carrying exposed metal parts of electric equipment shall be grounded.

3.5 APPLICATION

3.5.1 AC Power Connections

a. AC power for all equipment shall be circuited to the emergency system critical branch in accordance with NFPA 70 and NFPA 99.

b. Contractor shall verify AC power provided for the PA System has been circuited to the emergency life safety branch.

3.5.2 Installation Setup

Contractor shall make all adjustments and perform all application programming as necessary to setup the system to function in accordance with specific user requirements for the overall system and all paging zones. All levels shall be set for maximum performance and signal to noise ratio, with local Volume controls set to 50% settings for background music. Contractor shall re-adjust levels as required during initial operation, for a period of two weeks, to compensate for background noise levels during operations, not available during testing. Coordinate all such setup details with BACH users, install them as part of the system setup, and include the setup details in the Test Plans and O&M documentation.

3.6 INSPECTION, TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

f. Qualified PA System Contractor personnel conducting acceptance tests shall be factory trained or certified and shall be completely knowledgeable regarding the system design, installation, and operation.

g. The Contracting Officer reserves the right to approve the System Contractor's choice of testing personnel, and, upon rejection of any testing personnel by the Contracting Officer at any time, the System Contractor shall replace such testing personnel as soon as reasonably possible. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to review the qualifications of each person proposed for testing work.

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

j. Inspection and testing shall be conducted during normal working hours with prior notice to the Contracting Officer so as not to interfere with orderly work processes.

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, readiness checks, integrated performance tests, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

m. Results of each inspection and test shall be reported in electronic and hard copy form to the Contracting Officer.

3.6.2 Periodic Inspection and Testing

a. All work and workmanship shall be subject to inspection and testing as requested by the Contracting Officer at any and all times during preparation and installation.

b. The Contracting Officer, in his or her sole discretion, may reject defective work and workmanship and require its correction. The Government right to inspect, test, and reject, or its failure to exercise such right, as provided herein, shall in no way diminish the System Contractor's duty to inspect and reject work as necessary to comply fully with the requirements of the contract documents.

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

b. Draft as-built system drawings, and O&M manuals shall be made available by the System Contractor for use during performance of final inspection and acceptance testing. Final inspection or acceptance testing shall not be scheduled nor performed without this documentation.

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

d. Upon successful completion of final acceptance tests, and 30 calendar days of consecutive operation in accordance with specified requirements without the occurrence of any major malfunctions, the System Contractor shall submit the final acceptance test report, including certificates of compliance stating that all specified requirements and conditions have been satisfied. The effective date for completion of the final system acceptance shall be the date when the system has satisfied the 30 days of operation without a major malfunction as specified above.

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements, system application design, and user setup requirements for the system. Each system operating mode shall be demonstrated to perform as required by operation of each individual system component under normal or simulated normal system conditions.

b. Testing shall include, but not be limited to, the following tests to demonstrate specified requirements:

(1) Operation under emergency power conditions.

(2) Operation of 100% of all components used by the staff in all modes of operation demonstrating that all functions and the proper sequence of events occur.

(3) Interfaces with other systems.

(4) Program distribution sources and channel components.

(5) Amplified monitor panel, all specified monitoring points.

(6) Telephone interface couplers, dial up codes and priority over rides on every zone.

(7) Individual zone mixers, all inputs via amplified monitor panel.

(8) Individual paging zones, all volume controls & loudspeakers.

(9) Emergency Paging: Microphone, preamp, priority relays, transfer relays and all loudspeakers.

(10) Ambient Noise Control Amplifier and gain adjustments.

(11) Level settings in all Circulation areas.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as required to demonstrate compliance with all specifications to the Contracting Officer.

b. All corrective action shall be completed in a reasonable time consistent with project schedules and acceptable to the Contracting Officer.

c. If, after 30 calendar days from the start of acceptance testing, any system or any equipment component thereof fails to demonstrate complete and proper performance, the Government shall have the right to return the total system or any equipment component to the System Contractor. The System Contractor shall refund all costs thereof to the Government and shall indemnify the Government from damages, costs, and expenses incurred in connection with such activity.

d. The actual date of return of any rejected system or equipment component shall be under the absolute control of the Government. The Government shall have the right to continue to utilize such system and equipment until the actual date of removal.

3.6.7 Warranty Period Inspections and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

d. Results of each warranty period inspection and test shall be reported in writing to the Contracting Officer.

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified operations and maintenance training shall be provided. This includes all specified onsite training, and factory training at the

Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to BACH staff in accordance with the approved training plan.

3.7.2 General Preparations

During the week prior to the start of training for any system, check the system to assure that it as been successfully commissioned and acceptance tested, and is in full-specified operational condition.

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated medical facility staff in the operation and maintenance of the provided system.

b. The Contracting Officer reserves the right to approve the System Contractor's choice of training personnel, and, upon rejection of a trainer by the Contracting Officer at any time, the System Contractor shall immediately replace such trainers. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to review the qualifications of each proposed trainer.

3.7.4 Training Instructions

a. Training instructions shall cover all specified features and capabilities of the system, and all of the items contained in the operating and maintenance manuals.

b. Maintenance technician training shall also include preventive maintenance, routine maintenance, repair and troubleshooting procedures.

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

a. Furnish all training materials and handouts. Handouts shall be provided in the quantity needed for all of BACH technicians, operations and user staff that will receive training.

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

a. Training shall be provided onsite to all medical facility staff as required throughout the contract and warranty period to train operations and maintenance staff for the provided system.

b. The onsite training program shall include two training courses, one for maintenance technicians and one for user and operations staff.

c. Each course shall include classroom training and field training. Field training for medical facility staff shall take place in the area where the staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

d. Multiple instructional units for each onsite course shall be conducted on a three shift, seven days a week basis as required to train all staff during their normal on-duty working hours.

e. The Contracting Officer shall designate qualified personnel to be instructed in the operation and maintenance of each system, schedule instructional sessions, and provide suitable onsite instruction facilities.

3.7.7 User and Operational Staff Training

a. User and operational staff training shall commence at a time acceptable to the Contracting Officer and near the time the system is scheduled for operational use by BACH.

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system has been accepted by the Government, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

a. Before the system is turned over to the Government for operational use, training shall be provided for maintenance technicians designated by the Contracting Officer.

b. The onsite technician training course shall provide the number of instructional hours necessary to cover all aspects of system setup,

programming, operations, preventive maintenance, routine maintenance, routine repair, and troubleshooting procedures for the system as installed.

c. Nine (9) months after the system has been accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided by the Contractor at a location approved by the Contracting Officer. Training shall include comprehensive instruction for complete setup, operation, maintenance and repair of the system, including the theory of operation, maintenance programs, failure diagnostic programs, trouble shooting and repair.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 PA System

a. Provide a complete and operational PA System as specified in this Section and indicated on the Telecommunications Drawings, as required by the system application design, and as further defined below.

b. Deliver and install all product items as required to comply with the approved installation schedule.

3.11.2 Indicated Items

Provide the quantity and type of system components as indicated on the Telecommunications Drawings.

3.11.3 Terminal Blocks

The Telecommunication Drawings indicate space in Comm Rooms that has been designated for the installation of system terminal blocks. As required by the system application design, furnish and install the type and quantity of terminal blocks in these designated locations.

3.11.4 Product Samples

Provide one sample unit of each type of baffle for approval as part of the Samples submittal.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16771

SOUND REINFORCEMENT (SR) SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Power Supply Design
1.4.1.5 Shielding and Grounding
1.4.2 System Configuration
1.4.3 System Functionality
1.4.3.1 Individual Subsystems
1.4.3.2 Multi-Channel Zoned System
1.4.3.3 Classroom/Conference Room Subsystems
1.4.3.4 System Performance
1.4.4 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Design and Installation Work
1.5.2.2 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.1 MIXER-AMPLIFIER
2.2 EXPANSION MIXER
2.3 MIXER, MIXER-AMPLIFIER INPUT MODULES
2.3.1 Microphone Input Modules
2.3.2 Line Level Input Module
2.3.3 Aux Input Modules
2.4 MICROPHONES
2.4.1 Handheld Microphones - Three (3) required
2.4.2 Microphone - Gooseneck - One (1) required
2.4.3 Wireless Microphone System - One(1) required
2.4.4 Microphone Jack
2.5 LOUDSPEAKERS
2.5.1 Cone Speaker
2.5.2 Ceiling Speaker Enclosures
2.5.3 Ceiling Baffles - Type SR-C
2.6 COMPACT DISC PLAYER
2.7 DISTRIBUTION AMPLIFIERS
2.8 GRAPHIC EQUALIZERS
2.9 ROOM COMBINER
2.10 SPEAKER TRANSFER RELAYS
2.11 EQUIPMENT CABINETS
2.12 CABLES
2.12.1 Speaker Cable
2.12.2 Microphone Cable
2.13 TERMINALS
2.14 SURGE PROTECTION
2.14.1 Power Line Surge Protection
2.14.2 SIGNAL SURGE PROTECTION

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power and Grounds
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interfaces and Interconnections
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation
3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Installation Setup
3.6 INSPECTION, TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing

3.6.3 System Readiness Checks
3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspections and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 Close Out Documentation
3.10 Contractor Quality Control
3.11 SCHEDULES
3.11.1 SR System
3.11.2 Indicated Items
3.11.3 Product Samples

-- End of Section Table of Contents --

SECTION 16771

SOUND REINFORCEMENT (SR) SYSTEM

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 basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

47 CFR 15	Radio Frequency Devices

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C62.41	(1991; R 1995) Surge Voltages in Low-Voltage AC Power Circuits

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code

UNDERWRITERS LABORATORY (UL)

UL 1449	(1996; Rev thru Feb 1998) Transient Voltage Surge Suppressors

1.2 DEFINITIONS

1.2.1 General Definitions

The glossary of definitions, abbreviations and acronyms, and units set forth in ANSI/TIA/EIA-569-Ashall apply to this Section, unless otherwise noted.

1.2.2 Additional Acronyms

For the purposes of this Section, the following definitions shall apply.

BACH	Bassett Army Community Hospital
CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
GFGI	Government Furnished, Government Installed
MINC	Multimedia Interactive Network Center (TV System)
O&M	Operation and Maintenance (Manuals)
RF	Radio Frequency
SR	Sound Reinforcement (System)
TV	Television
UON	Unless Otherwise Noted

1.2.3 Additional Terms

For the purposes of this Section, following definitions shall apply.

System	Sound Reinforcement (SR) System, UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy all specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.
Telecommunications Systems	All low voltage, RF and power limited communications and security systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.
Telecommunications Rooms	Called Comm Rooms on the drawings. Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and devices for all telecommunications systems.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the SR System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all the system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements,

dimensions, and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations; G

a. Analysis and calculations to define power supply requirements for each component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions, for power supplies that are not an integral part of the component.

b. Analysis and calculations to define the type and size of all cables connecting all system components in accordance with Manufacturers instructions and power drop calculations.

c. Analysis and supporting result from specified preparation and application items, and all coordination items. Includes definition of all interface protocols.

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms.

e. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section H; SPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

Warranty document shall indicate the warranty period for the system and all component products.

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.6

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the SR System and all interfaced telecommunications systems and other systems, including the exact point and type of demarcation.

b. The layout and mounting of all SR equipment, and the routing and mounting of cabling in the Comm Equipment Room as coordinated with the layout of all other systems equipment in these rooms.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

Preprinted material from the Manufacturer describing installation requirements and safety precautions. Manufacturer's requirements for the use of specific products.

SD-09 Reports

Testing Reports; G

Submit all testing reports in both electronic media form and hard copy booklet form. Reports shall indicate all field tests performed to adjust each component and to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls and operating mode of the system, and the Manufacturer, model number, and serial number of the test equipment used in each test. The final acceptance test report shall include a statement that all specified requirements and conditions have been satisfied.

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

Proof that the items conform to the specified codes or standards, including the requirements of CFR, IEEE, NFPA, and UL.

SD-14 Samples

Product Samples; G

Submit one sample unit of each type of speaker baffle for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS.

O&M Manuals shall be available on-site before the start of any training.

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

The System Contractor shall perform the system application design required to provide a NCAV System that complies with and satisfies all of the requirements specified in this Section and indicated on the Telecommunications Drawings for this application and project.

1.4.1.2 Standard Products

The system application design shall utilize standard audio equipment that is the product of a Manufacturer regularly engaged in the manufacture of audio equipment.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to

satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Power Supply Design

a. AC powered equipment shall operate per specifications over the range of 105V to 130V, 60 Hz, unless otherwise noted.

b. All equipment connected to ac power circuits shall be protected from power line transients and surges as likely to be subjected in service from a commercial utility ac power system. Protection shall be integral to the equipment or installed as an accessory item in accordance with Manufacturer's recommendations. Fuses shall not be used for this protection.

1.4.1.5 Shielding and Grounding

All products shall be shielded and grounded as required by the system design, Manufacturer's instructions, UL 1069 listing, and regulatory requirements.

1.4.2 System Configuration

The Sound Reinforcement (SR) System shall consist of an integrated audio multichannel distribution network of subsystems to include amplifiers, mixers, microphones, volume controls, room combining and switching, audio monitor panel, power supplies, cabling, speakers, speaker enclosures and baffles, equipment cabinets, and any ancillary components necessary to provide the required functional capability, system performance, and system configuration.

1.4.3 System Functionality

The SR System shall provide live sound reinforcement and music program distribution throughout the classrooms and conference rooms that make up the Conference Center on the 3rd floor level. Prime system functions include the following:

a. Voice amplification, by microphones and system components, in individual classrooms or conference rooms, or any combination of classrooms and conference rooms throughout the Conference Center.

b. Playback of sound tracks from video tape, DVD or TV channels, in conjunction with the Section 16781 TELEVISION (TV) SYSTEM video projector and/or televisions in individual classrooms or conference room, or any combination of the classrooms and conference room throughout the Conference Center.

c. Background music distribution over loudspeakers.

1.4.3.1 Individual Subsystems

The SR Systems shall consist of an integrated network of five (5) individual SR Subsystems to serve the following Conference Center rooms:

Classroom	324-02
Classroom	324-04
Classroom	324-05

Conference Room	325-01
Classroom	325-04

1.4.3.2 Multi-Channel Zoned System

The system shall include microphones, microphone outlet receptacles, microphone inputs with preamplifiers, line level inputs for audio/visual playback and program music distribution sources. Power amplifying equipment, room combining circuitry and accessories required to output the live sound reinforcement and program music distribution through selected classrooms and conference rooms as indicated.

1.4.3.3 Classroom/Conference Room Subsystems

Each subsystem shall control and amplify an audio program for distribution within the areas indicated, either individually or in preset combinations. Components shall include a mixer-amplifier, equalizer, cabling and other associated hardware, located in the Communications Equipment Room 325-02. All control functions, such as source selection, level controls, and room combining shall take place in Room 325-02.

1.4.3.4 System Performance

The system shall provide even sound distribution throughout the designated area, plus or minus 3 dB for the 1/1 octave band centered at 4000 Hz. The system shall provide uniform frequency response throughout the designated area, plus or minus 3 dB as measured with 1/3-octave bands of pink noise at locations across the designated area selected by the Contracting Officer. The system shall be capable of delivering 75 dB average program level with additional 10 dB peaking margin sound pressure level (SPL) in the area without causing the associated amplifier to exceed normal operating specifications for power or distortion. Unless otherwise specified the sound pressure reference level is 20 micro Pascal (0.00002 Newtons per square meter). Minimum audio SPL to ambient noise ratio shall be at least +15 dB in all areas. System shall have no audible hum, noise, buzz or rattles at any loudspeaker. Electrical/acoustic signal-to-noise ratio for the entire system shall be at least 66 dB.

1.4.4 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

a. System block diagram, including interfaces with other systems, riser diagrams, wiring and schematic diagrams, run sheets including number of conductors and wire number (ID), custom assembly details, and installation details.

b. To scale installation details shall indicate layout and mounting of equipment, equipment relationship to other parts of the work, including clearances required for maintenance and operation, and plan and elevation details that indicate the exact and totally coordinated physical location and size of each individual item of equipment.

c. To scale details of the custom assembly of equipment shall indicate the assembly configuration, elevations and dimensions. Typical custom assembly details include annunciator panel stations, equipment panels, and equipment mounted in a rack or cabinet.

d. Legend of graphic symbols used on all drawings.

e. Details shall indicate anchoring and bracing provided for seismic protection in accordance with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

a. The SR System Contractor, Installer and Manufacturer shall each have the minimum qualifications specified, related to the type of system specified for this project.

b. The Government reserves the right to accept or reject the System Contractor, Installer or Manufacturer based upon qualifications and ability to conform to specified requirements of this Section. System Contractors, Installers and Manufacturers that do not have the specified qualifications shall not be acceptable and shall not be allowed to perform the work of this Section.

c. The Government shall determine the acceptability of any proposed System Contractor, Installer and Manufacturer based on submitted and verified documentation that substantiates that the proposed System Contractor, Installer and Manufacturer have the qualifications specified in this Section.

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and/or Installer in accordance with the qualifications specified in this Section.

e. The System Contractor shall submit documented verification of the specified qualifications as part of the data qualification submittal. The Government shall have the right to request, inspect and verify references and resumes of all technical and managerial personnel assigned to the project. Qualification documentation shall include, but not be limited to the information outlined below.

(1) A list of projects performed by the System Contractor and Installer during the last five years explicitly involving the type of system specified in this Section. The list shall include the name of the facility where the work was done, and the name, title, address and telephone number of a point of contact for the listed facility that can verify the work done. Lists shall be restricted to the facilities where the type of systems delivered and installed are similar to and serve the same purpose as the system specified in this Section. Lists shall explicitly identify the make and model of the system provided, and the total scope of work done for each and every facility on the list.

(2) An organization chart for the System Contractor and Installer project team that will perform the work of this Section.

(3) List and resumes of the principal personnel that will be assigned to work on this project and their assigned work responsibility and relationship with the project management structure. This shall include the following personnel:

System Project Manager
System Application Designer
CAD Staff (that will prepare submittal drawings)
Installation Technical and Supervisory Personnel
Acceptance Testing Personnel
Training Personnel

For each individual, this shall include his or her education and experience explicitly relevant to their work assignment on this project, and also include the certificate for factory training where this qualification is specified. Experiences with other types of system unrelated to the type of system specified in this Section are irrelevant and shall not be included.

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

(5) Telephone number that will be answered by staff 24 hours per day, 365 days per year, to obtain repair parts and service.

(6) The Manufacturer's qualifications relative to the production of the type of system specified in this Section.

(7) A letter from the Manufacturer stating that the System Contractor is an authorized distributor and service organization for the Manufacturer of the provided system. The letter shall also state the length of time that the System Contractor has been an authorized distributor.

(8) A letter from the Manufacturer stating that system being provided satisfies all functional and product requirements specified in this Section.

(9) A letter from the Manufacturer guaranteeing the availability of parts as specified.

1.5.1.2 System Contractor Qualifications

a. The System Contractor shall be regularly engaged in the system application design, documentation, installation, testing, training, and maintenance of the type of system specified in this Section, with a minimum of five years experience providing these services for systems having the same level of features and functions as the system being provided.

b. The System Contractor shall be an authorized distributor and service organization for the Manufacturer of the provided system for a minimum of at least five years.

c. System Contractor personnel assigned to this project shall be factory trained or certified for the make and model of the system provided by the System Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience performing the services that they will perform for this project.

d. The System Contractor shall maintain a full complement of repair parts for the provided system and shall be able to furnish on-call maintenance

service 24 hours per day, 365 days per year as specified herein.

1.5.1.3 Installer Qualifications

a. The Installer shall be regularly engaged in the business of installation of the type of system specified in this Section.

b. The installation supervisor that will be assigned to this project shall be factory trained or certified for the make and model of system provided by the System Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience in the installation of the specified types of system equipment and cables.

c. Installer personnel that will be assigned to this project shall have a minimum of three years experience in the installation of the types of system equipment and cabling specified in this Section.

1.5.1.4 Manufacturer Qualifications

a. The Manufacturer shall have a minimum of five years of experience in producing the types of products specified in this Section.

b. The Manufacturer shall produce products that satisfy all specified functional and product requirements.

c. The Manufacturer shall guarantee availability of replacement parts for a minimum of seven years from date of final acceptance of the installed system by the Contracting Officer.

1.5.2 Regulatory Requirements

1.5.2.1 Design and Installation Work

All design and installation work shall comply with NFPA 70 NEC, NFPA 99, and ANSI/TIA/EIA-569-A.

1.5.2.2 Electromagnetic Interference (EMI)

a. The installed system shall conform to the EMI standards specified in 47 CFR 15 Rules and Regulations, for EMI caused by computing devices.

b. Within the normal medical facility environment, the installed system shall not generate nor be susceptible to any harmful electromagnetic emission, radiation, or induction that degrades, obstructs, or interrupts the operation of the installed system, and any computer system, life safety system, or patient monitoring system in the facility.

c. In the event that any part of the system is subject to CFR technical standards different from those set forth herein, including without limitation the requirement that those computing devices marketed for use in business or industrial environments are certified by the FCC to comply with the Class B limit of the FCC Rules, such CFR standards shall apply in lieu of those set forth herein.

d. In the event that, at the time of system acceptance testing, the applicable CFR technical standards shall differ from those set forth above, the system as installed shall conform to such then applicable CFR technical standards.

e. In the event of a breach of the representations and warranties contained herein, the System Contractor at their own expense shall take all measures necessary to put the offending system into compliance with the applicable CFR technical standards, or replace the offending system with an acceptable substitute.

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

All products delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, or other contaminants.

1.6.2 Delivery Coordination

Coordinate deliveries with the Contracting Officer to insure a timely installation.

1.6.3 Loss Liability

The System Contractor shall be liable for any loss due to delivery and storage problems.

1.6.4 Delivery Restrictions

a. No products or installation material shall be delivered to the job site more than one month prior to commencement of its installation.

b. System products shall not leave the factory prior to six months before the time that the facility is ready for installation of the products. Obtain prior written approval of the shipping date from the Contracting Officer.

1.6.5 Contractor Responsibility

The System Contractor shall be responsible for all handling and control of products provided under this contract.

1.7 SEQUENCING AND SCHEDULING

a. Each part of the system shall be installed and phased into operation as required by the project schedule.

b. Schedule and coordinate work with all other trades and suppliers whose work is critical to the successful installation of the system.

c. Furnish and install all required items for a complete and operating installation so as to cause no delay in work by others, or completion of the project.

d. Final inspection and acceptance testing of each system shall be performed after the system installation has been completed and all pre-testing checks and commissioning has been successfully completed.

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

b. Warranty the operational and physical integrity of the provided system, including a warranty against all defects in design, equipment, materials, workmanship, and improper installation and adjustments, for a period of at least one year from the date the operating system is accepted by the Government after satisfactory completion of final inspection and acceptance tests. This warranty shall not cover any malfunctions or damage caused by misuse, abuse or neglect. If the System Contractor or Manufacturer warranty is for a period longer than one year, the longest warranty period shall govern. The System Contractor shall furnish a warranty document with the Data submittal.

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express delivered to BACH if not available locally.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

The System Contractor shall keep an adequate quantity of installation spare parts onsite to preclude work stoppages and to meet other contingencies that might arise prior to the final inspection and acceptance of the system.

1.9.1.3 Post Acceptance Spare Parts

a. After the system has been acceptance tested and turned over to the Government for operation, furnish the minimum type and quantity of onsite spare parts as itemized below.

Quantity	Items
1	Cone Speaker
1	Gooseneck Microphone

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

c. The System Contractor shall recommend any additional onsite spare parts deemed necessary by the Manufacturer and or the System Contractor. Furnish to the Contracting Officer the cost of recommended additional spare components as a separate line item.

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

c. Deliver all special maintenance tools, equipment and software to the Government upon successful completion of the final inspection and acceptance testing of the system.

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. As authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been factory trained for maintenance of the provided system, for the first level of response to a call for service.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

b. A 24-hour telephone answering service shall be provided to receive after hour maintenance service calls and dispatch on-call service personnel within the required response time.

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

(1) Complete failure of the total system

(2) Failure of any one subsystem.

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not

constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified, or indicated on the Telecommunications Drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

Modification of products that nullifies the UL listing or other agency approval is not permitted.

2.1.4 Identical Products

Products of the same classification shall be identical. This requirement includes all component equipment, modules, assemblies, parts, and materials.

2.1.5 Nameplates and Equipment Markings

a. Each major equipment component shall have the Manufacturer's name, model, and serial number on a plate secured to the equipment. Also, all compliance with regulatory requirements, such as UL and CFR, shall be indicated on the nameplate or on adjacent labels.

b. All controls on equipment shall be plainly and permanently labeled with the identification of the function served. Stick on marker tapes is not acceptable.

c. Markings on any exposed surfaces shall not be destroyed by housekeeping solutions normally used in BACH.

2.1.6 Mounting Alignment Capability

Wall mounted components shall have an adjustable mounting alignment capability to compensate for improperly aligned backboxes and to insure a level installation.

2.1.7 Model and Enhancements

a. The system and all product components shall be the Manufacturer's latest model, design, version, and quality in production at time of delivery and installation.

b. Any product enhancement that becomes available after delivery and installation, and up to time of system acceptance, shall be brought to the attention of the Contracting Officer upon announcement by the Manufacturer and shall be made available to BACH. If such enhancements customarily are provided at no additional cost, the Government shall automatically be entitled to such enhancements. If such enhancements customarily are provided at additional cost, the Contracting Officer has the option to accept or reject such enhancements.

c. Submit a letter to the Contracting Officer from the Manufacturer guaranteeing that the Manufacturer shall inform the Government of, and make available to the Government, all commercially available enhancements to the system at the then current price. Include the letter with the product Data submittal.

d. Substitutions, modifications, or improvements to the system are permissible provided that such substitution, modifications, or improvements shall not reduce or degrade the performance or product requirements, nor violate regulatory requirements. No such substitutions, modifications, or improvements shall be made without the written consent of the Manufacturer and Contracting Officer. Such consent shall not be unreasonably withheld or delayed.

2.1 MIXER-AMPLIFIER

Mixer-preamplifier section shall as a minimum conform to the following specifications:

Rated Output:	18 dB
Frequency Response:	Plus or Minus 1 dB, 20 - 20,000 Hz
Distortion:	Less than 0.2 percent, 20 - 20,000 Hz
Signal to noise:	Microphone - 60 dB Aux - 70 dB
Inputs:	6 modular inputs, function as required.
Modules:	Reference specs below per module.
Input Channel Isolation:	80 dB minimum
Bridging Input/Output	100mV/3.3k ohms
Preamp Out/Power Amp In	1,000mV into 600 ohms/1,000 Mv, 10K ohms
Tone Controls:	Plus or Minus 10 dB range at 50 and 15,000 Hz

Power amplifier section shall as a minimum conform to the following specifications:

Rated power output:	30 Watts RMS.
Frequency Response:	Plus or Minus 1 dB, 20-20,000 Hz
Distortion:	Less than 0.5 percent THD at RPO, 20-20K Hz
Direct Output Imp:	8 ohms Unbalanced
Transformer Output:	4 Ohms, 25 and 70.7 volts
Power Requirement:	60 Watts 110-125 Vac 60 Hz

2.2 EXPANSION MIXER

Provide an additional expansion Mixer only, of same manufacturer and specifications as the mixer section of the mixer/amplifier, for the Conference Room 325-01 to accommodate additional inputs.

2.3 MIXER, MIXER-AMPLIFIER INPUT MODULES

2.3.1 Microphone Input Modules

Microphone input modules shall as a minimum conform to the following specifications:

Gain:	40 dB nominal
Sensitivity:	1.0 mV nominal
Frequency Response:	Plus or Minus 2 dB, 20 - 20,000 Hz
Distortion:	Less than 0.5 percent 20 - 20,000 Hz
Inputs:	Transformer-coupled balanced 50 - 250 ohms
Signal to noise:	70 dB minimum

2.3.2 Line Level Input Modules

Line Level input modules shall as a minimum conform to the following specifications:

Gain:	0 dB nominal
Sensitivity:	125 mV nominal
Frequency Response:	Plus or Minus 2 dB, 20 - 20,000 Hz
Distortion:	Less than 0.5 percent 20 - 20,000 Hz
Inputs:	Transformer-coupled balanced 600 ohms
Signal to noise:	90 dB minimum

2.3.3 Aux Input Modules

Aux input modules shall as a minimum conform to the following specifications:

Gain:	0 dB nominal
Sensitivity:	100 mV nominal
Frequency Response:	Plus or Minus 2 dB, 20 - 20,000 Hz
Distortion:	Less than 0.5 percent 20 - 20,000 Hz
Inputs:	Unbalanced 220K ohms
Signal to noise:	90 dB minimum

2.4 MICROPHONES

2.4.1 Handheld Microphones - Three (3) required

Microphones shall as a minimum conform to the following specifications:

Element:	Dynamic
Application:	Hand Held
Pattern:	Cardioid
Frequency Response:	50 - 12,000 Hz
Impedance:	Low impedance mic (150-400 ohms)
Switch:	Built in On/off

Shure SM48S-LC or equivalent

2.4.2 Microphone - Gooseneck - One (1) required

Microphones shall as a minimum conform to the following specifications:

Element:	Electret condenser - integrated preamplifier
Application:	Lectern/podium
Pattern:	Cardioid
Frequency Response:	50 - 12,000 Hz
Impedance:	Low impedance mic (150-400 ohms)
Gooseneck:	457mm (18 inch)

Shure EZG/18 or equivalent

2.4.3 Wireless Microphone System - One(1) required

The wireless microphone system shall consist of an integrated system consisting of a portable lavalier mic with bodypack transmitter, rack mounted receiver and room antenna system. The system shall as a minimum conform to the following specifications:

Wireless Microphone

Type:	Lavalier
Element:	Electret condenser
Pattern:	Cardiod
Frequency Response:	50 - 12,000 Hz
Impedance:	Low impedance mic (150-400 ohms)

Body-Pack Transmitter

Type:	Low profile body-pack
RF Carrier Frequency:	169.445 to 240 MHz
RF Power Output:	50 mW maximum
Working Range:	92m typical
Gain Adjustment:	40 dB (adjustable)

Wireless Receiver

Type:	Diversity (dual channel/antenna)
RF Carrier Frequency:	169.445 to 240 MHz
Frequency Response:	50-15,000 Hz
Dynamic Range:	102 dB, A-weighted
Output:	XLR connector - 600 ohms
Mounting:	Rack mounted

Remote Antennas

Type:	1/2 Wave - two required
Mounting:	Ceiling mounted in Room 325-01
Connection:	Factory cable kits

System shall be a Shure LX System with Shure WL185 Microphone, LX1 Body-pack transmitter and Shure LX4 Diversity Receiver or equivalent system. SR Contractor shall perform site survey, contact factory and coordinate with RFTS Contractor for the operating frequency selection.

2.4.4 Microphone Jack

Each outlet for microphones shall consist of a standard outlet box, flush-mounted, and fitted with a three-pole, polarized, locking-type, female microphone jack and a corrosion resistant-steel device plate.

2.5 LOUDSPEAKERS

2.5.1 Cone Speaker

The cone speaker shall a Soundolier FA138T47 or equivalent, as a minimum conforms to the following specifications:

Application:	Ceiling; Type SR-C
Frequency range:	60 to 12,000 Hz
Power Rating:	50 watts RMS
Voice Coil Impedance:	8 ohms
Configuration:	Coaxial - Polypropylene Cone Butyl rubber surround
Magnet:	21 ounces or greater
Line Matching Transformer Type:	70.7 volt line
Capacity:	4 watts
Primary Taps:	0.5, 1, 2 and 4 watts Tapped at 2 watts
Primary Impedance:	70.7 volts - 10k, 5k, and 2.5k ohms
Frequency Response:	30 - 20,000 Hz
Insertion Loss:	Less than 1 dB

2.5.2 Ceiling Speaker Enclosures

Soundolier Enclosures FA97-8 for loudspeaker type SR-C, have been provided as part of the Construction Contract rough-in.

2.5.3 Ceiling Baffles - Type SR-C

Baffles for mounting Type SR-C loudspeakers shall be Soundolier FA730-8 baffles or equivalent and must be compatible with Soundolier FA97-8 enclosures provided.

2.6 COMPACT DISC PLAYER

Player shall have three beam laser pickup, dual Digital-to-Analog converters, random access and random mode programmable playback. Player shall have capability to play a minimum of 1 discs automatically. Player shall as a minimum conform to the following:

Frequency:	10 - 20,000 Hz Plus or Minus 1 dB
Signal-to-Noise:	Minimum of 100 dB
Dynamic Range:	Minimum of 96 dB
Total Harmonic	

Distortion:	Maximum of 0.005% at 1 KHZ
Channel Separation:	Minimum 100 dB at 1 KHZ
Quantization:	Minimum of 18 Bits Linear per channel
Conversion Rate:	Minimum 8 x Oversampling
Disc Size:	5 inch or mini disc
Formats:	Audio CD's and MP3 Files
Power Requirement:	110-125 Vac, 60Hz

2.7 DISTRIBUTION AMPLIFIERS

Line level distribution amplifiers, one 600 ohm balanced input to minimum of eight isolated and buffered, 600 ohm balanced outputs, rack mountable and shall as a minimum conform to the following specifications:

Gain:	Adjustable from 0 to + 10 dBm, nominally.
Noise:	-80 dBm maximum
THD:	0.01% maximum
Frequency Response:	+0 dB, -1 dB, 20 to 20,000 Hz

2.8 GRAPHIC EQUALIZERS

Rack mount unit with security cover with tamper proof screws for front panel and shall as a minimum conform to the following specifications:

Equalization:	2/3 octave eq at 15 ISO center frequency from 25 Hz to 16 kHz.
Attenuation:	plus or minus 12 dB at each frequency.
Distortion:	< 0.01% @ 1 kHz
Frequency Response:	20Hz to 20kHz (Eq out): ±0.5 dB
Signal to Noise:	<-90 dBm
Maximum Output Level:	+22 dBm
Low Pass Filter:	15Hz to 300Hz: 12 dB/octave
High Pass Filter:	2.5kHz to 30kHz: 12 dB/octave

2.9 ROOM COMBINER

A room combiner shall easily permit the following combinations of classrooms and conference areas by combining the mixer outputs into combined feeds to power amplifiers, inputs then shall be distributed to all rooms selected. Rooms combinations not listed shall not be required:

Scenario 1	Stand Alone (All individual)
Scenario 2	All rooms combined

Scenario 3	Conf 325-01 + 324-02 + 325-04
Scenario 4	Conf 325-01 + 324-02
Scenario 5	Conf 325-01 + 325-04
Scenario 6	Conf 325-01 + 324-04 + 324-05
Scenario 7	Classrooms 324-04 & 324-05

2.10 SPEAKER TRANSFER RELAYS

Emergency paging from the Public Address System requires that the 70volt speaker lines be transferred from the SR System amplifiers to the Emergency Paging amplifier when activated. Relays shall be wired for normal SR System operation in the un-activated position.

Relay Type:	24V DC Double Pole Double Throw - Sealed
Contact Material:	Gold plated silver
Contact Rating:	1ma to 3 amp

2.11 EQUIPMENT CABINETS

Equipment shall be mounted on (19 inch) racks provided by the Section 16781 TV SYSTEM Contractor as part of the MINC equipment in Equipment Room 325-02. Coordinate space requirements with TV System Contractor and if not enough space is available, the SR System Contractor shall provide an additional equipment cabinet of same make and model as supplied by TV System Contractor.

2.12 CABLES

2.12.1 Speaker Cable

All speaker cable shall be run in existing conduits provided by the Construction Contract. Cables shall be of the gauge required depending upon the cable run length. Contractor shall calculate gauge for each homerun to provide no appreciable loss. In no case shall cable be used which is smaller than 18 AWG. Cables shall be plenum rated CMP. The jacket thickness shall be 0.02 inch minimum.

2.12.2 Microphone Cable

Cable conductor shall be stranded copper 20 AWG. Cable shall be plenum rated CMP. Cable shall be shielded 100% of aluminum polyester foil with a bare 22 gauge stranded soft copper drain conductor. Cables shall be jacketed with a plenum rated CMP jacket. The jacket thickness shall be 0.02 inch minimum.

2.13 TERMINALS

Terminals used in the termination of cables on equipment or terminal strips shall be tool-crimped pressure type.

2.14 SURGE PROTECTION

2.14.1 Power Line Surge Protection

Major components of the system such as power amplifiers, mixer-preamplifiers, and tuners, shall have a device, whether internal or external, which provides protection against voltage spikes and current

surges originating from commercial power sources per IEEE C62.41 B3 combination waveform and NFPA 70. Fuses shall not be used for surge protection. The surge protector shall be rated for a maximum let thru voltage of 350 Volts ac (line-to-neutral) and 350 Volt ac (neutral-to-ground). Surge protection device shall be UL listed and labeled as having been tested in accordance with UL 1449.

2.14.2 SIGNAL SURGE PROTECTION

Major components of the system shall have internal protection circuits which protects the component from mismatched loads, direct current, and shorted output lines. Communication cables/conductors shall have surge protection installed at each point where it exits or enters a building.

PART 3 EXECUTION

3.1 EXAMINATION

System Contractor shall perform a site survey to verify all field conditions, become familiar with the details of the work and working conditions, verify dimensions in the field, and advise the Contracting Officer of any discrepancies before performing the work.

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of Comm Rooms are identified on the Telecommunications Drawings.

c. All flush and ceiling mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Junction box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

e. Coordinate all design and installation efforts with those of related trades that have provided the rough-in in the facility construction project to accommodate the installation of the system. In the event of any conflicts, delayed or improper preparatory work by others, notify the Contracting Officer for resolution. The Contracting Officer decision shall be binding.

3.2.3 Electrical Power and Grounds

a. Existing electrical power on the emergency critical branch circuit has been provided by the facility construction project at a power junction box in Comm Rooms for system central equipment, and at a power receptacle adjacent to each master station, the system maintenance station, the code blue annunciator panel station, and the failure alarm annunciator panel station. Reference the facility construction project Electrical Drawings for details.

b. Existing grounding buss bars have been provided as indicated on the Telecommunications Systems Drawings. Reference the facility construction project Electrical Drawings for details.

c. If any new electrical power circuits are required, the Telecommunications Systems Contractor shall define and submit the new power requirements to the Contracting Officer, who will coordinate the change with the existing Facility Contractor.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interfaces and Interconnections

Coordinate the details of all interfaces and interconnections with the following systems:

Public Address System - Program Music
Public Address System - Emergency Paging Relays
TV System - Outputs for microphone feeds for live feeds
TV System - Input from DVD player for presentation play back.

This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of coordination drawings and design Data submittals.

3.4 INSTALLATION

3.4.1 General

a. Installation shall be accomplished as indicated and specified, and in accordance with acknowledged industry and professional standards and practices, and the Manufacturer's instructions.

b. Installation shall comply with the requirements of NFPA 70, NFPA 99, and ANSI/TIA/EIA-569-A.

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

d. During the entire installation the System Contractor shall maintain onsite a supervisor as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications.

e. Provide all tools and equipment needed to install the system.

f. All ac power plugs shall be tightly strapped to the ac power receptacle to prevent accidental unplugging of the ac power.

g. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT.

3.4.2 Equipment Installation

a. Equipment Racks

Racks shall be provided by the Section 16781 TV System Contractor as part of the MINC Console, quantity as indicated on TC5.10. TV System shall have precedence and if additional rack space is required, then the SR System Contractor shall provide an identical cabinet to match. Each item shall be removable from the rack without disturbing other items or connections. Empty space in equipment racks shall be covered by blank panels so that the entire front of the rack is occupied by panels.

b. Mount equipment firmly secured in place, plumb and square.

c. Provide adequate equipment ventilation and adequate equipment accessibility for service and repair.

d. Equipment mounting shall comply with the seismic bracing and anchorage requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

3.4.3 System Cabling Installation

a. Installation of system cabling shall be by the qualified Installer.

b. All cables and the installation of cables shall be in accordance with NFPA 70 NEC.

c. Wiring shall be installed in conduit. Wiring for microphone, grounding, line level, speaker and power cables shall be isolated from each other by physical isolation and metallic shielding. Shielding shall be terminated and grounded at only one end.

d. System cables shall be installed without kinks, sharp bends or deformations, in a manner to prevent abrasion.

e. Coordinate the system cable routing with the cable routing of other systems to assure that there will not be any EMI problems that will adversely affect the performance of this system or any other specified project system.

f. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

g. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

h. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

Equipment enclosures and all other non-current carrying exposed metal parts of electric equipment shall be grounded.

3.5 APPLICATION

3.5.1 AC Power Connections

Contractor shall verify AC power provided for the SR System has been provided.

3.5.2 Installation Setup

Contractor shall make all adjustments and perform all application programming as necessary to setup the system to function in accordance with specific user requirements for the overall system and each patient care area. Coordinate all such setup details with BACH users, install them as part of the system setup, and include the setup details in the Test Plans and O&M documentation.

3.6 INSPECTION, TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

f. Qualified SR System Contractor personnel conducting acceptance tests shall be factory trained or certified and shall be completely knowledgeable regarding the system design, installation, setup and operation.

g. The Contracting Officer reserves the right to approve the System Contractor's choice of testing personnel, and, upon rejection of any testing personnel by the Contracting Officer at any time, the System Contractor shall replace such testing personnel as soon as reasonably possible. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to interview and review the qualifications of each person proposed for testing work.

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans, procedures, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plan, including procedures.

j. Inspection and testing shall be conducted during normal working hours with prior notice to the Contracting Officer so as not to interfere with orderly work processes.

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, system readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

m. Results of each inspection and test shall be reported in electronic and hard copy form to the Contracting Officer.

3.6.2 Periodic Inspection and Testing

a. All work and workmanship shall be subject to inspection and testing as requested by the Contracting Officer at any and all times during preparation and installation.

b. The Contracting Officer, in his or her sole discretion, may reject defective work and workmanship and require its correction. The Government right to inspect, test, and reject, or its failure to exercise such right, as provided herein, shall in no way diminish the System Contractor's duty to inspect and reject work as necessary to comply fully with the requirements of the contract documents.

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

b. Draft as-built system drawings, and O&M manuals shall be made available by the System Contractor for use during performance of final inspection and acceptance testing. Final inspection or acceptance testing shall not be scheduled nor performed without this documentation.

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

d. Upon successful completion of final acceptance tests, and 30 calendar days of consecutive operation in accordance with specified requirements without the occurrence of any major malfunctions, the System Contractor shall submit the final acceptance test report, including certificates of compliance stating that all specified requirements and conditions have been satisfied. The effective date for completion of the final system acceptance shall be the date when the system has satisfied the 30 days of operation without a major malfunction as specified above.

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements, system application design, and user setup requirements for the system. Each system operating mode shall be demonstrated to perform as required by operation of each individual system component under normal or simulated normal system conditions.

b. Testing shall include, but not be limited to, the following tests to demonstrate specified requirements:

(1) Program music feeds from PA System.

(2) All inputs on input panels, input modules and mixer-amplifiers.

(3) Wireless microphone for coverage within 325-01 and performance.

(4) Hard wired microphones.

(5) DVD feed from TV system.

(6) Mixer feed to TV system.

(7) Room combiner system, all listed scenarios.

(8) Optimizing equalizers for fidelity and reducing feed back.

(8) Emergency paging transfer relays.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as required to demonstrate compliance with all specifications to the Contracting Officer.

b. All corrective action shall be completed in a reasonable time consistent with project schedules and acceptable to the Contracting Officer.

c. If, after 30 calendar days from the start of acceptance testing, any system or any equipment component thereof fails to demonstrate complete and proper performance, the Government shall have the right to return the total system or any equipment component to the System Contractor. The System Contractor shall refund all costs thereof to the Government and shall indemnify the Government from damages, costs, and expenses incurred in connection with such activity.

d. The actual date of return of any rejected system or equipment component shall be under the absolute control of the Government. The Government shall have the right to continue to utilize such system and equipment until the actual date of removal.

3.6.7 Warranty Period Inspections and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

d. Results of each warranty period inspection and test shall be reported in writing to the Contracting Officer.

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified operations and maintenance training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to BACH staff in accordance with the approved training plan.

3.7.2 General Preparations

During the week prior to the start of training for any system, check the system to assure that it as been successfully commissioned and acceptance tested, and is in full-specified operational condition.

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated medical facility staff in the operation and maintenance of the provided system.

b. The Contracting Officer reserves the right to approve the System Contractor's choice of training personnel, and, upon rejection of a trainer by the Contracting Officer at any time, the System Contractor shall immediately replace such trainers. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to review the qualifications of each proposed trainer.

3.7.4 Training Instructions

a. Training instructions shall cover all specified features and capabilities of the system, and all of the items contained in the operating and maintenance manuals.

b. Maintenance technician training shall also include preventive maintenance, routine maintenance, repair and troubleshooting procedures.

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

a. Furnish all training materials and handouts. Handouts shall be provided in the quantity needed for all of BACH technicians, operations and user staff that will receive training.

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS, VIDEORECORDING OF TESTS AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

a. Training shall be provided onsite to all medical facility staff as required throughout the contract and warranty period to train operations and maintenance staff for the provided system.

b. The onsite training program shall include two training courses, one for maintenance technicians and one for user and operations staff.

c. Each course shall include classroom training and field training. Field training for medical facility staff shall take place in the area where the

staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

d. Multiple instructional units for each onsite course shall be conducted on a three shift, seven days a week basis as required to train all staff during their normal on-duty working hours.

e. The Contracting Officer shall designate qualified personnel to be instructed in the operation and maintenance of each system, schedule instructional sessions, and provide suitable onsite instruction facilities.

3.7.7 User and Operational Staff Training

a. User and operational staff training shall commence at a time acceptable to the Contracting Officer and near the time the system is scheduled for operational use by BACH.

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system has been accepted by the Government, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

a. Before the system is turned over to the Government for operational use, training shall be provided for maintenance technicians designated by the Contracting Officer.

b. The onsite technician training course shall provide the number of instructional hours necessary to cover all aspects of system setup, programming, operations, preventive maintenance, routine maintenance, routine repair, and troubleshooting procedures for the system as installed.

c. Nine (9) months after the system has been accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 Close Out Documentation

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 Contractor Quality Control

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 SR System

a. Provide a complete and operational SR System as specified in this Section and indicated on the Telecommunications Drawings, as required by the system application design, and as further defined below.

b. Deliver and install all product items as required to comply with the approved installation schedule.

3.11.2 Indicated Items

Provide the quantity and type of system components as indicated on the Telecommunications Drawings.

3.11.3 Product Samples

Provide one sample unit of each type of baffle for approval as part of the Samples submittal.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16781

TELEVISION (TV) SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Continuous Duty Design
1.4.1.5 Power Supply Design
1.4.1.6 Shielding and Grounding
1.4.1.7 Station Connectors
1.4.1.8 User Room Numbers and Names
1.4.2 System Capability and Configuration
1.4.2.1 System Capability
1.4.2.2 System Configuration and Major Functional Components
1.4.2.3 Headend
1.4.2.4 Multimedia Interactive Network Center (MINC)
1.4.2.5 Conference Center CCTV Subsystem
1.4.2.6 Distribution Networks
1.4.2.7 TV Sets And Associated Mounting/Connecting Items
1.4.2.8 Existing TV Wall Mount Supports
1.4.2.9 Government Furnished And Installed (GFGI) Items
1.4.3 Performance Requirements
1.4.3.1 Multimedia Interactive Network Center (MINC)
1.4.3.2 MINC Host and Menu Computers
1.4.3.3 System Data Network
1.4.3.4 TV Program Sources
1.4.3.5 Conference Center CCTV Subsystem
1.4.3.6 Combining
1.4.3.7 TV Channels
1.4.3.8 Broadband Distribution Network Characteristics
1.4.3.9 Programming of User Room Numbers and Names
1.4.4 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Products
1.5.2.2 Design and Installation Work

1.5.2.3 System Performance
1.5.2.4 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.1.8 Software and License
2.2 DISTRIBUTION NETWORK CABLES
2.2.1 Coaxial Cable Types & General Requirements
2.2.2 Trunk Cables
2.2.3 Feeder Cables
2.2.4 Drop Cables
2.2.5 System Data Network Cables
2.3 CONNECTORS AND MOUNTINGS
2.4 TERMINATORS
2.5 FACEPLATES
2.6 SPLITTERS AND DIRECTIONAL COUPLERS/TAPS
2.7 DISTRIBUTION AMPLIFIERS
2.8 EQUIPMENT CABINETS
2.9 FM ANTENNA
2.10 FM ANTENNA MAST
2.11 FM AMPLIFIER AND BANDPASS FILTER
2.12 MODULATORS
2.13 CHANNEL PROCESSORS
2.14 RF COMBINERS
2.15 COMPUTERS
2.16 KEYBOARD, VIDEO MONITOR, MOUSE, AND KVM SWITCH
2.17 LASER PRINTER
2.18 UPS
2.19 DIGITAL VIDEO SERVERS
2.20 SWITCHERS, ROUTERS, AND ADAPTERS
2.21 A/V DISTRIBUTION AMPLIFIER
2.22 VIDEO CAMERA ASSEMBLY & ACCESSORIES
2.23 TV SETS AND ASSOCIATED EQUIPMENT
2.23.1 General TV Set Requirements

2.23.2 508mm (20 Inch) Hospital Grade Color TV Sets
2.23.3 635mm (25 Inch) Commercial Grade Color TV Sets
2.23.4 686mm (27 Inch) Commercial Grade Color Monitor/TV Sets
2.24 TV MOUNTS
2.25 MULTIMEDIA PROJECTOR
2.26 DVD PLAYER/VCR

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power and Grounds
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interfaces and Interconnections
3.3.2.1 Sound Reinforcement System Interface
3.3.2.2 TV Sets - Nurse Call System Interface
3.3.2.3 PDS, HIS, and Telephone Interfaces
3.3.2.4 Patient Entertainment TV Source Interface
3.3.3 TV Mounting
3.3.4 Application Programming
3.3.5 Planning Data
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation
3.4.2.1 General Equipment Installation
3.4.2.2 Active and Passive Devices
3.4.2.3 Connector Installation
3.4.3 System Cabling Installation
3.4.4 Tagging and Labeling of Equipment and Cable
3.4.4.1 Labeling
3.4.4.2 Trunk, Feed and Drop Cables
3.4.4.3 TV Headend And MINC Equipment and Cables
3.4.5 Grounding
3.5 APPLICATION
3.5.1 Installation Setup
3.6 INSPECTION, TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing
3.6.3 Prerecorded Programs For Test Period
3.6.4 System readiness Checks
3.6.5 Integrated Performance Testing
3.6.6 Final Inspection and Acceptance Testing
3.6.6.1 General Requirements
3.6.6.2 Distribution Network Alignment
3.6.6.3 Distribution Network Alignment Set-Up
3.6.6.4 Distribution Network Sweep And Balance (Final Balance)
3.6.6.5 Distribution Network Proof Of Performance Tests
3.6.6.6 MINC Tests
3.6.6.7 FM Radio Tests
3.6.7 Corrective Action for Rejected Work
3.6.8 Warranty Period Inspection and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions

3.7.5 Training Materials
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 TV System
3.11.2 Indicated Items
3.11.3 Distribution Networks
3.11.4 Software
3.11.5 Product Samples
3.11.6 UPS
3.11.7 Remote Controls for Multimedia Projector
3.11.8 TV Sets and TV Mounts: Attached Schedule

-- End of Section Table of Contents --

SECTION 16781

TELEVISION (TV) SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

47 CFR 15	(2004) Radio Frequency Devices
47 CFR 76	(2003) Multichannel Video and Cable Television Service

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Health Care Facilities
NFPA 780	(1992) Lightning Protection Code

NATIONAL CABLE TELEVISION ASSOCIATION (NCTA)

NCTA RP	(1989; Revised Oct 1993) NCTA Recommended Practices for Measurements on Cable Television Systems

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

ANSI/TIA/EIA-569-A	(2001) Commercial Building Standards for Telecommunications Pathways and Spaces

UNDERWRITERS LABORATORIES (UL)

UL 1492	(1992, Rev thru 1995) Audio-Video Products and Accessories
UL 1778	(1994) Standard for Uninterruptible Power Supply

1.2 DEFINITIONS

1.2.1 General Definitions

The glossary of definitions, abbreviations and acronyms, and units set forth in ANSI/TIA/EIA-569-A shall apply to this Section, unless otherwise noted.

1.2.2 Additional Acronyms

For the purposes of this Section, the following definitions shall apply.

ADT	Admission, Discharge, and Transfer (Computer Program)
BACH	Bassett Army Community Hospital
CFR	Code of Federal Regulations
CHCS	Composite Health Care System (Computer Program)
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
FSS	Facility Security System
GFGI	Government Furnished, Government Installed
HIS	Hospital Information System (BACH)
IETV	Information and Educational Television
IMO	Information Management Office (BACH)
IR	Infrared
KVM	Keyboard, Video Monitor, Mouse
LAN	Local Area Network
MINC	Multimedia Interactive Network Center
MCP	Monitor Control Panel
NCAV	Nurse Call Audio-Visual (System)
O&M	Operation and Maintenance (Manuals)
PA	Public Address (System)
PDS	Premises Distribution System
PTZ	Pan/Tilt/Zoom
RF	Radio Frequency
TV	Television
UON	Unless Otherwise Noted
UPS	Uninterruptible Power Supply
UTP	Unshielded Twisted Pair

1.2.3 Additional Terms

For the purposes of this Section, following definitions shall apply.

SideCom	Registered trademark of the Hill-Rom Company, Inc. Hill-Rom bed side rails can be equipped with a SideCom unit which incorporates controls for remote operation of the patient TV set, and speakers for the TV sound.
Software	Operating systems and application programs that enable a computer, or computer-based system, to function as specified. Software shall include the documentation to describe, maintain and use the programs.
System	TV System, UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy the specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.
Telecommunications	

Systems	All low voltage and power limited communications and security systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.
Telecommunications Rooms	Called Comm Rooms on the Drawings. Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and devices for all telecommunications systems.
24x7 Staffed	A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify TV System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all the system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include a description of the individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements, dimensions and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, software, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations ; G

a. Analysis and calculations to support the design of the distribution networks, MINC, individual end items, and the total system.

b. Analysis and supporting result from specified preparation and application items, and all coordination items. Includes definition of all interface protocols.

c. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms, Comm Equipment Room, and the MINC Equipment Room 325-02.

b. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section H SPECIAL ITEMS, CLOSEOUT SUBMITTALS

Warranty document indicating the warranty period for the system and all component products.

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.4.

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the TV System and all interfaced telecommunications systems and other systems, including the exact point and type of demarcation.

b. The layout and mounting of all TV equipment, and the routing and mounting of cabling in Comm Rooms and the Comm Equipment Room as coordinated with the layout of all other systems equipment in these rooms.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

Preprinted material from the Manufacturer describing installation requirements and safety precautions. Manufacturer's requirements for the use of specific products.

SD-09 Reports

Coaxial Cable Factory Test Report

Result of factory coaxial cable sweep test data and structural return loss test data.

Test Reports; G

Submit all testing reports in both electronic media form and hard copy booklet form. Reports shall indicate all field tests performed to adjust each component and to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls and operating mode of the system, and the Manufacturer, model number, and serial number of the test equipment used in each test. The final acceptance test report shall include a statement that all specified requirements and conditions have been satisfied.

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

Proof that the items conform to the specified codes or standards,

including the requirements of CFR, NFPA, and UL.

SD-14 Samples

Product Samples; G

Submit one sample unit of each type of TV outlet for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Data

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS

O&M Manuals shall be available on-site before the start of any training.

Software Manuals; G;

O&M Manuals shall include a Software Manual describing the functions of all software and including all other information necessary to enable proper loading, setup, testing, and operation.

The software manual shall include:

a. Definition of terms and functions.

b. Use of system and applications software.

c. Procedures for system installation, initialization and set-up, start-up, shutdown, migration to another computer, and DLL or driver dependencies if these exist.

d. Alarm reports.

e. Reports generation.

f. Database format and requirements for data entry.

g. Directory of all disk files.

h. Description of all communications protocols, including data formats, command characters, and a sample of each type of data transfer.

Backup Software; G

Copy of all operating system and application software, on the

type of electronic media acceptable to the Contracting Officer. Ghost copy of all hard disks in the system after all setup procedures have been completed, the system has been programmed for the required user operation, and commissioning and acceptance tests have been successfully completed.

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

The System Contractor shall perform the system application design required to provide a TV System that complies with and satisfies all of the requirements specified in this Section and indicated on the drawings for this application and project.

1.4.1.2 Standard Products

The system application design shall utilize a standard, TV System that is the product of a Manufacturer regularly engaged in the manufacture of multimedia integrated TV Systems. The system shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the BACH installation site.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Continuous Duty Design

All equipment shall be designed for 24 hours per day, 365 days per year continuous 100 percent duty operation.

1.4.1.5 Power Supply Design

a. Power supplies shall provide sufficient power capacity for the worst-case condition of system operation and signaling that could occur in the application environment without any loss or perceptible degradation of signal quality. Design analysis shall include calculations to size power supplies for worst-case conditions, and this calculation shall be included with the design data submittal.

b. AC powered equipment shall operate per specifications over the range of 105V to 130V, 60 Hz, unless otherwise noted.

c. All equipment connected to ac power circuits shall be protected from power line transients and surges as likely to be subjected in service from a commercial utility ac power system. Protection shall be integral to the equipment or installed as an accessory item in accordance with Manufacturer's recommendations. Fuses shall not be used for this protection.

d. Power distributed over system cables shall be low voltage and power limited in accordance with NFPA 70.

1.4.1.6 Shielding and Grounding

All products shall be shielded and grounded as required by the system design, Manufacturer's instructions, and regulatory requirements.

1.4.1.7 Station Connectors

All equipment, outlets and panels shall plug into system cabling. Equipment, outlets, and panels hardwired to system cabling are not acceptable.

1.4.1.8 User Room Numbers and Names

a. At the start of submittals, the Government shall furnish to the System Contractor a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

b. For multi-bed patient bedrooms, the user room number shall also identify each bed in the bedroom.

c. Programmable assignment of patient room/bed number identification shall provide for up to ten alphanumeric characters for each room/bed. It shall be possible to program any identifying alphanumeric characters to any room or bed in any sequence regardless of the physical location of the patient station.

1.4.2 System Capability and Configuration

1.4.2.1 System Capability

The TV System capabilities shall include the following

a. A TV System with an interactive network that provides information, education and patient entertainment programs from a variety of multimedia program sources to TV sets provided in patient, staff and visitor areas throughout the BACH facility.

b. Multimedia program sources shall include the following:

(1) Patient entertainment TV channels that are received from an available commercial TV service provider under a separate contract directly with BACH. The TV service provider may be the CATV firm servicing the Post, a local wireless TV service firm, or a national satellite TV firm.

(2) Broadcast FM radio from local off-air FM radio stations.

(3) Information and Educational TV (IETV) programs that provides video messages, prerecorded video programs, live broadcast, interactive information and data programs, and a time of day channel.

c. Programmable computer control of the TV channels that can be received on each TV set in patient and staff areas.

d. Distribution of all TV program channels and the FM radio frequency band via a broadband coaxial distribution network from all signal sources to all

TV outlets and TV sets.

e. Two-way distribution of control data and interactive programs via an interactive data network from a Multimedia Interactive Network Center (MINC) to all TV sets in patient and staff areas.

1.4.2.2 System Configuration and Major Functional Components

The TV System shall be an integrated configuration of the Major Functional Components listed below to provide the required system capability and performance. The capability and configuration of each of these Major Functional Components are defined below.

Headend
Multimedia Interactive Network Center (MINC)
Distribution Networks
Conference Center CCTV Subsystem
TV Sets and Mounting/Connecting Items

1.4.2.3 Headend

a. Channel Processors to translate live program pickup channels to broadcast channels.

b. Off-air FM Radio equipment, including an FM radio antenna, antenna mast, antenna cables, FM band amplifier, and FM band pass filter.

c. Broadband distribution amplifiers.

d. Trunk cable combiner for all signal sources.

e. Rack cabinet to house all headend rack mounted equipment.

f. The headend equipment shall be installed in the Comm Equipment Room 424-01, and the FM antenna installed on the antenna mounting support frame provided on the ski slope roof.

1.4.2.4 Multimedia Interactive Network Center (MINC)

a. MINC equipment shall include a host CPU, menu CPUs, digital video servers, KVM switcher, keyboard, mouse, video monitor, printer, UPS, data switch, network adapter, host router, network router, VCR/DVD recorder, TV channel modulators, combiners, and equipment rack cabinets for the mounting of all equipment.

b. The MINC shall also house power, control and processing equipment for the Conference CCTV Subsystem.

c. A ceiling mounted MINC outlet panel shall allow for the interconnection of all cables to/from the MINC console. This includes: distribution network cables; future BACH HIS interface connection cables; Conference Center CCTV Subsystem cables; audio cables for interconnection to the Section 16771 SOUND REINFORCEMENT SYSTEM; and modem cables for interconnection to the telephone system.

d. The MINC equipment shall be installed in the Conference Center Equipment Room 325-02.

1.4.2.5 Conference Center CCTV Subsystem

a. The CCTV Subsystem equipment in the Conference Room 325-01, shall include a video camera assembly with motorized pan/tilt/zoom/focus control, a multimedia projector with remote controls, and an "On-Air" status light. Associated equipment for power, control, signal processing and monitoring shall be mounted in the MINC console as defined herein.

b. An outlet in the Conference Room 325-01 shall allow for computer connection to the multimedia projector for presentation of computer generated images.

1.4.2.6 Distribution Networks

a. A broadband coaxial cable distribution network for TV/FM signals shall include coaxial cables, distribution equipment power supplies, amplifiers, splitters, directional couplers/taps, terminators, TV outlets, and other items located throughout the facility as necessary to distribute TV/FM signals from all sources to all TV outlets. The various types of TV outlets are described below.

b. A data network shall link the MINC data network controller with all TV sets in staff and patient areas for TV set control and interactive program functions. This data network can be on a dedicated local area network (LAN), or can be modulated onto the broadband coaxial cable distribution network. If a data network is used, this shall include unshielded twisted pair (UTP) cable, modular outlet jacks, and other items located as necessary throughout the facility.

c. TV Set Outlets

The configuration of various types of TV outlets at TV set locations are described below and detailed on the drawings. Each is identified by the TV symbol designator indicated on the drawings.

(1) Each TV outlet at a TV set location will be configured with an RF coax connector. If a separate data LAN is used, each TV outlet shall have a data connector, except for TV outlets in waiting areas. Additional configurations are described below.

(2) TV-TH and TV-TR: These TV outlets in patient bed rooms shall include a remote control/speaker connector for hardwired interconnection of the remote control and speaker wires provided by the Section 16731 NCAV SYSTEM for connection of a patient station pillow speaker cord set and a Hill-Rom SideCom.

Note that while the pillow speaker cord set will be connected for total remote control/sound, the Hill-Rom SideCom will be connected for the TV remote sound only.

(3) TV-TT: These TV outlets shall include 2 RF coax connectors to allow connection of both a TV set and GFGI mobile conferencing equipment.

(4) TV outlets in the operating rooms provide empty boxes and empty conduit to allow for future GFGI installation of video and audio cables and connectors for routing of video/audio signals from GFGI video cameras and microphones mounted on the surgical lights to TV monitor/receivers in the OR, and to GFGI mobile IETV equipment connected to a monitor control panel (MCP) for the processing/recording of surgical procedures. Provide blank

cover plates for these outlet.

1.4.2.7 TV Sets And Associated Mounting/Connecting Items

a. TV sets shall include: 508mm (20 inch) TV sets with wired remote control and wired remote speaker for patient bed rooms; and 635 (25 inch) and 686mm (27 inch TV) sets with wireless remote control for all other areas.

b. Jumper cables necessary to connect the TV sets to TV outlets shall include antenna/data network cable(s), and remote control/speaker cables for foot wall mounted patient TV sets.

c. Wall brackets and furniture mounts for the mounting of all TV sets.

1.4.2.8 Existing TV Wall Mount Supports

In-wall support plates for wall mounting brackets are existing in the facility. Data related to these items can be obtained from the Contracting Officer.

1.4.2.9 Government Furnished And Installed (GFGI) Items

The following equipment and furniture that may be used with the TV System shall be GFGI:

a. Future video cameras, microphones, and associated cables to be installed in surgical lights in operating rooms.

b. All VCR and DVD player units, except those that are Contractor provided in the MINC. This includes all VCRs and DVDs that may be used in conference rooms, classrooms, training rooms, and lounges.

c. Mobile IETV equipment for live broadcasts.

d. FM radios that may be connected to any TV outlet.

e. TV furniture, including TV carts and entertainment units, in rooms where the facility construction project has not installed TV mounting provisions.

1.4.3 Performance Requirements

1.4.3.1 Multimedia Interactive Network Center (MINC)

a. The MINC shall be the control center and data base for all system operation and management functions, and shall provide a multimedia interactive network capability for the processing and distribution of information, education and entertainment programs to all TV sets provided throughout the BACH facility.

b. The MINC shall include host, message, and menu computers, and a data network for all programmable system functions and data network functions.

c. The MINC shall be the multimedia source for all in-house originated programs, except for live programs generated from mobile IETV equipment.

1.4.3.2 MINC Host and Menu Computers

The MINC host and menu computers shall provide the programming, control, management, and data communications capability listed below for the entire TV System.

a. Operating system that supports multi-user, multitasking operations for all specified performance requirements.

b. Applications programs, including programs for the following functions:

(1) Scheduling and routing of information and educational TV (IETV) programs originating from the MINC.

(2) Generation of multiple color information message screens.

(3) Generation of a time of day digital clock image.

(4) Control of the channels that can be received on each TV set in patient and staff areas.

(5) Tune a TV set to a prescription program at a scheduled time.

(6) Report generation, storage and printing of various reports on patient surveys, system status, and TV usage history by patients and staff.

(7) Interactive programs for patient surveys. Capability to add in the future other interactive programs, such as meal selection menus.

c. Utility programs, including programs for the following functions:

(1) System diagnostics with capability for remote diagnostic via a communications link to the System Contractor and the System Manufacturer.

(2) Backup utility program. During backup operation all systems applications shall remain on-line.

(3) The date and time in any system database and/or indicated on any component of the system shall be synchronized at least once a day from a central system clock in the host computer. The central system clock shall be automatically updated for daylight saving time and leap year.

d. Data communications programs and ports for the following interface functions:

(1) Future interface with the BACH HIS for functions as defined herein, and as coordinated with the BACH IMO.

(2) Modem connection to the telephone system for the functions listed below. If a commercial ISP service is required, then this shall be provided from the start of pre-testing checks and continuing throughout the testing and warranty period.

(a) Under log on and password control features, the Manufacturer or TV System Contractor can dial into the system and remotely perform troubleshooting routines throughout the system in order to identify the cause of a failure.

(b) Correct software problems.

(c) Download software upgrades from the system Manufacturer.

1.4.3.3 System Data Network

The system data network shall control all MINC multimedia functions and link with all TV sets in patient and staff areas for control and interactive media functions.

a. System data networking shall use an open architecture structure based upon off-the-shelf technologies and software. The data network shall run at real time speeds.

b. The system data network between the MINC and all connected TV sets shall be a distributed processing data communications network with intelligence built into each TV set to manage its operation and process interactive functions.

c. For interactive programs, it shall be possible to access the system data network from all connected TV sets at the same time.

1.4.3.4 TV Program Sources

The TV System shall provide the TV program sources listed below, with initially installed capacities as indicated.

a. Distribution of patient entertainment programs from an available commercial TV service provider that the Government has separately contracted to provide this service. This GFGI commercial TV service will provide a 40 dBmV signal to a demarcation point in the Comm Equipment Room 424-01. This TV service shall either exclude TV channels in the FM frequency band, 88 MHz to 108 MHz, or shall filter them out ahead of the demarcation point.

b. Reception and distribution of the FM radio band, 88 MHz to 108 MHz. An omnidirectional FM antenna shall provide broadband reception of FM stations in the Fairbanks area. FM radio band frequencies shall not be used for TV channels.

c. IETV Programming consisting of video information messages screens, prerecorded video programs, a time of day channel, live broadcasts, and interactive programs.

(1) Six (6) prerecorded video programs can run simultaneously from six (6) digital video servers to six (6) IETV channels. Two (2) of the channels shall run scheduled programs, and four (4) of the channels shall run on-demand programs. Selective routing of programs from any server to any of six (6) IETV channels shall be computer controlled.

(2) Message generation software shall provide multiple video information message screens with the choice of multiple color text and backgrounds, and selectively distribute each message screen on either or both of two (2) IETV channels.

(3) The host computer shall provide a minimum 7-day programming capability for preprogramming of the viewing times for video messages and the two (2) scheduled prerecorded video programs.

(4) A day and time of day digital clock image shall be generated and

displayed continuously on a dedicated IETV channel. This shall be synchronized with the host computer day and time.

(5) Live TV programs can be originated from a video camera assembly that is ceiling mounted in the Conference Room 325-01 and distributed on an IETV channel.

(6) Live TV programs can be originated from the Commanders Office Room 321-02, the Command Control Room 321-10, and any conference or classroom using GFGI mobile IETV equipment, and distributed over an IETV channel provided for this function. The System Contractor shall furnish a functional description of the GFGI mobile IETV equipment required for this function, and a recommended equipment list.

(7) All IETV programs shall be modulated on to a designated IETV channel, then they shall be combined and with all other TV channels for routing over the coaxial distribution network.

d. Interactive software based IETV programs shall be data communicated independently to each individual TV set in patient and staff areas. It shall be possible to independently and simultaneously activate the interactive channel on each TV set without restriction.

(1) Patient survey programs shall allow patients to express their opinion about various services and quality indicators during their hospital stay, by answering simple yes/no questions on the TV screen via the controls on their nurse call system pillow speaker remote control. Statistical reports of survey data shall be generated by software report generators in the MINC host computer.

e. A digital video server shall provide for the recording of any TV channel on the distribution network.

f. A VCR/DVD Recorder/Player shall provide for the playing of miscellaneous VCR/DVD recordings on the multimedia projector and on an IETV channel. This shall also allow for the recording of video from the conference center video camera.

1.4.3.5 Conference Center CCTV Subsystem

a. The Conference Center CCTV Subsystem shall provide a video camera and a multimedia projector capability for meetings held in the Conference Room 325-01, and in the large conference area that includes the following rooms: Class Room 324-02, Conference Room 325-01, and Classroom 325-04.

b. A color video camera assembly with a motorized zoom lens and a pan/tilt capability shall be ceiling mounted in front of the podium area in Conference Room 325-01 shall allow views of scenes throughout the large conference area that includes Rooms 324-02, 325-01 and 325-04.

(1) The camera shall be remotely pan/tilt/zoom/focus controlled from a control unit in the MINC console. The control unit shall be capable of programming at least four preset positions for video coverage of the podium area.

(2) A microphone provided by the Section 16771 SOUND REINFORCEMENT SYSTEM and mounted on the podium shall provide audio coverage of the podium area. This audio shall be interfaced with the TV System.

(3) The video and audio signals shall be monitored, controlled, processed, recorded, and modulated onto an IETV channel from the MINC.

(4) A ceiling mounted "On-Air" light in the Conference Room 325-01 shall illuminate anytime the video camera and microphone are live.

c. A ceiling mounded multimedia projector in Conference Room 325-01 shall allow projection of video and computer generated images on the existing projection screen located in front of the room.

(1) The projector shall be located to allow maximum image size consistent with the 2743 mm (108 inch) square size of the existing projection screen, and to minimize keystone effects.

(2) The projected image shall be of sufficient brightness and resolution to allow clear vision of sharp images on the projector screen from the all viewable areas of the large conference area that includes Rooms 324-02, 325-01 and 325-04.

(3) Projector settings shall be controlled from a wireless remote control unit in Conference Room 325-01, and from a hardwired connection in the MINC console.

(4) An outlet in Conference Room 325-01 shall allow connection of a computer to the projector for viewing of computer generated images.

(5) Associated equipment in the MINC shall provide for the projection of video from TV channels on the network, and from the MINC VCR/DVD recorder.

1.4.3.6 Combining

Combining of all RF TV channels from all sources for routing over the coaxial distribution network shall occur at a central point in the Comm Equipment Room 424-01.

1.4.3.7 TV Channels

Currently planned TV channels and the programming for each group of channels are indicated in the Table below. Since such TV programming may change by the facility activation date, the indicated programs are typical and shall be verified during the system application design, and again just prior to procurement of channel equipment.

TV Channels	Programming
T8 & T10	IETV Return Channels (for Live Broadcasts)
02 - 69	Patient Entertainment Channels
70 - 90	IETV Program Channels

1.4.3.8 Broadband Distribution Network Characteristics

a. Bandpass Conformance: The coaxial cable distribution network shall have a forward bandpass of 47 MHz to 1,000 MHz for passive components, a forward bandpass of 47 MHz to 862 MHz for active components, and a reverse bandpass of 5 MHz to 47 MHz for active components, for a total system bandpass of 5 MHz to 1,000 MHz.

Frequencies in the 108 to 120 MHz band, that are reserved for aircraft radio navigation and distress signals, shall not be used in the TV System.

b. Headend Signal Level: The level of all originating signals at the point where they are all combined for routing over the distribution network shall be +40 dBmV maximum.

c. TV Outlet Signal Level: TV outlets shall receive all signals at a visual referenced carrier peak level between +6 dBmV and +9 dBmV. If off-air ghosting is a problem at a particular TV outlet, the signal level at the outlet may be increased up to a maximum level of +15 dBmV as required to solve the problem.

d. Channel Frequency Response Flatness: All TV outlets shall exhibit a flat amplitude response within 1 dB across all 6 MHz channels.

e. Peak-to-Valley Response: All TV outlets shall exhibit a flat amplitude response within ±3 dB across the entire bandpass.

f. Visual Carrier-to-Noise: The carrier-to-noise ratio at any point in the system shall not be less than 45 dB in a 6 MHz bandwidth.

g. Hum Modulation: The ratio of hum modulation (referencing 100 percent modulation) to any visual referenced carrier's peak level shall not exceed one percent.

h. Carrier-to-Second Order Beats: The ratio of any visual referenced carrier peak level to any second order beat within the referenced carrier frequency range shall be at least 60 dB.

i. Carrier-to-Composite Triple Beats (CTB): The ratio of any visual referenced carrier peak level to peak distortion density level of all triple beat products within the referenced carrier frequency range shall be at least 53 dB. This is based on a fully loaded bandpass measurable on all channels.

j. Carrier-to-Coherent Spurious Signals: The ratio of any visual referenced carrier peak level to coherent spurious signals shall be at least 50 dB within the referenced carrier frequency range.

k. Adjacent Channel Variation: The maximum adjacent channel variation shall not exceed 2 dB.

l. Outlet TV Isolation: The isolation between any two TV outlets at all frequencies within the bandpass shall be at least 18 dB.

m. System Radiation: The system shall conform to the radiation standards specified in FCC Part 76.

Up to 54 MHz:	less than 15 uv/meter at 100 feet
54 - 216 MHz:	less than 20 uv/meter at 10 feet
Above 216 MHz:	less than 15 uv/meter at 100 feet

1.4.3.9 Programming of User Room Numbers and Names

Programmable assignment of room number identification shall provide for up to ten alphanumeric characters for each room. It shall be possible to program any identifying alphanumeric characters to any room in any sequence regardless of the physical location of the room.

1.4.4 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

a. System block diagram, network diagrams including all servers and interfaces, riser diagrams, cable routing diagrams, wiring diagrams, cable run sheets including cable type and identification number (ID), custom assembly details, installation details.

b. Riser diagrams shall indicate the identification number (ID) for all equipment components as shown on the Telecommunications Drawings.

c. Installation details shall indicate layout and mounting of equipment, equipment relationship to other parts of the work, including clearances required for maintenance and operation, and plan and elevation details that indicate the exact and totally coordinated physical location and size of each individual item of equipment.

d. Cable riser and routing diagrams shall include headend and trunk cables, feeder cables, drop cables, CCTV subsystem cables, distribution network passive devices and amplifiers, data network cables and devices, and interface cables. Diagrams shall indicate signal levels at the input and output of all amplifiers, splitters, directional couplers, taps and outlets.

e. Details of the custom assembly of equipment shall indicate the assembly configuration, elevations and dimensional. Typical custom assembly details include equipment panels, and equipment mounted in a rack or cabinet.

f. Legend of graphic symbols used on all drawings. Graphic symbols on detail drawings shall conform to NCTA RP standards.

g. Details shall indicate anchoring and bracing required for seismic protection in accordance with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

a. The TV System Contractor, Installer and Manufacturer shall each have the minimum qualifications specified, related to the type of system specified for this project.

b. The Government reserves the right to accept or reject the System Contractor, Installer or Manufacturer based upon qualifications and ability to conform to specified requirements of this Section. System Contractors, Installers and Manufacturers that do not have the specified qualifications shall not be acceptable and shall not be allowed to perform the work of this Section.

c. The Government shall determine the acceptability of any proposed System Contractor, Installer and Manufacturer based on submitted and verified documentation that substantiates that the proposed System Contractor, Installer and Manufacturer have the qualifications specified in this

Section.

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and or Installer in accordance with the qualifications specified in this Section.

e. The System Contractor shall submit documented verification of the specified qualifications as part of the Data Qualifications submittal. The Government shall have the right to request, inspect and verify references and resumes of all technical and managerial personnel assigned to the project. Qualification documentation shall include, but not be limited to the information outlined below.

(1) A list of projects performed by the System Contractor and Installer during the last five years explicitly involving the type of system specified in this Section. The list shall include the name of the facility where the work was done, and the name, title, address and telephone number of a point of contact for the listed facility that can verify the work done. Lists shall be restricted to the facilities where the type of system delivered and installed are similar to and serve the same purpose as the system specified in this Section. Lists shall explicitly identify the make and model of the systems provided, and the total scope of work done for each and every facility on the list.

(2) An organization chart for the System Contractor and Installer project team that will perform the work of this Section.

(3) List and resumes of the principal personnel that will be assigned to work on this project and their assigned work responsibility and relationship with the project management structure. This shall include the following personnel:

System Project Manager
System Application Designer
CAD Staff (that will prepare submittal drawings)
Installation Technical and Supervisory Personnel
Acceptance Testing Personnel
Training Personnel

For each individual, this shall include his or her education and experience explicitly relevant to their work assignment on this project, and also include the certificate for factory training where this qualification is specified. Experiences with other types of systems unrelated to the type of system specified in this Section are irrelevant and shall not be included.

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

(5) Telephone number that will be answered by staff 24 hours per day, 365 days per year, to obtain repair parts and maintenance service.

(6) The Manufacturer's qualifications relative to the production of the

type of system specified in this Section.

(7) A letter from the Manufacturer stating that the System Contractor is an authorized distributor and service organization for the Manufacturer of the provided system. The letter shall also state the length of time that the System Contractor has been an authorized distributor.

(8) A letter from the Manufacturer stating that system being provided satisfies all functional and product requirements specified in this Section.

(9) A letter from the Manufacturer guaranteeing the availability of parts as specified.

1.5.1.2 System Contractor Qualifications

a. The System Contractor shall be regularly engaged in the system application design, documentation, installation, testing, training, and maintenance of the type of system specified in this Section, with a minimum of five years experience providing these services for systems having the same level of features and functions as the system being provided.

b. The System Contractor shall be either the system Manufacturer, or an authorized distributor and service organization for the Manufacturer of the provided systems for a minimum of at least five years.

c. System Contractor personnel assigned to this project shall be factory trained or certified for the make and model of systems provided by the System Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience performing the services that they will perform for this project.

d. The System Contractor shall maintain a full complement of repair parts for the provided system and shall be able to furnish on-call maintenance service 24 hours per day, 365 days per year as specified herein.

1.5.1.3 Installer Qualifications

a. The Installer shall be regularly engaged in the business of installation of the type of system specified in this Section.

b. The installation supervisor that will be assigned to this project shall be factory trained or certified for the make and model of system provided by the System Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience in the installation of the specified types of system equipment and cables.

c. Installer personnel that will be assigned to this project shall have a minimum of three years experience in the installation of the types of system equipment and cable specified in this Section.

1.5.1.4 Manufacturer Qualifications

a. The Manufacturer shall have a minimum of five years of experience in producing the type of system specified in this Section.

b. The Manufacturer shall produce a system that satisfies all specified functional and product requirements.

c. The Manufacturer shall guarantee availability of replacement parts for

a minimum of seven years from date of final acceptance of the installed system by the Contracting Officer.

1.5.2 Regulatory Requirements

1.5.2.1 Products

a. UPS units shall comply with UL 1778.

b. Audio-Video products shall be comply with UL1492.

1.5.2.2 Design and Installation Work

All design and installation work shall comply with 47 CFR 15, 47 CFR 76, NFPA 70 NEC, NFPA 99, NFPA 780, NCTA RP, and ANSI/TIA/EIA-569-A.

1.5.2.3 System Performance

TV System performance shall be demonstrated using the recommended practices of NCTA RP.

1.5.2.4 Electromagnetic Interference (EMI)

a. Installed system shall conform to the EMI standards specified in 47 CFR 15 rules and regulations, for EMI caused by computing devices.

b. Within the normal BACH environment, the installed system shall not generate nor be susceptible to any harmful electromagnetic emission, radiation, or induction that degrades, obstructs, or interrupts the operation of the installed system, and any computer system, life safety system, or patient monitoring system in the facility.

c. In the event that any part of the system is subject to CFR technical standards different from those set forth herein, including without limitation the requirement that those computing devices marketed for use in business or industrial environments are certified by the FCC to comply with the Class B limit of the FCC Rules, such CFR standards shall apply in lieu of those set forth herein.

d. In the event that, at the time of system acceptance testing, the applicable CFR technical standards shall differ from those set forth above, the system as installed shall conform to such then applicable CFR technical standards.

e. In the event of a breach of the representations and warranties contained herein, the System Contractor at their own expense shall take all measures necessary to put the offending system into compliance with the applicable CFR technical standards, or replace the offending system with an acceptable substitute.

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

All products delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, or other contaminants.

1.6.2 Delivery Coordination

Coordinate deliveries with the Contracting Officer to insure a timely installation.

1.6.3 Loss Liability

The System Contractor shall be liable for any loss due to delivery and storage problems.

1.6.4 Delivery Restrictions

a. No products or installation material shall be delivered to the job site more than one month prior to commencement of its installation.

b. System products shall not leave the factory prior to six months before the time that the facility is ready for installation of the products. Obtain prior written approval of the shipping date from the Contracting Officer.

1.6.5 Contractor Responsibility

The System Contractor shall be responsible for all handling and control of products provided under this contract.

1.7 SEQUENCING AND SCHEDULING

a. Each part of the system shall be installed and phased into operation as required by the project schedule.

b. Schedule and coordinate work with all other trades and suppliers whose work is critical to the successful installation of the system.

c. Furnish and install all required items for a complete and operating installation so as to cause no delay in work by Others, or completion of the project.

d. Final inspection and acceptance testing of each system shall be performed after all pre-testing checks and commissioning has been completed.

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS and CLOSEOUT SUBMITTALS.

b. Warranty the operational and physical integrity of the provided system, including a warranty against all defects in design, equipment, materials, software, workmanship, and improper installation and adjustments, for a period of at least one year from the date the operating system is accepted by the Government after satisfactory completion of final inspection and acceptance tests. This warranty shall not cover any malfunctions or damage caused by misuse, abuse or neglect. If the System Contractor or Manufacturer warranty is for a period longer than one year, the longest warranty period shall govern. The System Contractor shall furnish a warranty document with the Data submittal.

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at

other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express delivered to BACH if not available locally.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

The System Contractor shall keep an adequate quantity of installation spare parts onsite to preclude work stoppages and to meet other contingencies that might arise prior to the final inspection and acceptance of the system.

1.9.1.3 Post Acceptance Spare Parts

a. After the system has been acceptance tested and turned over to the Government for operation, furnish the minimum type and quantity of onsite spare parts as itemized below.

Quantity	Items
2	508mm (20 inch) Hospital Grade Color TV Sets
2	635mm (25 inch) Commercial Grade Color TV Sets
2	686mm (27 inch) Presentation Color Monitor/TV Sets
1	Distribution Amplifier with Power Supply
2	4 Port Directional Taps
2	8 Port Directional Taps
4	Terminators
2	Each Type of Outlet
2	Removable Hard Disk for Digital Video File Servers
1	Multimedia Projector Lamp

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished to the specified quantities and turned over to the Government at the end of warranty period.

c. The System Contractor shall recommend any additional onsite spare parts deemed necessary by the Manufacturer and or the System Contractor. Furnish to the Contracting Officer the cost of recommended additional spare components as a separate line item.

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

c. Deliver all special maintenance tools, equipment and software to the Government upon successful completion of the final inspection and acceptance testing of the system.

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. The System Contractor shall provide an on-line diagnostic maintenance support capability as specified herein.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

b. A 24-hour telephone answering service shall be available to receive after hour maintenance service calls and dispatch on-call service personnel within the required response time.

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

(1) Complete failure of any of the following Major Functional Component of the system:

Total Coaxial Cable Distribution Network
Total Data Network
MINC Host, Menu or Message Computer

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified or indicated on the drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

Modification of products that nullifies the UL listing or other agency approval is not permitted.

2.1.4 Identical Products

Products of the same classification shall be identical. This requirement includes all component equipment, modules, assemblies, parts, and materials.

2.1.5 Nameplates and Equipment Markings

a. Each major equipment component shall have the Manufacturer's name, model, and serial number on a plate secured to the equipment. Also, all compliance with regulatory requirements, such as UL and CFR, shall be indicated on the nameplate or on adjacent labels.

b. All controls on panels shall be plainly and permanently labeled with the identification of the function served. Stick on marker tapes is not acceptable.

c. Markings on any exposed surfaces shall not be destroyed by housekeeping solutions normally used in medical facilities.

2.1.6 Mounting Alignment Capability

Wall mounted components shall have an adjustable mounting alignment capability to compensate for improperly aligned backboxes and to insure a plumb, square, and level installation.

2.1.7 Model and Enhancements

a. The system and all product components shall be the Manufacturer's latest model, design, version, and quality in production at time of delivery and installation.

b. Any product hardware or software enhancement that becomes available after delivery and installation, and up to time of system acceptance, shall be brought to the attention of the Contracting Officer upon announcement by the Manufacturer and shall be made available to BACH. If such enhancements customarily are provided at no additional cost, the Government shall automatically be entitled to such enhancements. If such enhancements customarily are provided at additional cost, the Contracting Officer has the option to accept or reject such enhancements.

c. Submit a letter to the Contracting Officer from the Manufacturer guaranteeing that the Manufacturer shall inform the Government of, and make available to the Government, all commercially available enhancements to the system hardware or software at the then current price. Include the letter with the Data submittal.

d. Substitutions, modifications, or improvements to a system hardware and software are permissible provided that such substitution, modifications, or improvements shall not reduce or degrade the performance or product requirements, nor violate regulatory requirements. No such substitutions, modifications, or improvements shall be made without the written consent of the Manufacturer and Contracting Officer. Such consent shall not be unreasonably withheld or delayed.

2.1.8 Software and License

a. Provide all software required for the specified capability, configuration, performance, and operation of the system.

b. The Government shall be granted a nonexclusive, fully paid perpetual license to use software provided. The Government receives no title or ownership rights to such Software.

c. Software maintenance that is provided to any or all other customers without charge shall be provided to the Government.

2.2 DISTRIBUTION NETWORK CABLES

All distribution cables shall be CMP rated as defined by NFPA 70

2.2.1 Coaxial Cable Types & General Requirements

a. Three types of coaxial cable shall be utilized for the distribution of TV signals: trunk cable, feeder cable, and drop cable.

b. All cables shall conform to NFPA 70 NEC.

c. 100% sweep testing, 5 MHz to 1,000 MHz, and structural return loss testing with certificates for all types of coaxial cables shall be performed at the cable manufacturer's facility. Test certificates from the coaxial cable manufacturer(s) shall be submitted to the Contract Officer. prior to the installation of any coaxial cable.

2.2.2 Trunk Cables

a. Trunk cables from the distribution network combiner point in the Comm Equipment Room 424-01 to all directional taps and amplifiers in all Comm Rooms shall be 12.7 mm (0.500 inch) type coaxial cables as specified herein.

b. Physical Characteristics

Center Conductor:	solid copper clad electrical grade aluminum
Dielectric:	polyethylene
Outer Conductor:	solid electrical grade aluminum sheath
Outer Jacket:	black low density polyethylene
Pulling Tension:	123 Kg (270 lbs.) maximum
Bending Radius:	no less than 152 mm (6 inches)

c. Electrical Characteristics

Max Attenuation at 20 Degrees C (68 Degrees F)

Frequency MHz:	5	55	211	300	450	550	1,000
Loss dB/30 M:	0.14	0.48	0.95	1.14	1.40	1.55	2.15

Nominal Impedance:	75
Nominal Capacitance:	14.9 pf/305 mm (/ft)
Nominal Velocity of Propagation:	93%
Nominal DC Resistance/1000 ft. @ 20 degrees C	
Center Conductor:	1.09 ohms
Loop	1.55 ohms

2.2.3 Feeder Cables

a. The coaxial cables interconnecting the MINC console in the Conference Center Equipment Room 325-02 to the distribution network combiner in the Comm Equipment Room 424-01 shall be RG-11/U type feeder coaxial cable as specified herein.

b. All feeder cables from the directional taps and splitters in all Comm Rooms to all directional taps at the drop cable locations shall be RG-11/U type coaxial cables as specified herein. The maximum length of any feeder cable line shall not exceed 90 M (295 ft).

c. Physical Characteristics

Center Conductor:	14 AWG solid copper clad steel
Dielectric:	polyethylene
Shielding:	quadshield construction providing 100% shield coverage
Jacket:	environmentally sealed black PVC

d. Electrical Characteristics

Max Attenuation at 20 Degrees C (68 Degrees F)

Frequency MHz:	5	55	300	450	550	1,000
Loss dB/30 M:						
RG-11/U	0.38	0.99	2.32	2.89	3.21	4.48

Nominal Impedance: 75 ohms
Nominal Capacitance: 14.9 pf/305 mm (/ft)
Nominal Velocity of Propagation: 83%
Nominal DC Resistance/1000 ft.
@ 20 degrees C
Center Conductor: 12.7 ohms
Loop 15.4 ohms

2.2.4 Drop Cables

a. All drop cables from the feeder directional taps to all TV outlets shall be RG-6/U type coaxial cables as specified herein, The maximum length of any drop cable shall not exceed 50 M (164 feet).

b. Physical Characteristics

Center Conductor:	18 AWG solid copper clad steel
Dielectric:	polyethylene
Shielding:	quadshield construction providing 100% shield coverage
Jacket:	environmentally sealed black PVC

c. Electrical Characteristics

Max Attenuation at 20 Degrees C (68 Degrees F)

Frequency MHz:	5	55	300	450	550	1,000
Loss dB/30 M:						
RG-6/U	0.64	1.60	3.54	4.40	4.90	6.75

Nominal Impedance: 75 ohms
Nominal Capacitance: 16.3 pf/ 305 mm (/ft)
Nominal Velocity of Propagation: 83%
Nominal DC Resistance/1000 ft.
@ 20 degrees M
Center Conductor: 32.0 ohms
Loop 35.7 ohms

2.2.5 System Data Network Cables

System data network cables shall conform to EIA/TIA 568A standards for the Category of unshielded twisted pair (UTP) wire used.

2.3 CONNECTORS AND MOUNTINGS

a. TV outlets shall consist of modular jacks and faceplates.

b. RF connectors shall be a "F" connectors

c. All cable splices and cable connections to equipment shall be made with

solderless connectors. All TV connections shall be made with the appropriate male/female type "F" connectors. All "F" connections shall have attached crimp/ferrule. All crimp tools shall be hex type.

d. Fittings for all coaxial cables shall be specifically designed to match the cable. Compression sleeves and threaded shells shall insure a secure installation free of radiation. Tools specifically designed for the purpose shall be utilized in preparing the cables for the fittings. All trunk and feeder connections shall be "pin type."

e. Data cable connectors shall be of the type required by the System Contractor system application design for the data network and shall be in conformance with EIA/TIA 568A standards for the Category of UTP wire used.

f. All outlet devices shall be bulkhead mounted on a duplex type connector block subplate that mounts on a standard NEMA backbox and fits the duplex openings on a standard electrical outlet faceplate.

g. Blank filler type subplates shall be provided for all outlets that are not equipped with connectors.

2.4 TERMINATORS

All unused TV outlets and unused ports of splitters, directional couplers, taps and equipment shall be equipped with a terminating device specifically designed for the purpose and shall match the impedance (75 ohm) specified by the cable manufacturer.

2.5 FACEPLATES

a. Standard modular faceplates shall be provided for all outlets unless indicated otherwise on the Telecommunications Drawings. Plastic faceplates shall be manufactured of high impact thermoplastic (e.g., Nylon) and of a color meeting NEMA standards. If no particular specification dictates the color, it shall have a color matching other electrical faceplates in the room.

b. Faceplates of outlets shall be permanently marked with the functional identification of each connector.

2.6 SPLITTERS AND DIRECTIONAL COUPLERS/TAPS

a. All splitters and directional couplers shall be hermetically sealed, RFI shielded, and have F type ports.

b. Splitters and directional couplers/taps characteristics:

Band Pass:	5 MHz to 1,000 MHz
Terminal Match:	18 dB
Isolation:	18 dB

c. Multi-port directional taps shall include 4 and 8 port taps in to the feed through ports. Taps shall be available with the following tap loss characteristics expressed in nominal dB: 8, 11, 14, 17, 20, 23, 26, 29, 32, and 35 dB. Tap-to-tap isolation shall be 24 dB minimum from 30 to 550 MHz and 18 dB minimum from 550 to 1,000 MHz. Match shall be 15 dB minimum return loss input to output through feed for 5 MHz to 1,000 MHz. Tap values for any installed tap shall be as required to satisfy specified signal level requirements.

2.7 DISTRIBUTION AMPLIFIERS

a. Distribution amplifiers shall provide for two-way distribution.

b. Characteristics:

Frequency Range: Forward	47 MHz to 860 MHz
Frequency Range: Reverse	5 MHz to 42 MHz
Frequency Response Flatness:	±1.00 dB
Gain:	31 dB
Noise Figure:	8.0 dB
Output Level - Max:	+44 dBmV
Gain Control Range:	15 dB
Slope Control Range:	10 dB
Composite Triple Beat:	-50 dB
Cross Modulation:	-50 dB
Composite Second Order:	-56 dB
Hum Modulation:	-70 dB
Return Loss In/Out:	14 dB
Impedance - All Ports:	75 ohms

c. Distribution amplifiers shall be provided with the input attenuator and cable equalizer as required by the system application design.

d. Terminating Resistors: Terminating resistors with 75 ohm impedance shall be installed at unused ports. Terminating resistors shall be designed for a minimum return loss of 30 dB across the broadband frequency spectrum.

e. An amplifier power supply shall be provided with each amplifier at the installed amplifier location. Line powering of amplifiers shall not be allowed.

2.8 EQUIPMENT CABINETS

a. MINC equipment and headend rack mount equipment shall be mounted in equipment cabinets.

b. Equipment cabinets shall be constructed of the heaviest gauge steel commercially offered by the approved manufacturer, and shall be prime painted and finished in a durable finish. Cabinets shall include intake and exhaust fans to provide air circulation. Cabinets shall accept standard EIA 483 mm (19 inch) wide rack mounted equipment and provide equipment mounting expansion space for additional equipment up to the capacity of the system. Cabinets shall be floor mounted and have rear removable hinged doors with latching handles and locks. Nominal dimensions shall be 584 mm (23 inches) deep and 195 mm (77 inches) high. Provide blank panels for cabinet front spaces not in use.

c. One of the MINC cabinets shall be configured with a slide out shelf for the computer keyboard and mouse.

d. One of the MINC cabinets shall leave half of the cabinet height blank for use by the Section 16771 SOUND REINFORCEMENT SYSTEM to mount equipment.

e. One of the MINC cabinets shall be configured to leave room for equipment panels to control a future GFGI motorized satellite antenna.

f. Cabinets shall be constructed and assembled so as to be capable of withstanding the seismic lateral force imposed at vertical center of gravity of the cabinets without causing permanent deformation, dislocations, separation of components, or other damage, which would render the equipment and cables mounted in the cabinets inoperative for significant periods of time following an earthquake.

2.9 FM ANTENNA

a. An omnidirectional FM antenna shall be provided for reception of all available FM stations in the Fairbanks metropolitan area.

b. Antenna shall be constructed of weather resistant, corrosion proof aluminum material and hardware.

c. Characteristics:

VSWR:	1.5:1
Frequency Range:	88 MHz - 108 MHz
Output Impedance:	75 ohm
Minimum Gain:	2.2 dBi
Output Interface:	Type "F" female, weather sealed
Wind Survival:	161 Km (100 MPH) with 1.3 gust factor minimum (No ice load)

2.10 FM ANTENNA MAST

a. Characteristics:

Stainless Steel mounting bolts
Galvanized tubular steel
63.5 mm (2-1/2 inch) minimum diameter
Lightning arresters.
Wind Survival: 161 Km (100 MPH) (No ice load)

2.11 FM AMPLIFIER AND BANDPASS FILTER

a. The FM amplifier required to provide the off-air FM frequency band for distribution shall have the following characteristics:

Frequency Range:	88 MHz to 108 MHz
Gain:	55 dB minimum
Noise Figure at Full Gain:	7.0 dB typical
Output Level Control Range:	20 dB minimum
AGC Range:	40 dB minimum

b. FM Bandpass Filter: An FM bandpass filter shall be provided to pass the off-air FM frequency band from the FM antenna and reject all other frequencies. Characteristics include:

Bandpass Range:	88 MHz to 108 MHz
Bandpass Response:	+/- 1.0 dB
Insertion Loss:	3.0 dB
Rejection Band:	5 to 1000 MHz except for the bandpass
Rejection:	40 dB at all frequencies except the bandpass

2.12 MODULATORS

a. Modular agile audio/video modulators shall be provided for each of the

IETV channels.

b. Modular modulators mounted in a rack chassis with power supply.

c. RF Characteristics:

Frequency Range:	54 - 860 MHz
Channels:	TV and CATV
Output Level:	45 dBmV
Output Level Adjust:	15 dB
Aural/Visual Carrier Ratio:	-10 to -17 dB
Visual Carrier Freq. Tolerance:	+/-5 KHz
Spurious Outputs:	-60 dBc
C/N Ratio In Channel:	65 dB
Broadband Noise:	-78 dBc
Output Return Loss:	12 dB

d. Video Characteristics:

Input Level:	1.0 V p-p
Frequency Response:	±1 dB maximum
S/N Ratio	62 dB

e. Audio Characteristics

Frequency Range:	20 Hz to 20 kHz
Frequency Response:	+/- 1.0 dB
S/N Ratio:	58 dB
Total Harmonic Distortion	0.6 %

f. Front Panel Controls: Video Level, A/V Ration, Audio Level, RF Output Level.

g. Front Panel Indicators: Power On

2.13 CHANNEL PROCESSORS

a. Agile heterodyne processor that converts reverse subband T channels to forward IETV channels.

b. RF Characteristics:

Input Frequency Range:	5 to 43 MHz
Output Frequency Range:	50 to 550 MHz
Channels:	Subband Input, TV & CATV Output
Output Level:	40 dBmV
Output Level Adjust:	10 dB
Aural/Visual Carrier Ratio:	0 to -10 dB
Visual Carrier Freq. Tolerance:	+/-10 KHz
Spurious Outputs:	-60 dBc
Intermod Distortion:	-64 dB
Broadband Noise:	-76 dBc
Image Rejection:	65 dB
Input Return Loss:	12 dB
Output Return Loss:	14 dB

c. Front Panel Controls: Frequency Selection, Frequency Response Adjust, Aural Carrier Level, Frequency Fine Tune, RF Output Level.

d. Front Panel Indicators: Power On

2.14 RF COMBINERS

a. Passive RF Combiners shall be used to combine multiple RF signals originating from various sources.

b. Number of inputs shall be as required by the system application design.

c. Characteristics:

Bandpass:	5 MHz to 1,000 MHz
Isolation - Adjacent Ports:	25 dB minimum
Isolation - Non-Adjacent Ports:	35 dB minimum
Match:	16 dB
Impedance:	75 ohms
Ports:	As required by system application design

2.15 COMPUTERS

a. Rack mount units.

b. Microcomputers configured specifically for the computer applications specified herein.

Processor:	Pentium 4 processor, 2.4 GHz
Cache:	512 KB cache
RAM:	512 MB DDR SDRAM
Hard Disk:	80 GB
CD Drive:	32x
Floppy Drive:	89 mm (3.5 inch)
NIC:	100 MB
Ports:	As required by system application design
Video Board:	128 MB RAM, SVGA, 1280x1024 pixel resolution, 65K colors, non-interlaced, 70 Hz vertical refresh rate
Modem:	56 kbps

c. Fully integrated and installed software as required for the system performance features specified herein, to include:

(1) Operating system that supports multi-user, multitasking operations.

(2) Application programs, report generation programs, utility programs, and data communications programs, with menu driven format in plain understandable English text.

d. Security log-on and password features.

2.16 KEYBOARD, VIDEO MONITOR, MOUSE, AND KVM SWITCH

a. KVM Switch that allows control of all the computers and servers using one keyboard, one mouse, and one monitor.

b. Standard computer keyboard.

c. Optical Mouse

d. Video Monitor
432 mm (17 inch) trade size LCD

1280 X 1024 native resolution.

2.17 LASER PRINTER

a. Speed of at least 8 pages per minute

b. Resolution of at least 300 x 300 DPI image.

c. At least 8 megabyte of built-in memory.

d. Paper tray capacity of at least 250 sheets.

e. At least 35 built-in scalable fonts.

2.18 UPS

a. Rack mount unit.

b. UPS shall be UL 1778 listed, and comply with the requirements of 47 CFR 15.

c. Volt-Amp capacity shall be at least 130 percent of the total volt-amp load of the equipment connected to the UPS. Power requirement calculations shall be included with design data submittal to verify power requirements.

d. Upon an ac power line outage, the UPS shall automatically transfer to battery power within 4.2 milliseconds of sensing ac power line loss, and provide at least 30 minutes of full power for operation of the equipment connected to the UPS. On-battery output voltage shall be 115 VAC, +/- 5 percent.

e. The UPS shall use sealed, maintenance free type batteries that have an expected life of at least three years. The batteries shall always be powered from a constant voltage or "float type" battery charger. Recharge time to 90 percent capacity after discharge to 50 percent capacity shall not exceed 10 hours.

f. Surge energy rating shall be at least 320 joules. Surge peak current capability shall be at least 26 ka.

g. UPS visual indicators on the UPS front panel shall indicate on-line operation, output overload, low battery, and replace battery.

2.19 DIGITAL VIDEO SERVERS

a. Rack mount unit.

b. Characteristics:

Processor:	Pentium 4 processor, 2.4 GHz
Cache:	512 KB cache
RAM:	512 MB DDR SDRAM
Hard Disk:	20 GB Removable
CD Drive:	32x
Floppy Drive:	89 mm (3.5 inch)
NIC:	100 MB
Ports:	As required by system application design
Video Board:	128 MB RAM, SVGA, 1280x1024 pixel resolution, 65K colors, non-interlaced,

	70 Hz vertical refresh rate
Modem:	56 kbps
Compression:	MPEG-1
Video:	NTSC
Audio:	MPEG 1 Stereo

c. Configured for scheduled or on-demand operation modes as required by specified performance requirements.

2.20 SWITCHERS, ROUTERS, AND ADAPTERS

a. Rack mount units.

b. Ports, protocols, speed, and capacity as required by the system application design.

2.21 A/V DISTRIBUTION AMPLIFIER

a. Rack mount unit

b. Distribute audio/video from the conference center video camera, and audio signals from the Section 16771 SOUND REINFORCEMENT SYSTEM for the Conference Center CCTV Subsystem.

c. Video Characteristics:

Inputs:	1 S-Video and Composite Video
Outputs:	3 Composite Video
S/N Ratio:	68 dB
Bandwidth:	10 MHz
Resolution:	1200 Lines

d. Audio Characteristics

Inputs:	1 Right and Left
Outputs:	4 Right and Left
Freq Response:	7 - 7500 Hz
S/N Ratio:	100 dB

2.22 VIDEO CAMERA ASSEMBLY & ACCESSORIES

a. The video camera assembly shall be ceiling mounted in the conference center.

b. The video camera assembly shall include a video camera, motorized zoom lens, pan/tilt unit, and dome housing.

(1) High Resolution Video Camera Characteristics:

Image Sensors:	3 chip, 8.5mm (1/3 inch) interline CCDs
Horizontal Resolution:	750 TV lines
Color Bar Generator:	Built-in, SMPTE type
Signal-to-Noise Ratio:	60 dB
Sensitivity:	F5.6 @ 2,000 Lux
Lens Mount:	C-mount
Remote Control:	RS232 remote control
Synchronizing System:	Internal/external with genlock input
Video Output:	Composite video RGB, S-VHS
Remote Powered	

(2) Motorized Zoom Lens Characteristics:

Type Lens:	1/3 CCD C-mount
Magnification Zoom Ratio:	15 to 1
Focal Length:	5mm to 75 mm
Remote Control:	Zoom and focus
Noise Control:	RF noise suppression circuitry
Remote Powered	

(3) Pan/Tilt Unit Characteristics:

Type:	Light duty, programmable
Load Rating:	10 lbs
Torque Rating:	180 in./lb
Pan/Tilt Speed:	25 degrees per second
Remote Control:	Pan and tilt
Remote powered	
Mountable in any position	
All cables to the unit through a coiled cord	

(4) Dome Housing Characteristics:

Type:	Indoor dome hemisphere configured for drop ceiling mounting and to house the pan/tilt unit, video camera and motorized lens
Viewing:	Distortion free
Travel Range:	As required by pan/tilt unit.

c. Remote Control Unit

(1) Rack mounted unit.

(2) The remote control unit shall control the video camera assembly pan/tilt unit and the motorized zoom lens.

(3) Characteristics:

Presets:	99 programmable preset positions
Pan/Tilt Control:	Joy stick
Lens Control:	Zoom and focus

d. On-Air Indicator

(1) An "On-Air" indicator shall be ceiling mounted near the video camera assembly to provide a visual indication of when the camera in on line.

(2) Characteristics:

Lamp:	15 watt
Lens:	Red
Remote Powered	

e. Power Supplies

(1) Rack mount unit.

(2) Power supplies shall include units to power the video camera, motorized zoom lens, pan/tilt unit, on-air indicator, and remote control unit.

(3) Power supplies shall controlled from a master switch that controls the power on/off to all of the equipment.

(4) Power supplies shall operate from 120 VAC.

(5) The output voltage and power ratings from all power supplies shall be as required to adequately power all equipment.

2.23 TV SETS AND ASSOCIATED EQUIPMENT

2.23.1 General TV Set Requirements

a. All TV sets shall:

(1) Conform to current CATV industry standards and have a minimum channel capacity of 125 CATV channels.

(2) Be UL 1492 listed. All TV sets in patient care areas shall be hospital grade.

(3) Be powered from a 120 VAC source.

(4) Have a closed caption capability.

(5) Have the capability to show on screen channel display.

(6) Have infrared remote (IR) control for TV set-up of controlled functions.

(7) Be configured with a cabinet for mounting on a wall bracket or on a furniture mount.

(8) Be equipped with the distributed data processing circuitry required to provide the control and performance capability specified in herein in the performance requirements of Paragraph 1.4.3, and shall be totally compatible with the MINC host computer system and data network.

(9) Have custom and preset picture settings through on-screen menu system. Custom on-screen menu adjustment of contrast, brightness, sharpness, color and tint. Preset at optimum factory setting.

(10) Have TV set cabinet front panel controls for power on/off, up/down channel selection scan, volume control, menu and selection controls for interactive programs, and closed caption selection control. Systems that locate any of these controls external to the TV set cabinet shall not be acceptable.

(11) Have automatic channel scan search for available channels with capability to delete unwanted channels from the scan sequence.

(12) Have Channel/Time display with configurable colors.

(13) Have adjustable volume limiter.

(14) Have short circuit protection.

(15) Be from the same manufacturer.

b. For TV sets that are mounted in enclosed spaces, the maximum width and height of the TV set shall not exceed the inside dimensions of the enclosed space, with an allowance on all sides and the top of the TV set for proper ventilation of the TV set.

c. Provide all jumper cables necessary to connect the TV sets to TV outlets, including antenna cables, data network cables, and remote control/speaker cables.

d. Provide the wall outlet connector for the wired remote control and wired remote speaker connection to the 598 mm (20 inch) TV sets in patient bed rooms.

2.23.2 508mm (20 Inch) Hospital Grade Color TV Sets

a. Hardwired remote control and hardwired remote speaker for interconnection with the Section 16731 NURSE CALL AUDIO-VISUAL SYSTEM patient station for remote control and sound via the nurse call digital pillow speaker cord set and Hill-Rom bed SideCom. Wired remote controls that shall be accessible from the pillow speaker shall include power on/off, up/down channel selection scan, volume control, menu and selection controls for interactive programs, FM radio selection control, and closed caption selection control.

b. Integral FM radio receiver.

c. Rear panel video and audio input jacks.

2.23.3 635mm (25 Inch) Commercial Grade Color TV Sets

a. Wireless IR remote control of TV set user functions. IR remote controls shall include power on/off, up/down channel selection scan, and volume control, and closed caption selection control. Systems that locate any of these controls external to the TV set cabinet shall not be acceptable.

b. Control panel lock-out.

c. Rear panel video and audio input jacks.

2.23.4 686mm (27 Inch) Commercial Grade Color Monitor/TV Sets

a. Wireless IR remote control of TV set user functions. IR remote controls shall include power on/off, up/down channel selection scan, and volume control, closed caption selection control. Systems that locate any of these controls external to the TV set cabinet shall not be acceptable.

b. Integrated true SVGA computer resolution with native 800 x 600 @ 60 Hz refresh.

c. Front auto sensing 15 pin computer connection with true SVGA.

d. Rear panel 15 pin computer connection with true SVGA.

e. Rear panel video/audio input jacks.

f. Dual scan technology.

g. Menu for computer color adjustments.

h. Stereo/MTS/SAP audio.

2.24 TV MOUNTS

a. Wall mounts and furniture mounts shall be sized and have the load capacity for the TV sets to be mounted.

b. Wall mount for the 506mm (20 inch) TV sets shall have a 360 degree adjustable swivel, and a fixed 12 degree tilt.

c. Wall mount for the 635mm (25 inch) TV sets shall have an adjustable yoke, a 360 degree adjustable swivel, and a 0 to 15 degree adjustable tilt.

d. Furniture mounts for all TV sets shall be locking type with a two piece bolt down construction, and a 360 degree restrictable swivel.

e. Mounts shall be manufactured of the heaviest gauge steel commercially offered by approved manufacturer, and have a baked on black epoxy wrinkle finish.

f. All mounts shall have pre-drilled holes and provided with mounting hardware specific to the TV set manufacturer and model that is being mounted.

2.25 MULTIMEDIA PROJECTOR

a. Fixed installation, ceiling mount unit, with mounting bracket and hardware.

b. Multimedia capability to handle both video and computer generated images.

c. Characteristics:

Display Technology:	Polysilicon LCD Panels x 3
Brightness:	3000 ANSI lumens
Resolution:	1024 x 768 pixels, 600 video lines
Computer Compatibility:	SVGA (800x600), XVGA (1024x768)
Video Comparability:	S-Video, Composite Video, Component Video
Projection Image:	787 mm (31 inches) to 8636 mm (340 inches)
Aspect Ratio:	4:3 native
Contrast Ratio:	700:1
Zoom/Focus:	Power (Optical Zoom Ratio: 1.3:1)
Projection Lamp:	270 W
Fan Noise:	35 dBA, maximum
Remote Control:	Wireless, and Wired for Computer Control
Keystone Correction:	Horizontal and Vertical

d. The remote control function shall allow projector setup and presentation operation, including motorized lens zoom and focus.

2.26 DVD PLAYER/VCR

a. Capabilities shall include:

(1) Playing a DVD disk.

(2) Playing a video cassette recording.

(3) Receiving CATV channels 1 to 125 and recording these channels on a video cassette tape.

(4) Audio and Video outputs

b. Wireless Remote Control unit for all functions.

PART 3 EXECUTION

3.1 EXAMINATION

System Contractor shall perform a site survey to verify all field conditions, become familiar with the details of the work and working conditions, verify dimensions in the field, and advise the Contracting Officer of any discrepancies before performing the work.

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of Comm Rooms are identified on the Telecommunications Drawings.

c. All flush and ceiling mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically

separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Junction box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

e. Coordinate all design and installation efforts with those of related trades that have provided the rough-in in the facility construction project to accommodate the installation of the system. In the event of any conflicts, delayed or improper preparatory work by others, notify the Contracting Officer for resolution. The Contracting Officer decision shall be binding.

3.2.3 Electrical Power and Grounds

a. Existing electrical power on the emergency critical branch circuit has been provided by the facility construction project at a power junction box in Comm Rooms for system central equipment, and at a power receptacle adjacent to each master station, the system maintenance station, the code blue annunciator panel station, and the failure alarm annunciator panel station. Reference the facility construction project Electrical Drawings for details.

b. Existing grounding buss bars have been provided as indicated on the Telecommunications Systems Drawings. Reference the facility construction project Electrical Drawings for details.

c. If any new electrical power circuits are required, the Telecommunications Systems Contractor shall define and submit the new power requirements to the Contracting Officer, who will coordinate the change with the existing Facility Contractor.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interfaces and Interconnections

Coordinate and define the details of all interfaces and interconnections with all other systems and equipment as specified herein. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of Drawings and Data submittals.

3.3.2.1 Sound Reinforcement System Interface

a. Define and coordinate with the Section 16771 SOUND REINFORCEMENT SYSTEM the interface and interconnection details for the audio cables that carry the microphone and loudspeaker audio feeds for the conference center.

b. Define and coordinate the mounting of sound reinforcement equipment in space to be allocated for this equipment in one of the MINC equipment racks, as indicated on the Telecommunications Drawings.

3.3.2.2 TV Sets - Nurse Call System Interface

Define and coordinate with the Section 16731 NCAV SYSTEM the interface and interconnection details for the TV remote control and sound cable connections in TV outlets in patient rooms.

3.3.2.3 PDS, HIS, and Telephone Interfaces

a. Define and coordinate with the Section 16710 PDS the cable interconnection details for PDS wiring to the telephone system for the modem connection. Also coordinate the modem line with the telephone system.

b. Define and coordinate with the Section 16710 PDS and the BACH IMO the cable interconnection details for PDS wiring for the future HIS connection. Also coordinate any required HIS data link with the BACH HIS.

3.3.2.4 Patient Entertainment TV Source Interface

Coordinate with the Contracting Officer the details for connecting to the GFGI source for patient entertainment TV channels. Coordination details shall include:

(1) Physical connection.

(2) Verification of the required 40 dBmV signal at the demarcation point in the Comm Equipment Room 424-01.

(3) TV channels to be received and distributed.

(4) Assurance that TV channels in the FM frequency band are excluded or filtered out.

3.3.3 TV Mounting

a. Check as-built dimensions of enclosed TV mounting spaces and verify that the space is adequate for the proper mounting of the TV sets to be provided.

b. Coordinate installation details for TV wall mounts with the facility Construction Contractor.

c. Coordinate installation details for TV furniture mounts with the Contracting Officer. Includes mounts for GFGI TV furniture carts.

3.3.4 Application Programming

Gather user data required to adequately program the system and set-up any unique functions as required by the system application design.

3.3.5 Planning Data

Gather data required to develop all required plans, including testing and training plans.

3.4 INSTALLATION

3.4.1 General

a. Installation shall be accomplished as indicated and specified, and in accordance with acknowledged industry and professional standards and practices, and the Manufacturer's instructions.

b. Installation shall comply with the requirements of 47 CFR 76, NFPA 70, NFPA 99, NFPA 780 and ANSI/TIA/EIA-569-A.

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

d. During the entire installation the System Contractor shall maintain onsite a supervisor as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications.

e. Provide all tools and equipment needed to install the system.

f. All ac power plugs, except those for TV sets, shall be tightly strapped to the ac power receptacle to prevent accidental unplugging of the ac power.

g. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

3.4.2 Equipment Installation

3.4.2.1 General Equipment Installation

a. All equipment shall be installed so as to be readily accessible for maintenance and shall be located so that it shall not interfere with servicing of other utilities or services.

b. All distribution amplifiers for the broadband distribution coaxial cable network shall be wall mounted in Comm Rooms in locations indicated on the Telecommunications Drawings, and where they are readily accessible for future connection or maintenance without the use of ladders or lifts. The ideal height for amplifiers is 1219 mm (48 inches) above the floor.

c. If a separate data network is required by the system application design, the equipment for this data network shall be wall mounted in Comm Rooms in locations indicated on the Telecommunications Drawings, and where they are readily accessible for future connection or maintenance without the use of ladders or lifts.

d. All MINC equipment shall be installed in rack equipment cabinets in a neat and orderly fashion.

e. Determine the height of the FM antenna and mast based upon the reception signal level requirements.

f. The mounting of the FM antenna mast shall be self supporting.

g. TV wall mounting brackets shall be bolted to existing in-wall supports provided by the facility construction contractor, or provide new supports as required.

h. TV furniture mounts shall be bolted to casework or GFGI furniture as coordinated with the Contracting Officer.

i. Any system LAN and UPS equipment housed in Comm Rooms shall be rack mounted. Under no circumstance shall any of this equipment be mounted on the floor.

j. Equipment mounting shall comply with seismic bracing and anchorage requirements.

k. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project.

3.4.2.2 Active and Passive Devices

a. All active and passive devices shall be securely fastened to a physical support. Equipment suspended by the coaxial cable and connectors shall not be accepted. Equipment attached using tie wraps or wire is not an acceptable installation practice.

b. Devices shall be permanently mounted so access to unused tap ports or normal maintenance operations on equipment can be accomplished without damaging cables connected to the device or any other adjacent cables or equipment.

c. All taps, splitters and attenuators in the distribution network that are not located within Comm Rooms shall be mounted in the IBS or crawl space areas and attached to the cable trays in these areas, as indicated on the drawings. These shall be located as close as possible to the TV outlets served.

d. All unused tap ports shall be terminated into 75 ohms.

e. Final system as-built drawings shall reflect exact location where taps and other devices are installed.

3.4.2.3 Connector Installation

a. All connectors shall be torqued to manufacturers' specifications. Connectors shall be installed in such a manner that the connector pin shall adequately pass through the set screw opening and then tightening the set screw to manufacturers specifications.

b. All cables shall be prepared for connector installation using approved prep, coring, and utility cable cutting tools. The center conductor shall be free of all dielectric material bonded to it by use of a plastic

dielectric removal tool. Cables scored during jacket removal shall be replaced. Metal dielectric removal tools and tubing cutters shall not be used.

c. All outdoor connections shall be sealed with a moisture seal or vapor wrap.

3.4.3 System Cabling Installation

a. System cabling shall be installed by the qualified Installer.

b. All cables and the installation of cables shall be in accordance with NFPA 70 NEC.

c. Prior to installing any coaxial cable, furnish to the Contracting Officer factory coaxial cable sweep test data and structural return loss test data from all coaxial cable manufacturers of testing performed at manufacturer's facility.

d. System cabling shall be installed in conduits, boxes and cable trays.

e. FM antenna cable shall be routed from the antenna to the Comm Equipment Room 424-01 thru the existing cable portal on the roof of the ski slop. Portals shall be weatherproof sealed after the cables are installed and successfully tested.

f. Interconnect the audio music feed line cables provided by the Section 16770 PA SYSTEM through the TV-CP connection panel for the MINC. Coordinate interconnection with the PA System installer.

g. Coordinate the system cable routing with the cable routing of other systems to assure that there will not be any EMI problems that will adversely affect the performance of this system or any other system.

h. Certify that system cables that are installed in the existing communications systems cable trays along with cables from other systems shall not adversely affect the performance of this system or any other project system.

i. Schedule and coordinate cable placement so as to avoid cable damage by other trades and activities which may take place during or subsequent to the cable installation.

j. Techniques such as sag, pay-off reel braking, and clamping should be observed in order to prevent kinking or bending of the cable beyond its limits. In no instance shall stress beyond the manufacturers specification be applied to the cable.

k. System cables shall be installed without kinks, sharp bends or deformations, in a manner to prevent abrasion.

l. Cable bending radius shall not be less than ten times the cable outside diameter or the manufacturer's recommendations, whichever is greater, unless otherwise specified in this Section.

m. Exercise due care in handling rigid coaxial cable. In particular, the cable shall be left uncut and fastened securely to its shipping reel until immediately prior to its installation.

n. Proper tools and equipment shall be used in making bends to insure that the minimum safe bending radius of the cable is not exceeded. Minimum bending radius for all solid sheathed aluminum cables is fourteen times its diameter.

o. All wiring and cable shall be continuous and splice free for the entire length of run between designated connections.

p. Provide cable service loops to facilitate maintenance and access.

q. At tap locations the excess drop cables shall be neatly coiled and secured to the cable tray or other structure so as to provide adequate strain relief to the drop cable connectors.

r. Cabling for for any low level audio signals shall be isolated by physical isolation and shielding.

s. Low level wiring between all audio components shall be metallically shielded. Balanced lines shall be required between any audio components not within the primary equipment cabinets. Shielding shall be terminated, and grounded at only one end, at the low potential end of run, unless otherwise noted.

t. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

u. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

v. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Tagging and Labeling of Equipment and Cable

3.4.4.1 Labeling

a. All equipment, cable, and electronics shall be properly labeled as indicated below with the design drawing designator.

b. Labeling scheme shall be approved by the Contracting Officer.

c. All labels shall have permanent and protected markings, and shall be impervious to environmental conditions.

d. Label adhesive used shall provide proper bonding of all labels.

e. Detail drawings and as-built drawings shall clearly and uniquely identify each item of equipment and each cable with the same identification as marked on the label.

3.4.4.2 Trunk, Feed and Drop Cables

a. Identification tags with permanent and protected markings, strap on plastic/teflon, shall be installed on each trunk, feed and drop run, including the beginning and termination of each run.

b. All drops shall be tagged at the tap, identifying the room number they are installed in.

3.4.4.3 TV Headend And MINC Equipment and Cables

a. All headend and MINC console equipment and individual controls shall be labeled as to its function.

b. All cabling installed in equipment cabinets shall have "to device___ /from device___" labels firmly attached at both ends of the cable.

3.4.5 Grounding

Equipment enclosures and all other non-current carrying metal parts of electric equipment shall be grounded.

3.5 APPLICATION

3.5.1 Installation Setup

Contractor shall make all adjustments and perform all application programming as necessary to setup the system to function in accordance with specified requirements and any specific user requirements for the overall system. Coordinate all such setup details with BACH users, install them as part of system setup, and include the setup details in the Test Plans and O&M documentation.

3.6 INSPECTION, TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

f. Qualified TV System Contractor personnel conducting acceptance tests shall be factory trained or certified and shall be completely knowledgeable

regarding the system application design, installation, setup and operation.

g. The Contracting Officer reserves the right to approve the System Contractor's choice of testing personnel, and, upon rejection of any testing personnel by the Contracting Officer at any time, the System Contractor shall replace such testing personnel as soon as reasonably possible. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to review the qualifications of each person proposed for testing work.

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

j. Inspection and testing shall be conducted during normal working hours with prior notice to the Contracting Officer so as not to interfere with orderly work processes.

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

m. Results of each inspection and test shall be reported in electronic and hard copy form to the Contracting Officer.

n. All cable and system tests shall be in accordance with the NCTA RP recommended practices.

3.6.2 Periodic Inspection and Testing

a. All work and workmanship shall be subject to inspection and testing as requested by the Contracting Officer at any and all times during preparation and installation.

b. The Contracting Officer, in his or her sole discretion, may reject defective work and workmanship and require its correction. The Government right to inspect, test, and reject, or its failure to exercise such right, as provided herein, shall in no way diminish the System Contractor's duty to inspect and reject work as necessary to comply fully with the requirements of the contract documents.

3.6.3 Prerecorded Programs For Test Period

The Contractor shall provide sufficient prerecorded video programs for the period of time required to successfully check and test the system, plus an additional 30 days. The prerecorded video programs used shall be acceptable to the Contract Officer.

3.6.4 System readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.5 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.6 Final Inspection and Acceptance Testing

3.6.6.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

b. Draft as-built system drawings, and O&M manuals shall be made available by the System Contractor for use during performance of final inspection and acceptance testing. Final inspection or acceptance testing shall not be scheduled nor performed without this documentation.

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

d. Upon successful completion of final acceptance tests, and 30 calendar days of consecutive operation in accordance with specified requirements without the occurrence of any major malfunctions, the System Contractor shall submit the final acceptance test report, including certificates of compliance stating that all specified requirements and conditions have been satisfied. The effective date for completion of the final system acceptance shall be the date when the system has satisfied the 30 days of operation without a major malfunction as specified above.

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.6.2 Distribution Network Alignment

Adjust all system amplifier gain and equalizer controls to achieve the system application design levels. Levels are to be measured for compliance with the system application design: at each amplifier input and output test point; at every drop in the feeder line and at every outlet. All levels shall be referenced from the TV headend combiner.

3.6.6.3 Distribution Network Alignment Set-Up

The distribution network shall be aligned utilizing portable CW carriers

(at 50 MHz, 250 MHz, and 860 MHz) injected into the TV combiner at the specified design levels. The carriers are then received by a spectrum analyzer or field strength meter at each amplifier test point. Working from each headend out to trunk and line amplifiers adjusting each amplifier in sequence, working towards each system extremity. Adjust the amplifier levels as specified in the design for each amplifier and its associated distribution. Note any problems encountered and any corrective action taken during this procedure before continuing to the next phase of testing.

3.6.6.4 Distribution Network Sweep And Balance (Final Balance)

Using a full sweep from 50 MHz to 860 MHz correct any discontinuities in the frequency response across the entire band.

3.6.6.5 Distribution Network Proof Of Performance Tests

Conduct the following tests on the distribution network and record all findings. Note requirements in the referenced specifications.

a. Carrier To Noise Ratio Test: Conduct this test at the furthest extremities of the distribution network off of each amplifier and then document results.

b. RF Leakage Test: Conduct this test at all extremities and all locations in the distribution network as required by the FCC regulations.

c. Carrier To Hum Modulation Test: Conduct this test at all amplifier locations throughout the distribution network.

d. Carrier To Composite Triple Beat Test: Conduct this test at the furthest points in the distribution network at the last amplifier in each distribution run.

e. Carrier To Second Order Beat: Conduct this test at the same time as the CTB test listed above.

f. RF Signal Levels: Conduct the test at the extremities of each leg of the distribution network.

3.6.6.6 MINC Tests

The following tests shall be performed only after successful certification of the distribution network.

a. Turn on all active MINC equipment, including the conference center CCTV subsystem, close all equipment cabinet doors, and allow the equipment to burnin for 72 continuous hours.

b. Load, setup and check software programs, including the operating system, application programs, utility programs, and data communications programs.

c. Load and check all system data bases and management programs.

d. Verify and test the FM frequency band to the Section 16770 PA SYSTEM.

e. Insert test programs to check all IETV channels.

f. Adjust the individual modulator outputs so that all shall combine at

the input of the attached combiner at the same amplitude. Verify this by use of a spectrum analyzer. Insure that the audio and video segments of the individual channels are adjusted for maximum clarity. Verify picture quality. Document all findings and settings.

g. Activate and test all information message screens, menus and interactive programs.

h. Activate and test the clock program. Verify picture quality.

i. Activate and test the conference center CCTV system, including combined tests with the interfaced Section 16771 Sound reinforcement System.

j. Verify and document the amplitude of all carriers as well as insure that there are no frequency response problems, VSWR problems, etc. Verify and correct any discontinuities in audio or video quality.

k. The Contracting Officer shall provide a list of times and functions that the host CPU shall be set to. This shall verify the functionality, and complete automation capability of all multimedia interactive network center devices. The times shall be random.

l. Test the host computer functions listed herein in Part 1, including all interactive programs.

m. Once the host CPU has been programmed and all recorded media has been loaded with test programs, the information screens have been programmed with test messages, the clock channel is operating, the conference center CCTV subsystem is operating, and the interactive programs are running, the following shall occur:

(1) The Contractor and the Government Representative shall travel to 24 different TV set locations to test and verify outlet signal level, picture clarity, host CPU control of channels received by the TV sets, sequence timing of programs, audio clarity and program switching between devices, and operation of interactive programs. The 24 different TV set locations shall be identified by the Contracting Officer. Any programming or switching problems shall be investigated and corrected. Based upon the outcome of the tests listed above, the Contracting Officer may elect to verify all TV set locations.

3.6.6.7 FM Radio Tests

In conjunction with the MINC tests at TV sets, as specified above in 3.6.6.6.m, the FM radio capability of the system and TV sets shall be tested and verified at the selected 24 TV sets for at least 6 local FM stations.

3.6.7 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as required to demonstrate compliance with all specifications to the Contracting Officer.

b. All corrective action shall be completed in a reasonable time consistent with project schedules and acceptable to the Contracting Officer.

c. If, after 30 calendar days from the start of acceptance testing, the system or any equipment component thereof fails to demonstrate complete and

proper performance, the Government shall have the right to return the total system or any equipment component to the System Contractor. The System Contractor shall refund all costs thereof to the Government and shall indemnify the Government from damages, costs, and expenses incurred in connection with such activity.

d. The actual date of return of any rejected system or equipment component shall be under the absolute control of the Government. The Government shall have the right to continue to utilize such system and equipment until the actual date of removal.

3.6.8 Warranty Period Inspection and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

d. Results of each warranty period inspection and test shall be reported in writing to the Contracting Officer.

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified operations and maintenance training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to the BACH staff in accordance with the approved training plan.

3.7.2 General Preparations

During the week prior to the start of training for any system, check the system to assure that it has been successfully commissioned and acceptance tested, and is in full-specified operation condition.

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated BACH staff in the operation and maintenance of the provided system.

b. The Contracting Officer reserves the right to approve the System Contractor's choice of training personnel, and, upon rejection of a trainer by the Contracting Officer at any time, the System Contractor shall immediately replace such trainers. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to review the qualifications of each proposed trainer.

3.7.4 Training Instructions

a. Training instructions shall cover all specified performance and capabilities of the system, and all of the items contained in the operating and maintenance manuals.

b. Maintenance technician training shall also include preventive maintenance, routine maintenance, repair and troubleshooting procedures.

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials

a. Furnish all training materials and handouts. Handouts shall be provided in the quantity needed for all of the BACH maintenance technicians, operations and user staff that will receive training.

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTING AND O&M TRAINING, and FOUR (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

a. Training shall be provided onsite to all BACH staff as required throughout the contract and warranty period to train operations and maintenance staff for the provided system.

b. The onsite training program shall include two training courses, one for maintenance technicians, and one for user and operations staff.

c. Each course shall include classroom training and field training. Field training for BACH staff shall take place in the area where the staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

d. Multiple instructional units for each onsite course shall be conducted on a three shift, seven days a week basis as required to train all staff during their normal on-duty working hours.

e. The Contracting Officer shall designate qualified personnel to be instructed in the operation and maintenance of each system, schedule instructional sessions, and provide suitable onsite instruction facilities.

3.7.7 User and Operational Staff Training

a. User and operational staff training shall commence at a time acceptable to the Contracting Officer and near the time the system is scheduled for operational use by the BACH staff.

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system has been accepted by the Government, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

a. Before the system is turned over to the Government for operational use, training shall be provided for maintenance technicians designated by the Contracting Officer.

b. The onsite technician training course shall provide the number of instructional hours necessary to cover all aspects of system setup, programming, operations, preventive maintenance, routine maintenance, routine repair, and troubleshooting procedures for the system as installed.

c. Nine (9) months after the system is installed and accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided at the Manufacturer=s factory. Training shall include comprehensive instruction for complete setup, operation, maintenance and repair of the system, including the theory of operation, software installation and setup, maintenance programs, failure diagnostic programs, troubleshooting and repair. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training for factory certification as a maintenance technician.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 TV System

a. Provide a complete and operational TV System as specified in this Section, as indicated on the Telecommunications Drawings, as required by the system application design, and as further defined below.

b. Deliver and install all product items as required to comply with the approved installation schedule.

3.11.2 Indicated Items

Provide the quantity and type of system components as indicated on the Telecommunications Drawings.

3.11.3 Distribution Networks

a. Provide the specified and indicated broadband coaxial distribution network throughout the BACH facility.

b. Provide the specified system data network throughout the BACH facility in accordance with the system application design by the System Contractor.

c. The minimum quantity of distribution amplifiers required for the broadband coaxial distribution network are indicated on the drawings. The quantity and location of distribution amplifiers indicated is based upon a generalized cable routing layout and the minimal specifications for the overall passive bandpass of 5 MHz to 1,000 MHz. The Contractor shall calculate actual overall passive bandpass signal levels and line losses throughout the distribution network based upon the detail cable riser and routing diagrams prepared in accordance with the detail drawings requirements of Paragraph 1.4.4. The Contractor shall provide any additional amplifiers as may be required based upon these signal level calculations for the distribution network.

3.11.4 Software

Provide all software programs as required for all specified capabilities and performance, and software manuals. Include all operating systems, application programs, utility programs, and a complete set of backup software.

3.11.5 Product Samples

Provide one sample unit of each type of outlet for approval as part of the Samples submittal.

3.11.6 UPS

Provide an UPS for all computers, video servers, video monitors, the KVM switch, and any ac powered equipment that requires manual reset after a power failure.

3.11.7 Remote Controls for Multimedia Projector

Provide two (2) remote control units for the multimedia projector.

3.11.8 TV Sets and TV Mounts: Attached Schedule

a. Specified TV Sets and associated connecting cables shall be provided at the TV Outlet locations indicated on the Telecommunications Drawings and as listed in the Attached Schedule of TV Sets and Mounts.

b. Specified TV Wall Mounts or Furniture Mounts shall be provided for all TV Sets as listed in the Attached Schedule of TV Sets and Mounts.

-- End of Section --

SCHEDULE OF TV SETS AND TV MOUNTS									
ROOM AND ID		TYPE OF TV SET			TYPE OF TV MOUNT		COMMENTS		
		508 mm	635 mm	686 mm	WALL	FURNITURE			
ROOM #	ID #	(20 Inch)	(25 Inch)	(27 Inch)	MOUNT	MOUNT			
101-05	T01			1		1			
103-02	T01		1		1				
104-07	T01			1		1			
108-07	T01	1				1			
108-12	T01			1		1			
110-02	T01		1			1			
111-12	T01			1		1			
112-03	T01			1		1			
115-01	T01		1			1			
117-05	T01	1			1				
117-15	T01		1		1				
117-26	T01		1		1				
119-05	T01		1		1				
121-07	T01			1		1			
124-02	T01		1		1				
128-05	T01			1		1			
130-10	T01			1		1			
130-14	T01			1		1			
131-08	T01			1		1			
132-01	T01		1			1			
132-01	TO2		1			1			
132-18	T01		1		1				
133-14	T01		1		1				
134-01	T01		1		1				
135-05	T01			1		1			
143-05	T01			1		1			
144-02	T01			1		1			
208-01	T01	1				1			
208-05	T01	1			1				
208-07	T01	1			1				
208-08	T01	1			1				
208-10	T01	1			1				
208-11	T01	1			1				
209-10	T01			1		1			
210-10	T01				1		Mount for future 686 mm TV Set		
210-13	T01				1		Mount for future 686 mm TV Set		
212-07	T01	1				1			
212-11	T01	1				1			
212-25	T01	1				1			
213-02	T01	1				1			
213-05	T01	1				1			
213-08	T01	1				1			
213-09	T01	1				1			
215-01	T01	1				1			
215-04	T01	1				1			
215-05	T01	1				1			
215-08	T01	1				1			
215-16	T01		1			1			
216-07	T01		1			1			
216-13	T01			1		1			
216-20	T01	1			1				
217-32	T01		1			1			
218-09	T01		1			1			
219-01	T01			1		1			
219-06	T01		1			1			
219-09	T01	1			1				
219-13	T01			1		1			
219-15	T01	1				1			
219-17	T01	1				1			
220-01	T01	1				1			
220-04	T01	1				1			
220-07	T01	1				1			

SCHEDULE OF TV SETS AND TV MOUNTS									
ROOM AND ID		TYPE OF TV SET			TYPE OF TV MOUNT		COMMENTS		
		508 mm	635 mm	686 mm	WALL	FURNITURE			
ROOM #	ID #	(20 Inch)	(25 Inch)	(27 Inch)	MOUNT	MOUNT			
220-09	T01	1				1			
221-03	T01	1				1			
221-04	T01	1				1			
221-07	T01	1				1			
221-08	T01	1				1			
222-03	T01	1				1			
222-05	T01	1				1			
222-08	T01	1				1			
222-10	T01	1				1			
223-02	T01	1				1			
223-03	T01	1				1			
223-06	T01	1				1			
229-01	T01			1		1			
229-11	T01		1			1			
238-10	T01			1		1			
239-12	T01			1		1			
316-01	T01			1		1			
321-02	T01			1		1			
321-10	T01			1		1			
323-05	T01			1		1			
324-02	T01			1		1			
324-02	T02			1		1			
324-04	T01			1		1			
324-05	T01			1		1			
325-01	T01			1		1			
325-02			1		1		Mount per MINC design		
325-04	T01			1		1			
325-04	T02			1		1			
TOTALS		38	19	31	19	71			

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16786

EMS RECORDER

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Continuous Duty Design
1.4.1.5 Power Supply Design
1.4.1.6 Shielding and Grounding
1.4.1.7 Station Connectors
1.4.1.8 User Room Numbers and Names
1.4.2 System Capability and Configuration
1.4.2.1 System Capability
1.4.2.2 System Configuration and Major Functional Components
1.4.3 Performance Requirements
1.4.4 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.1.4 Manufacturer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Products
1.5.2.2 Design and Installation Work
1.5.2.3 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service

1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.1.8 Software and License
2.2 RECORDING DEVICE
2.3 AUDIO
2.4 CONTROL PANEL
2.5 RECORDING TAPES

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interface with Other Products
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation
3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Installation Setup
3.6 INSPECTION, TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing
3.6.3 System Readiness Checks
3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspection and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 EMSR System
3.11.2 Indicated Items

3.11.3 Main Equipment
3.11.4 UPS
3.11.5 Software
3.11.6 Tapes/Storage Units
3.11.7 Interface

-- End of Section Table of Contents --

SECTION 16786

EMS RECORDER

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 basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

47 CFR 15	Radio Frequency Devices

AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

S3.2	(R 1982) Method for Measurement of Monosyllabic Word Intelligibility

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

ANSI/TIA/EIA-569-A	(2001) Commercial Building Standards for Telecommunications Pathways and Spaces

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Standard For Health Care Facilities

1.2 DEFINITIONS

1.2.1 General Definitions

The glossary of definitions, abbreviations and acronyms, and units set forth in ANSI/TIA/EIA-569-A shall apply to this Section, unless otherwise noted.

1.2.2 Additional Acronyms

For the purposes of this Section, the following definitions shall apply.

BACH	Bassett Army Community Hospital
CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
EMSR	EMS Recorder
GFGI	Government Furnished, Government Installed
PDS	Premises Distribution System
O&M	Operation and Maintenance (Manuals)
UON	Unless Otherwise Noted

UPS Uninterruptible Power Supply

1.2.3 Additional Terms

For the purposes of this Section, following definitions shall apply.

Software	Operating systems and application programs that enable a computer, or computer-based systems, to function as specified. Software shall include the documentation to describe, maintain and use the programs.
System	EMS Recorder or EMSR, UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy all specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.
24x7 Staffed	A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the EMSR System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

The Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include individual product data sheets for each item of equipment indicating descriptive and technical data, operating

temperature limits, heat dissipated, electrical requirements, dimensions and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, software, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations ; G

a. Analysis and calculations to define power supply requirements for each component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions, for power supplies that are not an integral part of the component.

b. Analysis and calculations to define the type and size of all cables connecting all system components in accordance with Manufacturers instructions and power drop calculations.

c. Analysis and supporting result from specified preparation and application items, and all coordination items. Includes definition of all interface protocols.

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms.

e. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section HSPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

Warranty document shall indicate the warranty period for the system and all component products.

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.4.

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the EMSR System and all interfaced telecommunications systems and other systems. including the exact point and type of demarcation.

b. The layout and mounting of all EMSR equipment, and the routing and mounting of cabling in comm rooms and the comm equipment room as coordinated with the layout of all other systems equipment in these rooms.

c. The layout and mounting of all EMSR equipment, and the routing and mounting of cabling on nurse station modular furniture.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

Preprinted material from the Manufacturer describing installation requirements and safety precautions. Manufacturer's requirements for the use of specific products.

SD-09 Reports

Testing Reports; G

Submit all testing reports in both electronic media form and hard copy booklet form. Reports shall indicate all field tests performed to adjust each component and to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls and operating mode of the system, and the Manufacturer, model number, and serial number of

the test equipment used in each test. The final acceptance test report shall include a statement that all specified requirements and conditions have been satisfied.

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System Contractor.

SD-13 Certificates

Certificates of Compliance; G

Proof that the items conform to the specified codes or standards, including the requirements of CFR, NFPA, and UL.

SD-14 Samples

Product Samples; G

Submit one sample unit of each type of station, light, and cord set for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS.

O&M Manuals shall be available on-site before the start of any training.

Software Manuals; G;

O&M manuals data shall include a software manual describing the functions of all software and including all other information necessary to enable proper loading, setup, testing, and operation.

The software manual shall include:

a. Definition of terms and functions.

b. Use of system and applications software.

c. Procedures for system installation, initialization and set-up, start-up, shutdown, migration to another computer, and DLL or driver dependencies if these exist.

d. Alarm reports.

e. Reports generation.

f. Database format and requirements for data entry.

g. Directory of all disk files.

h. Description of all communications protocols, including data formats, command characters, and a sample of each type of data transfer.

Backup Software; G

Copy of all operating system and application software, on the type of electronic media acceptable to the Contracting Officer. Ghost copy of all hard disks in the system after all setup procedures have been completed, the system has been programmed for the required user operation, and commissioning and acceptance tests have been successfully completed.

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

The System Contractor shall perform the system application design required to provide an EMSR System that complies with and satisfies all of the requirements specified in this Section and indicated on the Telecommunications Drawings for this application and project.

1.4.1.2 Standard Products

The system application design shall utilize a standard EMSR System that is the product of a Manufacturer regularly engaged in the manufacture of EMSR Systems. The system shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the BACH installation site.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Continuous Duty Design

All equipment shall be designed for 24 hours per day, 365 days per year continuous 100 percent duty operation.

1.4.1.5 Power Supply Design

a. Power supplies shall provide sufficient power capacity for the worst-case condition of system operation and signaling that could occur in the application environment without any loss or perceptible degradation of

signal quality. Design analysis shall include calculations to size power supplies for worst-case conditions, and this calculation shall be included with the design data submittal.

b. AC powered equipment shall operate per specifications over the range of 105V to 130V, 60 Hz, unless otherwise noted.

c. All equipment connected to ac power circuits shall be protected from power line transients and surges as likely to be subjected in service from a commercial utility ac power system. Protection shall be integral to the equipment or installed as an accessory item in accordance with Manufacturer's recommendations. Fuses shall not be used for this protection.

d. Power distributed over system cables shall be low voltage and power limited in accordance with NFPA 70.

1.4.1.6 Shielding and Grounding

All products shall be shielded and grounded as required by the system design, Manufacturer's instructions, 47 CFR 15 listing, and regulatory requirements.

1.4.1.7 Station Connectors

All stations shall plug into system cabling. Stations hardwired to system cabling are not acceptable.

1.4.1.8 User Room Numbers and Names

At the start of submittals, the Government shall furnish to the System Contractor a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

1.4.2 System Capability and Configuration

1.4.2.1 System Capability

The EMSR shall activate whenever there is a telephone call on one of the covered lines, or whenever there is audio traffic on one of the radio channels. Upon establishing either an incoming or outgoing telephone call or radio traffic, both sides of the two-way conversation shall be recorded.

1.4.2.2 System Configuration and Major Functional Components

The EMSR shall be connected to seven telephone lines, 4 serving Room 102-10 and 3 serving room 102.15. The Hospital switch is a RSC operating from a Nortel MSL 100.

The EMSR shall provide for input from 5 two way monitoring channels for Government Radio receivers. Input shall include a line level audio channel, and vox control for the EMSR to indicate signal presence.

The EMSR System shall be rack mounted in a lockable, free standing cabinet and located in the Communication Room 102-15

1.4.3 Performance Requirements

The system shall have the following minimum characteristics:

a. Each tape (or other form of digital storage media) shall have a minimum of twenty-four hours of recording capacity.

b. System shall have a minimum of twenty four (24) recording channels and one channel which records the time in hours, minutes and seconds for information retrieval.

c. A microprocessor based control system which provides both system control and diagnostics.

d. Periodic tones shall be provided in the background on telephone lines. Absence or presence of tones shall be user controllable by individual channel.

e. A rapid search system shall be provided which will enable searching for specific communications by entering the time in hours, minutes and seconds. System shall fast forward to that specific time, and play back the recorded audio.

f. The system shall be capable of recording the assigned channels and simultaneously searching and playing back a historical storage device by time search.

1.4.4 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

a. System block diagram, LAN diagram including all servers and interfaces, voice intercom network diagram, riser diagrams, wiring and schematic diagrams, run sheets including number of conductors and wire number (ID), custom assembly details, and installation details.

b. Riser diagrams shall indicate the identification number (ID) for all equipment components as shown on the Telecommunications Drawings.

c. Installation details shall indicate layout and mounting of equipment, equipment relationship to other parts of the work, including clearances required for maintenance and operation, and plan and elevation details that indicate the exact and totally coordinated physical location and size of each individual item of equipment.

d. Installation details for equipment and cabling that is surface mounted on the back panel of GFGI modular furniture shall include the make and model of the surface mounted boxes and wireways, and details for any mounting hardware.

e. Details for the custom assembly of equipment shall indicate the assembly configuration, elevations and dimensions. Typical custom assembly details include equipment panels, and equipment mounted in a rack or cabinet.

f. Legend of graphic symbols used on all drawings.

g. Details shall indicate anchoring and bracing provided for seismic

protection in accordance with the requirements of the Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

a. The EMRS System Contractor, Installer and Manufacturer shall each have the minimum qualifications specified, related to the type of system specified for this project.

b. The Government reserves the right to accept or reject the System Contractor, Installer or Manufacturer based upon qualifications and ability to conform to specified requirements of this Section. System Contractors, Installers and Manufacturers that do not have the specified qualifications shall not be acceptable and shall not be allowed to perform the work of this Section.

c. The Government shall determine the acceptability of any proposed System Contractor, Installer and Manufacturer based on submitted and verified documentation that substantiates that the proposed System Contractor, Installer and Manufacturer have the qualifications specified in this Section.

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and or Installer in accordance with the qualifications specified in this Section.

e. The System Contractor shall submit documented verification of the specified qualifications as part of the Data Qualifications submittal. The Government shall have the right to request, inspect and verify references and resumes of all technical and managerial personnel assigned to the project. Qualification documentation shall include, but not be limited to the information outlined below.

(1) A list of projects performed by the System Contractor and Installer during the last five years explicitly involving the type of system specified in this Section. The list shall include the name of the facility where the work was done, and the name, title, address and telephone number of a point of contact for the listed facility that can verify the work done. Lists shall be restricted to the facilities where the type of system delivered and installed are similar to and serve the same purpose as the system specified in this Section. Lists shall explicitly identify the make and model of the systems provided, and the total scope of work done for each and every facility on the list.

(2) An organization chart for the System Contractor and Installer project team that will perform the work of this Section.

(3) List and resumes of the principal personnel that will be assigned to work on this project and their assigned work responsibility and relationship with the project management structure. This shall include the following personnel:

System Project Manager
System Application Designer

CAD Staff (that will prepare submittal drawings)
Installation Technical and Supervisory Personnel
Acceptance Testing Personnel
Training Personnel

For each individual, this shall include his or her education and experience explicitly relevant to their work assignment on this project, and also include the certificate for factory training where this qualification is specified. Experiences with other types of systems unrelated to the type of system specified in this Section are irrelevant and shall not be included.

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

(5) Telephone number that will be answered by staff 24 hours per day, 365 days per year, to obtain repair parts and maintenance service.

(6) The Manufacturer's qualifications relative to the production of the type of system specified in this Section.

(7) A letter from the Manufacturer stating that the System Contractor is an authorized distributor and service organization for the Manufacturer of the provided system. The letter shall also state the length of time that the System Contractor has been an authorized distributor.

(8) A letter from the Manufacturer stating that system being provided satisfies all functional and product requirements specified in this Section.

(9) A letter from the Manufacturer guaranteeing the availability of parts as specified.

1.5.1.2 System Contractor Qualifications

a. The System Contractor shall be regularly engaged in the system application design, documentation, installation, testing, training, and maintenance of the type of system specified in this Section, with a minimum of five years experience providing these services for systems having the same level of features and functions as the system being provided.

b. The System Contractor shall be either the system Manufacturer, or an authorized distributor and service organization for the Manufacturer of the provided system for a minimum of at least five years.

c. System Contractor personnel assigned to this project shall be factory trained or certified for the make and model of systems provided by the System Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience performing the services that they will perform for this project.

d. The System Contractor shall maintain a full complement of repair parts for the provided system and shall be able to furnish on-call maintenance service 24 hours per day, 365 days per year as specified herein.

1.5.1.3 Installer Qualifications

a. The Installer shall be regularly engaged in the business of installation of the type of system specified in this Section.

b. The installation supervisor that will be assigned to this project shall be factory trained or certified for the make and model of system provided by the System Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience in the installation of the specified types of system equipment and cables.

c. Installer personnel that will be assigned to this project shall have a minimum of three years experience in the installation of the types of system equipment and cable specified in this Section.

1.5.1.4 Manufacturer Qualifications

a. The Manufacturer shall have a minimum of five years of experience in producing the type of system specified in this Section.

b. The Manufacturer shall produce a system that satisfies all specified functional and product requirements.

c. The Manufacturer shall guarantee availability of replacement parts for a minimum of seven years from date of final acceptance of the installed system by the Contracting Officer.

1.5.2 Regulatory Requirements

1.5.2.1 Products

a. The EMRS System shall comply with all aspects of NFPA 70 and 47 CFR 15.

b. UPS units shall comply with UL 1778.

1.5.2.2 Design and Installation Work

All design and installation work shall comply with UL 1778, NFPA 70 NEC, NFPA 99, and EIA ANSI/TIA/EIA-569-A.

1.5.2.3 Electromagnetic Interference (EMI)

a. Installed system shall conform to the EMI standards specified in 47 CFR 15 rules and regulations, for EMI caused by computing devices.

b. Within the normal BACH environment, the installed system shall not generate nor be susceptible to any harmful electromagnetic emission, radiation, or induction that degrades, obstructs, or interrupts the operation of the installed system, and any computer system, life safety system, or patient monitoring system in the facility.

c. In the event that any part of the system is subject to CFR technical standards different from those set forth herein, including without limitation the requirement that those computing devices marketed for use in business or industrial environments are certified by the FCC to comply with the Class B limit of the FCC Rules, such CFR standards shall apply in lieu of those set forth herein.

d. In the event that, at the time of system acceptance testing, the

applicable CFR technical standards shall differ from those set forth above, the system as installed shall conform to such then applicable CFR technical standards.

e. In the event of a breach of the representations and warranties contained herein, the System Contractor shall at their own expense take all measures necessary to put the offending system into compliance with the applicable CFR technical standards, or replace the offending system with an acceptable system.

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

All products delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, or other contaminants.

1.6.2 Delivery Coordination

Coordinate deliveries with the Contracting Officer to insure a timely installation.

1.6.3 Loss Liability

The System Contractor shall be liable for any loss due to delivery and storage problems.

1.6.4 Delivery Restrictions

a. No products or installation material shall be delivered to the job site more than one month prior to commencement of its installation.

b. System products shall not leave the factory prior to six months before the time that the facility is ready for installation of the products. Obtain prior written approval of the shipping date from the Contracting Officer.

1.6.5 Contractor Responsibility

The System Contractor shall be responsible for all handling and control of products provided under this contract.

1.7 SEQUENCING AND SCHEDULING

a. Each part of the system shall be installed and phased into operation as required by the project schedule.

b. Schedule and coordinate work with all other trades and suppliers whose work is critical to the successful installation of the system.

c. Furnish and install all required items for a complete and operating installation so as to cause no delay in work by Others, or completion of the project.

d. Final inspection and acceptance testing of each system shall be performed after the system installation has been completed and all pre-testing checks and commissioning has been successfully completed.

1.8 WARRANTY

a. Warranty shall be in accordance with Section H SPECIAL ITEMS and CLOSEOUT SUBMITTALS.

b. Warranty the operational and physical integrity of the provided system, including a warranty against all defects in design, equipment, materials, software, workmanship, and improper installation and adjustments, for a period of at least one year from the date that the operating system is accepted by the Government after satisfactory completion of final inspection and acceptance tests. This warranty shall not cover any malfunctions or damage caused by misuse, abuse or neglect. If the System Contractor or Manufacturer warranty is for a period longer than one year, the longest warranty period shall govern. The System Contractor shall furnish a warranty document with the Data submittal.

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express shipped to BACH if not available locally within a 150 mile driving radius of BACH.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

The System Contractor shall keep an adequate quantity of installation spare parts onsite to preclude work stoppages and to meet other contingencies that might arise prior to the final inspection and acceptance of the system.

1.9.1.3 Post Acceptance Spare Parts

a. After the system has been acceptance tested and turned over to the Government for operation, furnish the minimum type and quantity of onsite spare parts as itemized below.

Quantity	Items
1	Manufacturer's recommend spare parts kit
1	Each type of telephone interface unit
1	Each type of radio monitor interface unit.

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

c. The system contractor shall recommend any additional onsite spare parts deemed necessary by the Manufacturer and or the System Contractor. Furnish to the Contracting Officer the cost of recommended additional spare components as a separate line item.

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

c. Deliver all special maintenance tools, equipment and software to the Government upon successful completion of the final inspection and acceptance testing of the system.

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. The System Contractor shall provide an on-line diagnostic maintenance support capability as specified herein.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

b. A 24-hour telephone answering service shall be available to receive after hour maintenance service calls and dispatch on-call service personnel within the required response time.

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

(1) Complete failure of any Major Functional Component of the system, including:

Recording device

(2) Failure of a power supply, exclusive of commercial ac power feed.

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified or indicated on the Telecommunications Drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

Modification of products that nullifies the UL listing or other agency approval is not permitted.

2.1.4 Identical Products

Products of the same classification shall be identical. This requirement includes all component equipment, modules, assemblies, parts, and materials.

2.1.5 Nameplates and Equipment Markings

a. Each major equipment component shall have the Manufacturer's name, model, and serial number on a plate secured to the equipment. Also, all compliance with regulatory requirements, such as UL and CFR, shall be indicated on the nameplate or on adjacent labels.

b. All controls shall be plainly and permanently labeled with the identification of the function served. Stick on marker tapes is not acceptable.

c. Markings on any exposed surfaces shall not be destroyed by housekeeping solutions normally used in medical facilities.

2.1.6 Mounting Alignment Capability

Wall mounted components shall have an adjustable mounting alignment capability to compensate for improperly aligned backboxes and to insure a plumb, square, and level installation.

2.1.7 Model and Enhancements

a. The system and all product components shall be the Manufacturer's latest model, design, version, and quality in production at time of delivery and installation.

b. Any product hardware or software enhancement that becomes available after delivery and installation, and up to time of system acceptance, shall be brought to the attention of the Contracting Officer upon announcement by the Manufacturer and shall be made available to BACH. If such enhancements customarily are provided at no additional cost, the Government shall automatically be entitled to such enhancements. If such enhancements customarily are provided at additional cost, the Contracting Officer has the option to accept or reject such enhancements.

c. Submit a letter to the Contracting Officer from the Manufacturer guaranteeing that the Manufacturer shall inform the Government of, and make available to the Government, all commercially available enhancements to the system hardware or software at the then current price. Include the letter with the Data submittal.

d. Substitutions, modifications, or improvements to a system hardware and software are permissible provided that such substitution, modifications, or improvements shall not reduce or degrade the performance or product requirements, nor violate regulatory requirements. No such substitutions, modifications, or improvements shall be made without the written consent of the Manufacturer and Contracting Officer. Such consent shall not be unreasonably withheld or delayed.

2.1.8 Software and License

a. Provide all software required for the specified capability, configuration, performance, and operation of the system.

b. The Government shall be granted a nonexclusive, fully paid perpetual license to use software provided. The Government receives no title or ownership rights to such Software.

c. Software maintenance that is provided to any or all other customers without charge shall be provided to the Government.

2.2 RECORDING DEVICE

a. The tape transport, if utilized, shall have the following characteristics:

(1) Minimum 24 audio channels, minimum 30 channels total including data channels.

(2) Tape width of one inch.

(3) Record/Play speed and time = 15/32 ips plus or minus 1% for 25.6

hours per transport.

(4) Controls: Ready, record, stop, fast forward, rewind and play

b. A digital recording deck may be substituted for the tape transport above. If utilized, the digital deck shall have the following characteristics:

(1) Minimum 24 audio channels, minimum 30 channels total including data channels.

(2) Record/Play speed and time = for 25.6 hours per storage unit, minimum.

(3) Controls: Ready, record, stop, and play

(4) A digital indexing scheme shall be provided to allow indexing of the recording, and to locate specific clips.

2.3 AUDIO

The system audio characteristics shall be as follows:`

a. Frequency response: Plus or minus 3 dB from 300 Hz to 3kHz

b. Signal to noise ratio: -36 dB standard record level

c. Crosstalk: less than -34 dB standard record level

d. Wow and Flutter: 0.5% weighted @ 15/32 ips tape speed

e. Total Harmonic Distortion: 3% at maximum standard record level.

f. Input impedance: at least 20 kohms.

g. Input level: -10, 0, +10, or +20 dBm

2.4 CONTROL PANEL

The control panel shall present all user control switches, system status indicators, Audio monitor speaker, earphone jack and cassette output (or "line level") jack.

2.5 RECORDING TAPES

Recording tapes shall provide for at least (25) twenty-five hours of recording.

PART 3 EXECUTION

3.1 EXAMINATION

System Contractor shall perform a site survey to verify all field conditions, become familiar with the details of the work and working conditions, verify dimensions in the field, and advise the Contracting Officer of any discrepancies before performing the work.

3.2 EXISTING CONDITIONS

a. Existing infrastructure and rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, grounding system and buss bars, and all primary power wiring, as indicated in the facility construction project contract documents, to accommodate the installation of the specified system.

b. Coordinate all design and installation efforts with those of related trades that have provided the infrastructure and rough-in in the facility construction project to accommodate the installation of the system. In the event of any conflicts, delayed or improper preparatory work by Others, notify the Contracting Officer for resolution. The Contracting Officer decision shall be binding.

c. Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

d. If the provided system requires any infrastructure or rough-in, in addition to or different from what has been provided as part of the facility construction project contract, then the System Contractor shall provide all such additional infrastructures and rough-in.

e. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project.

f. Existing electrical power on the emergency critical branch circuit has been provided by the facility construction project.

3.3 PREPARATIONS

3.3.1 User Room Numbers and Names

a. User room numbers and names for the final system application design, all system functions, and indication on as-built drawings, shall be as directed by the Contracting Officer six months prior to the beneficial occupancy date for the BACH facility.

b. The System Contractor shall verify that the user room numbers and names used in the system documentation are consistent with the room numbers and names used on BACH signage.

3.3.2 Interface with Other Products

Coordinate and define the details of all interconnections with the GFGI Telephone System, and the GFGI Emergency Radio System. This shall include a detailed definition of all physical interface requirements and physical demarcation points. Provide details as part of coordination drawings and design data submittals.

3.4 INSTALLATION

3.4.1 General

a. Installation shall be accomplished as indicated and specified, and in accordance with acknowledged industry and professional standards and practices, and the Manufacturer's instructions.

b. Installation shall comply with the requirements of NFPA 70 and ANSI/TIA/EIA-569-A.

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

d. During the entire installation the System Contractor shall maintain onsite a supervisor as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications.

e. Provide all tools and equipment needed to install the system.

f. Provide surface mount metal wireways and boxes for master station outlets that are required to be surface mounted on the backpanel of GFGI free standing modular furniture, as indicated on the Telecommunications Drawings.

g. All ac power plugs shall be tightly strapped to the ac power receptacle to prevent accidental unplugging of the ac power.

h. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

3.4.2 Equipment Installation

a. The equipment shall be installed in Room 102-15 at the area indicated in the drawings.

b. The system and UPS equipment housed in comm rooms shall be mounted in a lockable cabinet. Under no circumstance shall any of this equipment be mounted on the floor.

c. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project.

d. Mounted equipment shall be firmly secured in place, plumb, square, and level.

e. Provide adequate equipment ventilation and adequate equipment accessibility for service and repair.

f. Equipment mounting shall comply with the seismic bracing and anchorage requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

3.4.3 System Cabling Installation

a. Installation of system cabling shall be by the qualified Installer.

b. All cables and the installation of cables shall be in accordance with NFPA 70 NEC.

c. System cables shall be installed without kinks, sharp bends or deformations, in a manner to prevent abrasion.

d. System cabling shall be installed in cable trays, conduits and boxes.

e. Coordinate the system cable routing with the cable routing of other systems to assure that there will not be any EMI problems that will adversely affect the performance of this system or any other specified project system.

f. Certify that system cable that are installed in the existing communications systems cable trays along with the cables from other systems shall not adversely affect the performance of this system or any other project system.

g. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

h. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

i. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

Equipment enclosures and all other non-current carrying exposed metal parts of electric equipment shall be grounded.

3.5 APPLICATION

3.5.1 AC Power Connections

AC power for all equipment shall be circuited to the emergency system critical branch in accordance with NFPA 70 and NFPA 99.

3.5.2 Installation Setup

Contractor shall make all adjustments and perform all application programming as necessary to setup the system to function in accordance with specific user requirements for the overall system. Coordinate all such setup details with BACH users, install them as part of the system setup, and include the setup details in the Test Plans and O&M documentation. Examples of installation setup details that require user coordination include the following:

a. Sound volume level for alert tone signals that have adjustable settings.

b. Time and date setup.

c. Setup and default settings.

e. Preprogrammed pager service messages for each patient care area.

f. Default duty assignments, including primary and backup assignments.

g. Default pager listing and assignments.

h. Display layout configuration for systems that show a graphic representation of the patient care area floor plan on each master station monitor.

3.6 INSPECTION, TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

f. Qualified EMSR System Contractor personnel conducting acceptance tests shall be factory trained or certified and shall be completely knowledgeable regarding the system application design, installation, setup and operation.

g. The Contracting Officer reserves the right to approve the System Contractor's choice of testing personnel, and, upon rejection of any testing personnel by the Contracting Officer at any time, the System Contractor shall replace such testing personnel as soon as reasonably possible. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to review the qualifications of each person proposed for testing work.

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

j. Inspection and testing shall be conducted during normal working hours with prior notice to the Contracting Officer so as not to interfere with orderly work processes.

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed inspections, system readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

m. Results of each inspection and test shall be reported in electronic and hard copy form to the Contracting Officer.

3.6.2 Periodic Inspection and Testing

a. All work and workmanship shall be subject to inspection and testing as requested by the Contracting Officer at any and all times during preparation and installation.

b. The Contracting Officer, in his or her sole discretion, may reject defective work and workmanship and require its correction. The Government right to inspect, test, and reject, or its failure to exercise such right, as provided herein, shall in no way diminish the System Contractor's duty to inspect and reject work as necessary to comply fully with the requirements of the contract documents.

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

b. Draft as-built system drawings, and O&M manuals shall be made available by the System Contractor for use during performance of final inspection and acceptance testing. Final inspection or acceptance testing shall not be scheduled nor performed without this documentation.

c. The System Contractor shall demonstrate proper installation and performance of the system in full compliance with all contract documents.

d. Upon successful completion of final acceptance tests, and 30 calendar days of consecutive operation in accordance with specified requirements without the occurrence of any major malfunctions, the System Contractor shall submit the final acceptance test report, including certificates of compliance stating that all specified requirements and conditions have been satisfied. The effective date for completion of the final system acceptance shall be the date when the system has satisfied the 30 days of operation without a major malfunction as specified above.

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements, system application design, and user setup requirements for the system. Each system operating mode shall be demonstrated to perform as required by operation of each individual system component under normal or simulated normal system conditions.

b. Testing shall include, but not be limited to, the following tests to demonstrate all requirements:

(1) Operation under ac power failure conditions. Include demonstration of UPS capability under normal power loading conditions, and operation under emergency power conditions.

(2) Tests shall utilize the phonetically balanced monosyllabic word intelligibility test in accordance with ANSI S3.2. To be acceptable, a score of 75 percent must be obtained for each system test.

(3) Operation of electronic supervision circuitry.

(4) All interface functions.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as necessary to demonstrate compliance with all requirements to the Contracting Officer.

b. All corrective action shall be completed in a reasonable time consistent with project schedules and acceptable to the Contracting Officer.

c. If, after 30 calendar days from the start of acceptance testing, the system or any equipment component thereof fails to demonstrate complete and proper performance, the Government shall have the right to return the total system or any equipment component to the System Contractor. The System Contractor shall refund all costs thereof to the Government and shall indemnify the Government from damages, costs, and expenses incurred in connection with such activity.

d. The actual date of return of any rejected system or equipment component shall be under the absolute control of the Government. The Government shall have the right to continue to utilize such system and equipment until the actual date of removal.

3.6.7 Warranty Period Inspection and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

d. Results of each warranty period inspection and test shall be reported in writing to the Contracting Officer.

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified demonstration and training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to the BACH staff in accordance with the approved Training Plan.

3.7.2 General Preparations

During the week prior to the start of training for any system, check the system to assure that it has been successfully commissioned and acceptance tested, and is in full-specified operation condition.

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated BACH staff in the operation and maintenance of the provided system.

b. The Contracting Officer reserves the right to approve the System Contractor's choice of training personnel, and, upon rejection of a trainer by the Contracting Officer at any time, the System Contractor shall immediately replace such trainers. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to review the qualifications of each proposed trainer.

3.7.4 Training Instructions

a. Training instructions shall cover all specified performance and capabilities of the system, and all of the items contained in the operating and maintenance manuals.

b. Maintenance technician training shall also include preventive maintenance, routine maintenance, repair and troubleshooting procedures.

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

a. Furnish all training materials and handouts. Handouts shall be provided in the quantity needed for all of the BACH maintenance technicians, operations and user staff that will receive training.

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

a. Training shall be provided onsite to all BACH staff as required throughout the contract and warranty period to train operations and maintenance staff for the provided system.

b. The onsite training program shall include two training courses, one for maintenance technicians, and one for user and operations staff.

c. Each course shall include classroom training and field training. Field training for BACH staff shall take place in the area where the staff will be working. Classroom training shall be conducted in classrooms as coordinated with the user.

d. Multiple instructional units for each onsite course shall be conducted on a three shift, seven days a week basis as required to train all staff during their normal on-duty working hours.

e. The Contracting Officer shall designate qualified personnel to be instructed in the operation and maintenance of each system, schedule instructional sessions, and provide suitable onsite instruction facilities.

3.7.7 User and Operational Staff Training

a. User and operational staff training shall commence at a time acceptable to the Contracting Officer and near the time the system is scheduled for operational use by the BACH staff.

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system is installed and accepted by the Government, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

a. Before the system is turned over to the Government for operational use, training shall be provided for maintenance technicians designated by the Contracting Officer.

b. The onsite technician training course shall provide the number of instructional hours necessary to cover all aspects of system setup, programming, operations, preventive maintenance, routine maintenance, routine repair, and troubleshooting procedures for the system as installed.

c. Nine (9) months after the system is installed and accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided at the Manufacturer's factory. Training shall include comprehensive instruction for complete setup, operation, maintenance and repair of the system, including the theory of operation, software installation and setup, maintenance programs, failure diagnostic programs, troubleshooting and repair. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training for factory certification as a maintenance technician.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 EMSR System

a. Provide a complete and operational EMSR System as specified in this Section, as indicated on the Telecommunications Drawings, as required by the system application design, and as further defined below.

b. Deliver and install all product items as required to comply with the approved installation schedule.

3.11.2 Indicated Items

Provide the quantity and type of system components as indicated on the Telecommunications Drawings.

3.11.3 Main Equipment

The Telecommunication Drawings indicate space in Comm Room 102-15 that has been designated for the installation of system main terminal/equipment. As required by the system application design, furnish and install the type and quantity of equipment, cabinet(s) and mounting devices.

3.11.4 UPS

Provide an UPS for all equipment that operates directly off of ac line power. At locations where the installed equipment includes both a computer and a monitor, the UPS shall be used to power both the computer and monitor.

3.11.5 Software

a. Provide all software programs as required for all specified capabilities and performance, and pertinent software manuals.

b. Include all operating systems, utility programs, application programs, and a complete set of backup software.

3.11.6 Tapes/Storage Units

a. Provide 35 tapes of the type, manufacturer and lot of those used for testing.

b. If a digital recording option was used, provide 35 digital storage units of the specified capacity.

3.11.7 Interface

a. Provide all hardware, software and cabling as required for the telephone interfaces.

b. Provide all hardware, software and cabling as required for the future connection of GFGI monitor radios as indicated in the drawings.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 16 - ELECTRICAL

SECTION 16788

FACILITY SECURITY SYSTEM

PART 1 GENERAL

1.1 REFERENCES
1.2 DEFINITIONS
1.2.1 General Definitions
1.2.2 Additional Acronyms
1.2.3 Additional Terms
1.3 SUBMITTALS
1.4 SYSTEM DESCRIPTION
1.4.1 Design Requirements
1.4.1.1 System Application Design
1.4.1.2 Standard Products
1.4.1.3 Minimal Requirements
1.4.1.4 Continuous Duty Design
1.4.1.5 Power Supply Design
1.4.1.6 Shielding and Grounding
1.4.1.7 User Room Numbers and Names
1.4.2 System Capability and Configuration
1.4.2.1 System Capability
1.4.2.2 System Configuration and Major Functional Components
1.4.2.3 Integrator Network Major Components
1.4.2.4 ACA Subsystem Major Components
1.4.2.5 Infant Protection Alarm Subsystem Major Components
1.4.2.6 CCTV Surveillance Subsystem Major Components
1.4.3 Integrator Network Performance Requirements
1.4.3.1 System Architecture and Performance
1.4.3.2 Integrator Network Servers
1.4.3.3 Communications
1.4.3.4 System Software
1.4.3.5 Operator Workstations
1.4.3.6 Operator Interface
1.4.3.7 Help and Documentation
1.4.3.8 Monitoring And Control
1.4.3.9 System Database
1.4.3.10 Open Integration
1.4.3.11 Data Exchange
1.4.4 ACA Subsystem Performance Requirements
1.4.4.1 General
1.4.4.2 Distributed Databases
1.4.4.3 Remote Alarm Reporting
1.4.4.4 Access Control
1.4.4.5 Door/Grill Alarm Sensor Devices
1.4.4.6 Volumetric Motion Detector Alarm Sensor Device
1.4.4.7 Duress Alarm Sensor Devices
1.4.4.8 Tamper Conditions
1.4.4.9 Electronic Supervision
1.4.4.10 CCTV Surveillance Subsystem Interface
1.4.4.11 Cardholder Management System

1.4.4.12 Software Functions
1.4.5 Infant Protection Alarm Subsystem Performance Requirements
1.4.5.1 General
1.4.5.2 Infant Exit Control
1.4.5.3 Infant TAG Tamper Alarms
1.4.5.4 Operator Interface
1.4.5.5 Alarm Management
1.4.5.6 Reporting
1.4.6 CCTV Surveillance Subsystem Performance Requirements
1.4.6.1 General
1.4.6.2 Digital Video Server
1.4.6.3 Camera Servers
1.4.6.4 FSS Relationship
1.4.6.5 Operator Workstations
1.4.6.6 Live Video
1.4.6.7 Recording
1.4.6.8 Viewing Recordings
1.4.6.9 System and User Audit Trail
1.4.6.10 Digitally Signed Recordings and Audit Logs
1.4.6.11 Storage
1.4.6.12 Operator Workstation
1.4.7 Detail Drawings
1.5 QUALITY ASSURANCE
1.5.1 Qualifications
1.5.1.1 General Qualification Requirements
1.5.1.2 System Contractor Qualifications
1.5.1.3 Installer Qualifications
1.5.2 Regulatory Requirements
1.5.2.1 Design and Installation Work
1.5.2.2 Electromagnetic Interference (EMI)
1.6 DELIVERY, STORAGE AND HANDLING
1.6.1 Protection
1.6.2 Delivery Coordination
1.6.3 Loss Liability
1.6.4 Delivery Restrictions
1.6.5 Contractor Responsibility
1.7 SEQUENCING AND SCHEDULING
1.8 WARRANTY
1.9 MAINTENANCE
1.9.1 Extra Materials
1.9.1.1 Off-The-Shelf Maintenance Parts
1.9.1.2 Installation Spare Parts
1.9.1.3 Post Acceptance Spare Parts
1.9.1.4 Special Maintenance Tools, Equipment and Software
1.9.2 Warranty Maintenance Service
1.9.3 Warranty Maintenance Service Response Time
1.9.4 Post Warranty Maintenance Service

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT
2.1.1 New Products
2.1.2 Unspecified Products
2.1.3 Product Modifications
2.1.4 Identical Products
2.1.5 Nameplates and Equipment Markings
2.1.6 Mounting Alignment Capability
2.1.7 Model and Enhancements
2.1.8 Software and License

2.1.9 Equipment Design for Outdoor Areas
2.2 SERVERS
2.3 OPERATOR WORKSTATIONS
2.4 UPS
2.5 LAN
2.6 PHOTO BADGE MAKER
2.7 PROXIMITY CARD READERS AND KEYPADS
2.8 PHOTO BADGE CARDS AND HOLDERS
2.9 REX DEVICES
2.10 DOOR REMOTE UNLATCH SWITCHES
2.11 ELECTROMAGNETIC LOCK ASSEMBLIES
2.12 ACU
2.13 DOOR POSITION SWITCHES
2.14 OVERHEAD DOOR AND SECURITY GRILL SWITCHES
2.15 VOLUMETRIC MOTION DETECTORS
2.16 DURESS ALARM SWITCHES
2.17 INDOOR CAMERA ASSEMBLIES
2.17.1 Indoor Fixed Mount 203mm (8") Dome
2.17.2 High Resolution Color CCD Camera
2.17.3 Vari-Focal Length Auto Iris Lenses
2.18 OUTDOOR CAMERA ASSEMBLIES
2.18.1 Outdoor Camera Pan And Tilt Positioning Drive Unit
2.18.2 High Resolution Color CCD Camera and Lens
2.18.3 Integral Enclosure Assembly
2.19 CAMERA POLES
2.20 NETWORK ADAPTERS
2.21 RF READERS
2.22 LF READERS
2.23 BABY TAGS AND STRAPS
2.24 DOME LIGHTS
2.25 EXTERNAL RELAY BOXES
2.26 REMOTE DISPLAY UNIT (RDU)
2.27 SYSTEM CABLING
2.28 EQUIPMENT MOUNTING RACKS AND CABINETS

PART 3 EXECUTION

3.1 EXAMINATION
3.2 EXISTING CONDITIONS
3.2.1 Equipment Mounting Space
3.2.2 Rough-In
3.2.3 Electrical Power and Grounds
3.3 PREPARATIONS
3.3.1 User Room Numbers and Names
3.3.2 Interface and Interconnections
3.3.3 Application Programming
3.3.4 Video Camera Scenes
3.3.5 Planning Data
3.4 INSTALLATION
3.4.1 General
3.4.2 Equipment Installation
3.4.3 System Cabling Installation
3.4.4 Grounding
3.5 APPLICATION
3.5.1 AC Power Connections
3.5.2 Installation Setup
3.6 INSPECTION, TESTING AND VALIDATION
3.6.1 General Requirements
3.6.2 Periodic Inspection and Testing

3.6.3 System Readiness Checks
3.6.4 Integrated Performance Testing
3.6.5 Final Inspection and Acceptance Testing
3.6.5.1 General Requirements
3.6.5.2 Acceptance Testing
3.6.6 Corrective Action for Rejected Work
3.6.7 Warranty Period Inspection and Testing
3.7 OPERATION AND MAINTENANCE TRAINING
3.7.1 Training Plan
3.7.2 General Preparations
3.7.3 Training Personnel
3.7.4 Training Instructions
3.7.5 Training Materials and Recordings
3.7.6 Onsite Training Programs and Requirements
3.7.7 User and Operational Staff Training
3.7.8 Technician Training
3.8 PROTECTION
3.9 CLOSE OUT DOCUMENTATION
3.10 CONTRACTOR QUALITY CONTROL
3.11 SCHEDULES
3.11.1 Facility Security System
3.11.2 Indicated Items
3.11.3 System Equipment in Comm Rooms
3.11.4 UPS
3.11.5 Software
3.11.6 System LAN
3.11.7 Servers
3.11.8 Pagers
3.11.9 Video Camera Assemblies
3.11.10 Post Life Safety Network Connection
3.11.11 Product Samples
3.11.12 Photo Badge Cards & Holders
3.11.13 Infant Tags and Straps
3.11.14 LF and RF Readers
3.12 VIDEO SURVEILLANCE SCENES

-- End of Section Table of Contents --

SECTION 16788

FACILITY SECURITY SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

47 CFR 15	Radio Frequency Devices

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
NFPA 99	(2002) Health Care Facilities

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

ANSI/TIA/EIA-569-A	(2001) Commercial Building Standards for Telecommunications Pathways and Spaces
ANSI/TIA/EIA-568-B	(2001) Commercial Building Telecommunications Cabling Standard
ANSI/TIA/EIA-568-B.2-1	(2002) Transmission Performance Specifications for 4-pair 100 ohm Category 6 Cabling

UNDERWRITERS LABORATORIES (UL)

UL 1778	(1994) Standard for Uninterruptible Power Supply

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-83-596	(1994) Fiber Optic Premises Distribution Cable

1.2 DEFINITIONS

1.2.1 General Definitions

The glossary of definitions, abbreviations and acronyms, and units set forth in ANSI/TIA/EIA-569-A shall apply to this Section, unless otherwise noted.

1.2.2 Additional Acronyms

For the purposes of this Section, the following definitions shall apply.

ACA Access Control & Alarm (Subsystem)

ACU	Area Control Unit
BACH	Bassett Army Community Hospital
BACnet	Building Automation and Control Network
CCTV	Closed Circuit Television
CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
DVRM	Digital Video Recording & Management
EBI	Enterprise Buildings Integrator
FSS	Facility Security System
GFGI	Government Furnished, Government Installed
HIS	Hospital Information System (BACH)
IDF	Intermediate Distribution Frame (PDS)
IMO	Information Management Office (BACH)
IP	Infant Protection
KVM	Keyboard, Video Monitor, Mouse
LAN	Local Area Network (uses Echelon LonTalk Protocol)
LON	Local Operating Network
L&D	Labor & Delivery (Unit)
LDRP	Labor, Delivery, Recovery & Postpartum (Room)
LF	Low Frequency
NCAV	Nurse Call Audio-Visual (System)
ODBC	Open Data Base Connectivity
O&M	Operation and Maintenance (Manuals)
PDS	Premises Distribution System
PIN	Personal Identification Number
PMO	Provost Marshal Office (Post)
PROX	Proximity
PTZ	Pan, Tilt, Zoom
REX	Request to Exit (Device)
RF	Radio Frequency
UON	Unless Otherwise Noted
UPS	Uninterruptible Power Supply
UTP	Unshielded Twisted Pair
VCR	Video Cassette Recorder

1.2.3 Additional Terms

For the purposes of this Section, following definitions shall apply.

Pager	Radio Page Receiver.
Software	Operating systems, application programs, and utility programs that enable a computer, or computer-based system, to function as specified. Software shall include the documentation to describe, maintain and use the programs.
System	Facility Security System (FSS), UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy the specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and

	performance.
Telecommunications Systems	All low voltage, RF and power limited Communications and Security Systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.
Telecommunications Rooms	Called Comm Rooms on the drawings. Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and devices for all telecommunications systems.
24x7 Staffed	A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.
Post	Fort Wainwright, Alaska

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H SUBMITTAL PROCEDURES:

SD-01 Data

Qualifications; G

Verify that the FSS System Contractor, Installer, and Manufacturer qualifications that were submitted in response to the RFP are still valid as of the time of this submittal. If there are any changes, submit a description of the revised qualification item.

System Description; G

A complete description of the system to be provided, including a comprehensive description of all the system functions, architecture, and operating characteristics in sufficient detail and scope to verify that the system is in compliance with the requirements of the contract documents.

Material and Equipment; G

Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include a description of the individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements, dimensions, and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be marked to indicate the specific item provided. A letter from the Manufacturer, stating that BACH shall be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, software, cables, and materials products arranged in the

order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Design Analysis and Calculations; G

a. Analysis and calculations to define power supply requirements for each component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions, for power supplies that are not an integral part of the component.

b. Analysis and calculations to define the type and size of all cables connecting all system components in accordance with Manufacturers instructions and power drop calculations.

c. Analysis and supporting result from specified preparation and application items, and all coordination items. Includes definition of all interface protocols.

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions, for equipment housed in Comm Rooms.

e. Design data for seismic anchoring and bracing.

Test Plan; G

Submit Test Plan in accordance with Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, in addition to the requirements of this Section.

Training Plan and Materials; G

Submit forty five (45) calendar days prior to scheduled training date. Submit in accordance with Section H OPERATION & MAINTENANCE TRAINING, in addition to the requirements of this Section.

Submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, which are available from the Manufacturer.

Warranty and Warranty Management Plan; G

Submit in accordance with Section HSPECIAL ITEMS, and CLOSEOUT SUBMITTALS.

Warranty document shall indicate the warranty period for the system and all component products.

Maintenance Service; G

For maintenance service after the warranty period, the System Contractor shall submit a service agreement proposal to BACH.

SD-04 Drawings

Detail Drawings; G

Drawings, diagrams, and details specifically prepared to indicate the work of this project. Detail drawings shall be in accordance with Paragraph 1.4.7.

Coordination Drawings; G

Submit Coordination Drawings in accordance with Section H COORDINATION. Coordination drawings shall include:

a. The details of all electronic and physical interfaces between the FSS and all interfaced telecommunications systems and other systems, including the exact point and type of demarcation.

b. The layout and mounting of all FSS equipment, and the routing and mounting of cabling in Comm Rooms and the Comm Equipment Room as coordinated with the layout of all other systems equipment in these rooms.

c. The layout and mounting of all FSS equipment, and the routing and mounting of cabling on Nurse Station modular furniture.

As-Built System Drawings; G

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. Include a copy of the list obtained from the Government that cross references the architectural room names and numbers with the BACH user room names and numbers. If an electronic file of this document is available from the Government, and if it is feasible to incorporate the information into the as-built drawings, then the System Contractor shall consider doing this.

SD-06 Instructions

Installation; G

Preprinted material from the Manufacturer describing installation requirements and safety precautions. Manufacturer's requirements for the use of specific products.

SD-09 Reports

Acceptance Test Report; G

Submit all test reports in both electronic media form and hard copy booklet form. Reports shall indicate all field tests performed to adjust each component and to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls and operating mode of the system, and the Manufacturer, model number, and serial number of the test equipment used in each test. The final acceptance test report shall include a statement that all specified requirements and conditions have been satisfied.

Post Acceptance Warranty Inspections and Testing Report; G

A report shall be submitted for each of the two (2) post acceptance inspections and testing performed by the System

Contractor.

SD-13 Certificates

Certificates of Compliance; G

Proof that the items conform to the specified codes or standards, including the requirements of CFR, NFPA, and UL.

SD-14 Samples

Product Samples; G

Submit one sample unit of the photo badge cards and holders, proximity card readers and keypads, duress alarm switches, indoor camera assembly, outdoor camera assembly, and baby tags and straps, for approval.

SD-18 Records

Closeout Submittals;

Submit per Section H CLOSEOUT SUBMITTALS

Video Recordings;

Submit per Section H SPECIAL ITEMS

SD-19 Operation and Maintenance Manuals

Operating and Maintenance Manuals; G

Operation and Maintenance (O&M) Manuals shall be in accordance with Section H OPERATION AND MAINTENANCE MANUALS.

O&M Manuals shall be available on-site before the start of any training.

Software Manuals; G

O&M manuals data shall include a Software Manual describing the functions of all software and including all other information necessary to enable proper loading, setup, testing, and operation.

The software manual shall include:

a. Definition of terms and functions.

b. Use of system and applications software.

c. Procedures for system initialization and set-up, start-up, shutdown, migration to another computer, and DLL or driver dependencies if these exist.

d. Alarm reports.

e. Reports generation.

f. Database format and requirements for data entry.

g. Directory of all disk files.

h. Description of all communications protocols, including data formats, command characters, and a sample of each type of data transfer.

Backup Software; G

Copy of all operating system and application software, on the type of electronic media acceptable to the Contracting Officer. Ghost copy of all hard disks in the system after all setup procedures have been completed, the system has been programmed for the required user operation, and all commissioning and acceptance tests have been successfully completed.

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

1.4.1.1 System Application Design

The System Contractor shall perform the system application design required to provide a Facility Security System (FSS) that complies with and satisfies all of the requirements specified in this Section and indicated on the drawings for this application and project.

1.4.1.2 Standard Products

The system application design shall utilize a standard Honeywell Enterprise Building Integrator (EBI) System products that are required for the FSS specified herein. The system shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the BACH installation site.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided.

1.4.1.4 Continuous Duty Design

All equipment shall be designed for 24 hours per day, 365 days per year continuous 100 percent duty operation.

1.4.1.5 Power Supply Design

a. Power supplies shall provide sufficient power capacity for the worst-case condition of system operation and signaling that could occur in the application environment without any loss or perceptible degradation of signal quality. Design analysis shall include calculations to size power supplies for worst-case conditions, and this calculation shall be included with the design data submittal.

b. AC powered equipment shall operate per specifications over the range of 105V to 130V, 60 Hz, unless otherwise noted.

c. All equipment connected to ac power circuits shall be protected from power line transients and surges as likely to be subjected in service from a commercial utility ac power system. Protection shall be integral to the equipment or installed as an accessory item in accordance with Manufacturer's recommendations. Fuses shall not be used for this protection.

d. Power distributed over system cables shall be low voltage and power limited in accordance with NFPA 70.

1.4.1.6 Shielding and Grounding

All products shall be shielded and grounded as required by the system design, Manufacturer's instructions, and regulatory requirements.

1.4.1.7 User Room Numbers and Names

a. At the start of submittals, the Government shall furnish to the System Contractor a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

b. Programmable assignment of room number identification shall provide for up to ten alphanumeric characters for each room. It shall be possible to program any identifying alphanumeric characters to any room in any sequence regardless of the physical location of the room.

1.4.2 System Capability and Configuration

1.4.2.1 System Capability

The FSS shall be a Honeywell Enterprise Buildings Integrator (EBI) System that has been system application designed to provide a total integrated FSS capability for electronic access control, intrusion detection, duress alarm, infant protection alarm, photo badging, and video surveillance for the new BACH facility and site as specified in this Section and indicated on the project Telecommunications Drawings. Prime system capability includes the following:

a. Facility access control of pedestrian passage through controlled doors.

b. Detect intrusions into the facility and protected areas.

c. Allow staff in critical and high risk areas to initiate a silent duress alarm signal for security assistance.

d. Detect and deter attempts of infant abduction from the Labor and Delivery (L&D) Unit and the Inpatient Services Nursing Unit.

e. Make staff access control proximity cards with photo identification (ID). Cards shall also include the a magnetic stripe capability for a separate, stand alone, existing Keyless Entry System.

f. Video surveillance of the facility perimeters, entrances/exits, high traffic routes, high risk and vital operations areas, and site parking lots.

g. Monitor, record, and report all security data, video images, alarms and events.

h. Alphanumeric radio paging of all alarms to the security staff, and alarms to the nursing staff for infant abduction alarms and intrusion alarms for nursing units. Radio paging shall be routed through the Section 16755 RADIO PAGE SYSTEM.

i. Programmable transmission of selected alarm signals to the Post Provost Marshal Office (PMO) via an interface to the existing Post Life Safety Network.

1.4.2.2 System Configuration and Major Functional Components

The FSS shall be an integrated configuration of the Major Functional Components listed below to provide the required system capability and performance. The capability and configuration of each of these Major Functional Components are defined in this Section.

Integrator Network
Access Control & Alarm (ACA) Subsystem
Infant Protection Alarm Subsystem
CCTV Surveillance Subsystem

1.4.2.3 Integrator Network Major Components

a. The FSS Integrator Network shall be configured as a Client Server network with the major components listed below to serve all of the specified subsystems.

Local Area Network (LAN) and Infrastructure
Data Base Servers
Digital Video Servers
System Operator Workstations
Management and Photo Badging Workstation
Maintenance Workstation
System Software

b. An independent, dedicated system LAN shall connect all Major Functional Components of the system into an integrated network for system wide data and video communications for the functions specified in this Section. Use of the BACH HIS LAN, or any Section 16710 PDS fiber optic cable shall not be allowed.

c. The system LAN shall be interfaced with the BACH HIS LAN (if allowed by the BACH IMO), via the Section 16710 PDS IDF panels, for the downloading of staff data for the photo badging system.

d. LAN equipment shall be located as required by the system application design.

e. The LAN shall use standard ANSI/TIA/EIA-568-B and ANSI/TIA/EIA-568-B.2-1 Category 6 UTP network cables and fiber optic cables.

1.4.2.4 ACA Subsystem Major Components

a. Major components of the ACA Subsystem shall include:

Network Adapters

Area Control Units (ACU)
Proximity Card Readers and Keypads
Door Position Switches
Overhead Door/Grill Position Switches
Request to Exit (REX) Devices
Duress Alarm Switches
Motion Detectors
Electromagnetic Locks & Power Supplies
Electric Strikes & Power Supplies (Existing)
Door Remote Unlatch Switches
Door Devices Groups (see below)
ACA Software

b. Door Control Devices Groups for access control of doors, as indicated on the Telecommunications Drawings, shall be equipped with various combinations of some of the components listed above, and as defined below. The electric strike and associated power supply for each controlled single door is existing and was provided by the facility Construction Contractor as part of the Door Hardware.

(1) Group GA: Proximity Card Reader, REX Device, Door Position Switch (one per door leaf). Electromagnetic Locks and Power Supply for double doors (one per leaf). Existing Electric Strikes and Power Supplies for single doors.

(2) Group GB: Combination Proximity Card Reader and Keypad, REX Device, Door Position Switch (one per door leaf). Electromagnetic Locks and Power Supply for double doors (one per leaf). Existing Electric Strikes and Power Supplies for single doors.

(3) Group GC: Keypad, REX Device, Door Position Switch (one per door leaf). Electromagnetic Locks and Power Supply for double doors (one per leaf). Existing Electric Strikes and Power Supplies for single doors.

(4) Group GD: Proximity Card Reader, REX Device, Door Position Switch (one per door leaf), and a Door Remote Unlatch Switch. Electromagnetic Locks and Power Supply for double doors (one per leaf). Existing Electric Strikes and Power Supplies for single doors.

The Group GD for Door 130-06 into the Pharmacy shall also include a Keypad.

1.4.2.5 Infant Protection Alarm Subsystem Major Components

Major components of the Infant Protection Alarm Subsystem shall include:

Network Adapters (LON to Ethernet)
Infant Protection Workstations
RF Readers
Low Frequency (LF) Readers
Tags
Tag Straps
External Relay Boxes
Door Position Switches
Dome Lights with Buzzer Device
Electromagnetic Locks & Power Supplies
Proximity Card Readers
Remote Display Units (RDU)
Infant Protection Software

1.4.2.6 CCTV Surveillance Subsystem Major Components

Major components of the CCTV Surveillance Subsystem shall include:

Network Adapters (Digital to Analog Video and PTZ Control)
Video Camera Servers
Indoor Video Camera Assemblies
Outdoor Video Camera Assemblies
Outdoor Camera Poles
Camera Power Supplies
Digital Video Recording & Management (DVRM) Software

1.4.3 Integrator Network Performance Requirements

1.4.3.1 System Architecture and Performance

a. The system shall use a Client Server architecture based around a modular computer network, utilizing an industry standard operating system, networks and protocols for all data and digital video.

b. System networking shall utilize an IEEE 802.3 Standard Local Area Network (LAN).

c. The system shall allow the distribution of system functions such as monitoring and control, graphical user interface, digital video, etc., across the entire integrator network to allow maximum flexibility and performance.

d. The system shall be an autonomous Client node on the existing Honeywell EBI Central Fire and Security System that serves that entire Fort Wainwright, Alaska Post. The BACH FSS Client node shall be connected to the existing Post EBI System via a switch port, in the BACH facility, on the existing Post Life Safety Network for the sole purpose of communicating designated alarms to the PMO. The network protocol used shall be industry standard TCP/IP. The System Contractor shall field coordinate the exact configuration and location of this interface.

e. The system shall allow communications with a wide variety of security devices utilizing off-the-shelf driver packages. It shall support LON, BACnet, Modbus, OPC and ODBC standards for open system communications.

f. The system shall operate in real time within the BACH facility, with a response time of less than 1/2 second for alarms and one second for access granted.

g. The system data processing and data communications capability shall allow handling of all alarm and access control events, and all analog and digital video, that are possible within the capacity of the system without any degradation of system response time.

h. The system shall allow on-line changes in data, printing reports, etc., without affecting the real time operation of the system and alarm reporting.

i. Displays and printouts shall be English language descriptions. All operator interaction with the system shall be menu driven in plain understandable English text.

j. All commands in the system shall be addressed by function, and a menu can be displayed when requested if authorized.

1.4.3.2 Integrator Network Servers

a. The Integrator Network shall be configured with Data Base Servers and Digital Video Servers as required by the system application design. At a minimum there shall be one Data Base Server and one Digital Video Server for overall system operation, and one Data Base Server dedicated for the the Infant Protection Alarm Subsystem operation.

b. Server Configuration

(1) Each server shall consist of a pair of similarly configured server computers connected in a hot backup configuration where at any point in time, one is the acting Primary and the other acting as the Hot Backup. An on-line database duplication mechanism shall be supported.

(2) Simply scanning I/O on two separate servers and processing independently is not acceptable. The database duplication shall be performed on a per-transaction basis for two reasons:

(a) To ensure that the duplicated Backup database is consistent at all times with the Primary database

(b) To avoid unnecessary loading of field devices caused by duplicate polling

(3) It shall be possible to remove one of the redundant servers for maintenance without interrupting operation, and upon its reinstatement, re-synchronize the databases, again without interruption to system operation. A method of manually initiating a fail over shall be provided to assist with such maintenance operations.

(4) Failure of either server shall be announced audibly and visually via the Maintenance Operator Workstation.

(5) To accommodate recoverable faults, the failed server shall be able to reboot automatically after non-fatal errors and assume the role of acting as Hot Backup automatically.

c. System Date and Time

The date and time in any system database and/or indicated on any component of the system shall be synchronized at least once a day with the system data base server. The system date and time shall be automatically updated for daylight saving time and leap year.

1.4.3.3 Communications

a. The FSS shall provide communications over a variety of physical media topologies as follows:

RS-232
RS-485
Ethernet
Echelon

b. The system shall be capable of supporting greater than ninety separate communications links to networks of control devices. Each connection shall operate independently of the others and facilities shall be provided by

system displays to individually place these links in service or out of service.

c. Connections to the database servers and digital video servers shall be routed via network adapters and the LAN. TCP/IP based network adapters are suitable and shall be Ethernet connected to the servers.

d. Given the sufficient level of system privilege, it shall be possible to view, manipulate and analyze all data and video in the system from any Operator Workstation in the system.

e. Once any subsystem is configured and placed in service, the system shall automatically begin background diagnostic scanning of the subsystems to ensure that communications are monitored independently of any monitoring scanning.

f. The system shall perform checks on data integrity of all data acquired from a device. If an invalid or time out response is received, the data shall be ignored and the system shall record the transaction as an error. Statistics shall be kept and displayed by the system on errors encountered in communication by means of a communications history log.

1.4.3.4 System Software

a. The system servers shall be based around the Microsoft Windows 32 bit multi-tasking environment and Windows 2000 or the latest server software. The operating system shall be a true 32-bit application to take advantage of later Microsoft Windows 2000's enabling technologies.

b. Standard services supported by the server operating system shall include the following:

Multi-tasking, Multi-user Support
TCP/IP Network Support
Graphic Display Building Editor
Application Software for all specified functions

c. Software at all Operator Workstations shall consist of:

Windows XP Professional, or the latest operating system
Graphic Display Building Editor
Application Software for all specified functions
TCP/IP Networking

d. The system networking software shall use the industry standard TCP/IP LAN protocol.

e. The database server or an alternative network connected computer shall be capable of acting as a File Server for graphic displays and cardholder photo images. All LAN connected Operator Workstations shall be able to view custom displays and photo images from the database server.

f. The system shall be integrated with the start-up services of Microsoft Windows XP Professional.

1.4.3.5 Operator Workstations

The various System Operator Workstations shall be used to perform the functions described below for all data and video operations.

a. Management System Operator Workstation

(1) Management of the entire system shall be performed from a Management System Operator Workstation located in the Security Management Office Room 322-03. This workstation shall also provide the required photo badge making capability.

(2) The management operator workstation shall include a CPU, computer keyboard, mouse, 2 video monitors, printer, photo card programming unit, card printer, and a removable media storage unit that shall provide for off line storage and retrieval of system programs and badging information, programmed data and system event activity. Ancillary items to be provided shall include a photo light and a background screen.

(3) System programming and management shall take place at the management operator workstation.

(4) Photo Identification Cards shall be made on this workstation, and shall include proximity card capability for the FSS, and magnetic strip capability for the separate existing Keyless Entry System.

(5) All system functions associated with Monitoring and Control at any operator workstation shall be accessible from the management operator workstation. This shall include all data and video.

(6) All system programmable functions shall be programmed and controlled from the management operator workstation.

(7) Personal Identification Number (PIN) assignment for keypad access shall be issued and logged into the system data base via the management operator workstation.

(8) Access control cards issued to personnel shall be programmed using the card programming unit and logged into the system data. Programmed cards shall be tested at this location using a card reader that is part of the management operator workstation.

(9) Authorized use of access control cards and PIN shall be programmable by time, day and location of entry point.

(10) A printer shall provide for hard copy printout of all alarms, management reports and all system data.

b. Monitoring and Control System Operator Workstations

(1) 24x7 monitoring and control of the entire system can be performed from either of the System Operator Workstations located in the Reception and Security Room 125-05 and Emergency Reception Room 103-03, and from the Management System Operator Workstation in the Security Management Office Room 322-03.

(2) The workstation shall include a CPU, computer keyboard, mouse, 2 video monitors, printer, and a removable media storage unit that shall provide for off line storage and retrieval of event activity.

(3) All system functions relative to the monitoring and control operations, except for infant protection tag assignment and control functions, shall be accessible from the operator workstation. This shall

include all data and video.

(4) All valid and invalid access attempts, and all alarm and event data shall be displayed on the operator workstation monitor. Alarm and event data shall be logged on the printer simultaneously with the alarm and event occurrence.

c. Infant Protection Operator Workstations

(1) Operation, management and monitoring of the Infant Protection Alarm Subsystems shall be performed from the Infant Protection Workstations located in the Nurse Station 212-20 for the L&D Unit, and in the Nurse Station 216-16 for the Inpatient Services Unit. Functions performed at this workstation shall include:

Management of the subsystem for the protected unit
Tag inventory, activation and assignment, and deactivation
Strap inventory and use
Infant data, tag and strap assignment, and discharge
Alarm event reporting and monitoring
Activity and event reports
Display of alarm receivers and status
Video display of alarmed cameras

(2) The infant protection operator workstations shall include a CPU, computer keyboard, mouse, 2 video monitors, printer, and a removable media storage unit that shall provide for off line storage and retrieval of event activity.

d. Maintenance System Operator Workstation

(1) System failure alarm monitoring and troubleshooting of the entire system shall be performed from a Maintenance Operator Workstation located in the Alarm Monitor Room 141-10. This workstation shall also have access to online help, system manuals, and software upgrades.

(2) The maintenance system operator workstation shall include a CPU, computer keyboard, mouse, 2 video monitors, printer, and a removable media storage unit that shall provide for off line storage and retrieval of event activity, and a modem for remote data communications with the System Manufacturer for remote diagnostics and software upgrades.

1.4.3.6 Operator Interface

a. General

(1) The operator interface provided by the system shall allow for efficient communication of operational data and abnormal conditions. It shall provide a consistent framework for viewing of information. Critical areas (such as alarm icons) shall be visible at all times. A predefined area on the screen shall provide operator messaging, and this area shall also be visible at all times. A set of standard displays for configuration, and navigation around the system shall be provided with and shall not require any engineering. The system shall have the capacity to have an unlimited number of custom facility specific displays created, as needed, to meet the needs of the BACH facility. The System Contractor shall coordinate with the Contracting Officer to define the custom displays initially required, and shall develop and install such displays.

(2) The operator interface software shall be capable of running in the Windows XP environment. The operator interface shall be interactive and totally graphics and/or icon based. Graphics shall be capable of supporting at least 65,000 colors at a minimum 1024 x 768 pixel resolution. Graphics shall be designed for optimal resolution at the monitor's native resolution.

(3) The operator interface shall employ standard Windowing conventions so as to reduce required Operator training. In particular, standard tool bar icons and drop-down menus shall be available on all standard and custom displays to allow easy access to common functions. The tool bar and pull down menus shall be fully configurable. Similarly, such functions shall also be available via a standard set of Function-Key based pushbuttons without requiring configuration.

(4) The operator interface shall support the ability to "full screen lock" the window so users cannot access other applications. If "full screen lock" is not enabled, support for copy and paste facilities shall be provided between the operator window and other Microsoft applications.

b. Operator Interface Connection

The operator interface LAN connection shall be flexible to support both permanent and casual access to the system servers through the standard operator interface. Licensing shall be based on the number of simultaneous operator connections on a "First Come First Served" basis.

To minimize bandwidth on both serial and LAN links, it shall be possible for the operator interface to only require updated dynamic information from the system servers. All static information (such as display backgrounds) shall be stored locally.

c. Operator Interface Characteristics

The system shall provide a Windows operator interface with the following minimum capabilities as standard. No custom programming or scripting shall be necessary to produce these:

Window re-size, Zoom in, Zoom out
Dedicated icons and Pull Down Menus to perform the following:
Associated Alarm Display
Alarm Summary
Alarm Acknowledgment
Display Sequence Forward/Backward
Previous Display Recall (minimum of 8 displays)
Graphic Call-up
Trend Call-up
Point Detail Call-up
Card Holder Detail
Alarm Banner showing highest priority, most recent (or oldest) unacknowledged alarm
System Date and Time Zone
Current security Level
Workstation connection number
Alarm Annunciation
Communications Fail Annunciation
Operator Message Zone

d. Pointing and Input Devices

The operator interface shall be capable of being mouse driven and simultaneously support computer keyboard data input. Both fixed menus and configurable function keys shall be supported to aid novice and experienced operator respectively.

The operator interface shall use a Tool Bar for common operator commands. The operator shall be able to request display of commonly used displays and activate system functions via Drop-Down menus

All operator interface input shall be possible using only the pointing device and QWERTY section of the computer keyboard.

e. Operator Functions

The following functions shall be performed through the operator interface:

Display and control of field equipment
Acknowledge alarms on a priority basis
Initiate printing of reports
Archive and retrieve event logs
View intranet or information from the Internet in a secure environment
View ActiveX documents
Use ActiveX controls
Change own password
Monitoring of data communications channels
Configure system parameters

f. Operator Security and Sign-On

(1) Security

If necessary, each operator may be assigned a user profile that defines the following:

Security and/or Control Level
Operator Identifier
Unique Password
Area Assignment / Area Profile
Start Graphic for that operator
Timeout Value for that operator

Any actions initiated by the operator shall be logged in the Event database by operator identifier. In addition, any control actions to a given point shall only be allowed if the control level configured in the operator's profile exceeds the level assigned to the controlled point.

Utilities shall be provided to allow administration of the operator passwords.

(2) Security Levels

The system shall support at least 6 levels of operator security. The functions allowed from each security level shall be as follows:

Level 1: Signed Off mode - View start-up display only.

Level 2: View only - Permit all Level 1 functions and in addition the operator shall be able to view displays. Typically used for an inexperienced operator.

Level 3: Permit all Level 1 and 2 functions and in addition the operator shall be permitted to control points such as start/stop, disable/enable, etc. and acknowledge alarms as they occur.

Level 4: Permit all Level 1 through Level 3 functions in addition to accessing master time schedules, system peripherals allocation, change point engineering parameters, build reports and use most standard system configuration displays.

Level 5: Permit all Level 1 through Level 4 functions in addition to accessing the engineering functions such as building and linking displays, allocating computer keyboard push button assignments, etc.

Level 6: This is the highest level of operator workstation security and shall allow the user unlimited access to all operator workstation functions.

(3) Sign-On/Sign-Off

The operator shall be permitted to sign on to the system if the correct Operator Identity (up to 4 characters) and the Operator Password (up to 6 characters) have been entered. This password shall be encrypted.

After a series of three (3) unsuccessful attempts to sign-on the Operator Workstation interface shall be locked for a configurable period of time. The lockout period shall be set via system configuration displays. During Operator Workstation lockout the other Windows functions of the computer running the Operator Workstation software shall not be affected.

It shall be possible to assign operators either single or multi-user passwords. Single user passwords enable the operator to sign-on to only a single Operator Workstation thus preventing simultaneous sign-on be the same operator. Operators with the highest sign-on security level who may require simultaneous access to more than one Operator Workstation would typically use the multi-user password.

Each operator shall be assigned a password and a set of authorized areas.

The operator may sign-off at any time by issuing a sign-off command.

A computer keyboard and mouse (pointing device) time-out feature shall be provided such that the operator shall be automatically signed off after a defined period of keyboard inactivity. It shall optionally be possible to configure automatic call-up of a "logged-out" display when this occurs to hide restricted information for example.

(4) Area Assignment / Area Profile

Each operator can be assigned one or more specific areas of the building with the appropriate monitoring and control responsibility (no view, view only, alarm acknowledge only or full control). An area shall be defined in this context as a logical entity comprising of a set of points in the system. This in turn may represent a physical space in the building. Areas shall be used to partition the database in such a way as to assign operators control over certain areas and prevent unauthorized access to other areas.

It shall be possible to define individual functional area access by means of area assignment. Likewise, an operator's ability to control or monitor

certain parts of a facility can be controlled by means of area assignment.

The system shall provide the facility to create area profiles, which combine areas and time periods, and which can be assigned to operators with the same area access requirements. By using area profiles in this way, area access can be specified to apply during certain time periods, allowing different areas of access at different times of the day or week.

(5) Password Authentication

Each password shall be an alphanumeric character string programmable up to a maximum of six (6) characters in length. The system shall not accept a password of less than five (5) characters in length nor shall the system force an operator to enter a password of more than five (5) characters in length.

The system shall provide a facility to allow all operators to change their own passwords at any time.

When a password is changed, the system shall not permit the new password to be the same as any of the last ten (10) passwords used in the past three (3) months. This shall be configurable with the appropriate level of security. All passwords stored in the system shall be encrypted.

(6) Duress

It shall be possible for an operator to indicate that they are signing on under duress. The system shall recognize that the operator is signing on under duress and it shall then be able to issue a control to alert appropriate assistance.

(7) Command Partitioning

It shall be possible to assign to each operator a set of allowed commands for each assigned area, where an area is a group of points. These commands can be mapped against the output state of any given digital point in the respective area to determine whether a control command is allowed for the particular operator.

With this feature, it shall for example be possible to configure an operator to set a digital point to ON, but to disallow the same operator from setting the same digital point to OFF.

g. Standard System Displays

The following displays shall be included as part of the system:

Alarm Summary Display
Event Summary Display
Point Detail Template Displays (for each point in the database)
Trend Set Template Displays
Group Control and Group Trend Template Displays
Communications Status Displays
System Status Displays
Operator Scratch-pad Display

In the case of the Trend and Group displays, configuration of these displays shall only require entry of a point name to completely configure the display. The Alarm Summary, Event Summary, Point Detail,

Communications Status, System Status shall not require any configuration.

Systems where standard graphical displays, showing all parameters for each system Point, do not exist shall not be acceptable.

(1) Status Displays

System status displays shall be available on the main Operator Workstation. They shall display the following information:

Points in alarm condition pending ACKNOWLEDGE command
Points which remain in an alarm state but which have been acknowledged
Communication failures
Printer status
Operator Workstations status
Communication links status
Controller status

(2) Administration Displays

The system shall provide the following full screen displays:

Master system menu
Report summary
Alarm summary
Event summary
Display summary
System parameters configuration
Operator Workstation configuration
Area assignment
Time Schedule assignment
Holiday assignment
History assignment
Push-button assignment
Operator definition
Operator message board
Events archive and retrieval
Time Period summary and configuration
Point Detail for every configured Point

(3) Applications Launcher

It shall be possible to launch any Windows application from within the Operator Interface. For example, a button or menu item shall be able to be created in the FSS to launch an application such as Microsoft Word.

(4) Point Collection Summary

There shall be an online display of selected points and their current states. It shall be possible to group points together based on common states, areas, controllers or links and place them in a collection. The total number of all points in a collection shall be displayed along with the number of points in each possible state. An overall summary display shall be provided which shows this information about each point collection.

It shall be possible to simultaneously control points, or subsets of points in the collection to a desired state.

h. Creating Custom Displays

(1) Graphic Display Building Editor

The FSS shall provide a Graphic Display Building editor for the creation of site specific graphic displays. It shall allow one-step online building of display static and dynamic objects. It shall be a WYSIWYG editor (what you see is what you get) allowing the displays drawn using the editor to appear exactly the same when viewed from an Operator Workstation.

Displays shall be created in the HTML (Hypertext Markup Language) format. This is essential so that the displays can also be viewed through a web browser as well as the normal system operator interface. The displays shall be saved in the standard HTML format. All graphic elements shall be available as HTML elements. It is not acceptable to have an HTML format which merely links to a proprietary object or bit map of the entire display. It shall be possible to view and edit the resulting HTML file using a text editor. Systems which do not support HTML displays shall not be acceptable.

Static objects created using the Graphic Display Building Editor shall include static text, rectangles, arcs and circles. However, it shall be possible to animate static objects to give the dynamic characteristics of the real-world object the point represents.

It shall be possible to link dynamic objects to the FSS database. They shall allow information to be displayed from the database or to allow an operator to interact with them in order to make changes in the database and to perform control actions. Dynamic objects shall include dynamic text, push buttons, indicators, charts, check boxes, combo boxes, pop up boxes, ActiveX controls and scroll bars.

It shall be possible to include static and dynamic display objects on the one display. The editor shall allow display objects to be manipulated by pointing, clicking and dragging. The editor shall allow display objects to be drawn, re-sized, copied, grouped, rotated, aligned and layered over each other. It shall be possible to copy and paste objects within and between displays.

The Graphic Display Building Editor shall support the following features:

One step display building (both background and dynamic information)
Point and click operation
Paste to and from the Clipboard
Absolute positioning object placement
Ruler and grid
Configurable tool, color and line palettes
Dialog boxes for definition of object details
Shape and page building
On-line help
Import graphics from third party packages including WMF, BMP, TGA, IF and JPEG formats.
Standard library of FSS industry objects
Three dimensional effects including raised, lowered, ridge and groove line styles
Live video element
ActiveX controls
ActiveX documents
Display Scripts written in either JavaScript or VBScript
Multilevel undo and redo

Object manipulation including combine, union, intersection
Polyline node editing
Transparent images

(2) Display Scripting

It shall be possible to further animate display elements using standard HTML scripts such as JavaScript or VBScript. A script editor supporting one of the standard script languages shall be provided. By using script programs, individual elements on the display may be manipulated. A proprietary scripting language or additional scripting and drawing package shall not be acceptable. It shall be possible to perform a variety of animations, which include but are not limited to:

Move objects
Resize objects
Recolor objects
Pop up messages and dialog boxes etc.

Scripts may be activated on displays using the following events:

On mouse click
On mouse enter
On mouse move
On page call-up
On a timer
On value or state change of a point on the display

(3) Live Video

Both the Graphic Display Building Editor and the Operator Interface shall have built in support for the creation and display of live video objects without the need for programming. The size and position of the video object shall be configured on a per display basis.

Systems, which show the live video object in a separate window from the operator interface, or on a separate monitor screen, shall not be acceptable.

(4) Launching External Applications

It shall be possible to launch applications (such as Microsoft Word, Excel, custom help files or any third party applications) from a custom display. If supported by the application, it shall be possible to launch the application with a specified file opened within the launched application. Launching of such applications shall also be possible from the Operator Workstation pull down menus or from a push button on a custom display.

1.4.3.7 Help and Documentation

The system operator interface via the Maintenance Operator Workstation shall also have access to online help and full system documentation. Online help shall be fully searchable and cross referenced to all relevant sections of the documentation. It shall be possible to browse the online help and set "favorites" which link to commonly used sections of the help information. All O&M manuals shall be available online at the workstation.

1.4.3.8 Monitoring And Control

a. Monitoring

The system shall support acquisition of data using the following techniques:

Periodic Scanning
Report by Exception
Data on demand

The system shall support a range of scan intervals, ranging from less than 1 second up to 15 minutes.

In order to minimize communications traffic, the system shall automatically block data requests using contiguous addresses and the scan intervals to generate scan packets, optimizing throughput for a given scanning load. The system shall also provide utilities to examine scan packet allocation for each scan interval, and compile aggregate statistics on communication link usage.

Where supported by the controlling device, Report by Exception (RBE) protocols shall be used to reduce the scanning load of the system while improving system response. If necessary, periodic scanning may be used in conjunction with RBE to ensure data integrity.

b. Device Control

Control transactions issued by the operator shall be communicated to control field devices using a write followed by read to ensure the integrity of the transaction. If the read following the write to the device indicates that the control action has failed, the operator shall be informed by means of a control failure alarm. The priority of the control failure alarm shall be configurable by the user.

It shall be possible to optionally assign a control confirmation message to individual points. This message shall request the operator confirm the requested supervisory control action prior to sending the entered value to the controller.

1.4.3.9 System Database

The system shall provide a real-time database incorporating data from analog, logical or pulse inputs. The database shall be configurable by the end user without the need for any programming and shall be able to be modified on-line without interrupting operation of the system. In addition to point-based information, the database shall also provide historization capabilities for analog, digital, pulse and event based information. This information shall be accessible by all facilities of the system such as custom displays, reports, trends, user written applications, etc.

a. Database Structure

The real-time database shall support collection of data and storage using the following structures:

Access Point Structures
Analog Point Structures
Status Point Structures
Accumulator Point Structures

Flexible Point Structures
Historical Data Structures
Event Data Structures
User Defined Structures

Each of the Point database structures shall be comprised as a composite point with a number of associated parameters, which may be referenced relative to a single tag name. Specifically, each of these parameters shall be accessible by various sub-systems such as the Graphical Operator Interface, Report Generation system and Application Program Interface in a simple POINT.PARAMETER format without the need to know any internal storage mechanism.

The system shall maintain portions of the database requiring frequent high-speed access as memory resident information and other less frequently accessed data as disk resident data. Memory resident data shall be checkpoint to disk every minute to minimize loss of data in the event of loss of power or other system failure.

Database backup shall be possible with the system on-line including backup of historical based data. The backup shall be possible via standard Microsoft Windows 2000 operating system utilities.

Point data shall be stored in a composite point database structure that provides a wide range of configurable information including but not limited to:

Point name and description
Multiple locations for data storage and device scanning addresses
Scan period
Multiple types and instances of alarms
Monitoring and Control access restriction information
Location of operator alarm handling instructions
Location of ancillary information associated with the point
A list of all recent events pertaining to that point

b. Access Points

Access points represent card readers and keypads when using access control with the FSS. The point represents the state of the card reader and/or keypad and whether access was granted to a cardholder or whether access was denied.

c. Analog Points

Analog data shall be stored in an analog point type in the database. This is a composite point type, which consists of multiple point parameters. For example, it is possible to have the analog set point, process variable and output all represented in one single point in the FSS.

d. Status Points

Status (digital) information shall be stored in a Status Point type in the database. The status point shall be a composite point capable of processing from a single to a three-bit digital input, allowing up to eight possible states.

e. Flexible Points

Data from some devices does not fit neatly into the standard point types defined above. In this case, it shall be possible to define flexible point types which can be structured to meet the requirements of the data structure they are being used to represent.

All points shall display the last 10 transactions for that point on the point detail display.

f. Grouping of Points

The FSS shall provide a means by which a number of alarm inputs, outputs and other related points can be grouped together for more convenient monitoring and control without the need for custom graphics.

g. History Management

Collection of historical point data shall be configurable as part of the point definition. Once configured, this data shall be collected automatically. Historical data collection shall be provided for both snapshots and averages with intervals ranging from 1 second to 24 hours.

Once assigned to history, point data shall be available by POINT.PARAMETER access used in conjunction with a history offset to locate the particular value of interest. The graphical operator interface, trend, report generation and application interfaces shall be able to access historical data.

Modifications to the history collection of a point shall be possible on-line without the loss of previously collected data for the point being changed or any other points in the system currently being historized.

History shall be able to be archived to an alternative file system or offline media. Different archive settings shall be available for different history types.

h. Trending

The system shall provide flexible trending allowing real-time, historical or archived data to be trended in a variety of formats. In addition, trend data types shall be able to be combined to allow for comparisons between data e.g. current real-time data versus archived data.

(1) Trend Capabilities

The system shall provide trending capability with the following functions:

Real time trending
Historical trending
Archived History trending
Trend Scrolling
Trend Zoom
Engineering Unit or Percent
Cursor readout of trend data
Trend comparisons between archived, real-time and historical data (for example, this year vs. last year). Comparisons between the same point offset in time, or different points shall be possible.
Trend De-cluttering via per-pen enable/disable on multi-plot style trends
Independent Y-axis per point on multi-plot style trends. It shall be

possible to display the Y-axis for any point on the trend by simply selecting the point using the mouse or computer keyboard.

Copying the currently displayed trend data to the clipboard for pasting into spreadsheet or document

Configuration of trends shall only require the entry of the Point Name into the desired trend template to produce the trend. All trend configuration shall be possible on-line without interruption to the system. Historization of data shall not be affected by changes to trend configuration. Systems that only provide trending via a third party package shall not be acceptable.

(2) Trend Types

The system shall be able to present real-time, historical or archived data in a variety of formats, including single, dual and multiple value trends of up to 8 points. For each trend set display it shall be possible for operators to configure the number of historical samples and ranges displayed. Points configured in trend sets shall be changeable on-line.

Operators shall be able to zoom in on information displayed on trend sets for closer inspection by dragging out an area of interest with the mouse or other pointing device. From such a selection, it shall be possible to copy the underlying data to the Windows clipboard for subsequent pasting into a spreadsheet application such as Microsoft Excel 2000. Systems that do not provide support for Microsoft Excel 2000 in this respect shall not be acceptable.

Scroll bars shall be available to move the Trend set backwards and forwards across the historical records. The trend sets shall automatically access archived history files without operator configuration.

It shall be possible to embed trend objects as part of custom displays. The following formats shall be available:

Bar Trend
Line Trend
Numeric Trend
Tuning Trend
Pie Trend
X-Y Plot

i. Event Management

It shall be possible to log an event such that it shall be journalized in the event file and optionally printed on the event printer. The journal shall contain the following event information:

Alarms
Alarm Acknowledgments
Return to Normal
Operator Control Actions
Operator Login & Security Level Changes
On-line database Modifications
Communications Alarms
System Restart Messages

Standard Displays shall be provided to show the current journal file with the most recent event at the top of the display. Subsequent page forward

actions shall allow display of progressively older events. Sorting and filtering of the journal shall be possible via a standard report, which shall be configurable by filling-in-the-blanks. Coding or scripting of any kind shall not be required. If events are viewed on the screen, it shall be possible to pause the real time view and prevent events from scrolling off the screen as new events occur.

The event database entries shall contain the following information:

Time & Date Stamp
Point Name
Event Type
Alarm Priority
Point Description
Point value or status at time of the event
Engineering Units

The event database shall also be accessible from other sub-systems such as the Operator Interface, Report Generation and Application Programmers Interface.

It shall be possible to have an on-line event file as large as the disk capacity can accommodate. For example, given the appropriate disk space it shall be capable of storing more than 1,000,000 (one million) events on-line.

The event file shall store events online. The system shall be able to automatically or manually archive these online events periodically, at a time period specified by the user. Operators shall be notified by an alarm that event archiving is required if manual operation is chosen. Events may be archived to tape, or to other media such as CD, Zip drive or to another file systems. If archiving does not take place, the event system shall continue to collect events until it reaches a nominated disk space limit. It shall then overwrite the oldest events until archiving takes place or more disk space is made available.

Archived events may be restored to the FSS at a later time if required for reporting purposes. Multiple archives shall be able to be restored at any one time. The FSS shall indicate to the operator the range of events in a particular archive file.

The event management system shall be fully integrated with the standard reporting system. The system shall automatically reference the restored archive file if a report is requested containing a time search window covered by the current archive file.
The operator shall be able to restore previously archived files and review or print them from the Operator Workstations.

j. Alarm Management

The FSS shall support several different types of alarms for analog points, including:

Two high-value alarms
Two low-value alarms
Two deviation alarms
Rate of change alarm
Unreasonable value alarm

Any four of these alarms shall be assignable to each Analog or Accumulator point on an individual point basis as part of the point configuration process. Status points shall allow each individual state to be alarmed.

(1) Alarm Priorities

Each monitored point in the system shall be able to assigned one of four alarm priorities to individual states. The meaning of the priorities shall be as follows:

Journal

Changes of state shall be journalized to the Alarm/Event Log and optionally printed on the Alarm/Event printer.

Low

Change of state shall generate a Low priority alarm, which shall appear on the Alarm Summary. Optionally, the alarm may be printed on the Alarm/Event printer or generate an audible tone.

High

Change of state shall generate a High priority alarm, which shall appear on the Alarm Summary. Optionally, the alarm may be printed on the Alarm/Event printer or generate an audible tone.

Urgent

This is the highest priority. Change of state shall generate an Urgent priority alarm, which shall appear on the Alarm Summary. Optionally, the alarm may be printed on the Alarm/Event printer or generate an audible tone.

Within each of the four alarm types there shall be 15 sub-priorities available. Each alarm priority shall have a configurable color.

It shall be possible to configure a time such that if a low priority alarm is not acknowledged within this time the alarm's priority is elevated to high priority. If a high priority alarm is not acknowledged within a configured time, its priority is elevated to urgent priority.

For each alarm priority, it shall be possible to configure a point such that if any alarms of this priority occur, the point is controlled to the configured state. This could be used to drive external annunciators such as sirens or lights.

When an alarm is acknowledged, it shall be possible to automatically issue a reset to a controller to indicate the alarm is acknowledged and to attempt to reset the alarm point.

(2) Alarm Enunciation

Alarms shall be enunciated by:

Most recent, highest priority alarm message appearing on dedicated alarm banner on the operator interface.
Alarm message appearing on alarm summary display.
Available Tone - based on a "*.wav" or other sound file for each

alarm priority
Alarm message printed on the alarm printer
Alarm indicator flashing on the operator interface

Alarms shall be enunciated at the Operator Workstation even if there is no operator currently signed-on. This feature shall be available on network connected Operator Workstations as long as the computer running the Operator Workstation software remains logically connected to the network. If the Operator Workstation is minimized in the Windows environment, then the Operator Workstation icon shall indicate an alarm. An audible tone shall be able to be generated and this tone shall be specified by a "*.wav" or other sound file for each alarm priority.

Points shall be enunciated while in alarm. If a point is set to alarm inhibited the point shall no longer cause annunciation. If a point goes into an alarm state whilst inhibited and then is still in the alarm state when the point is set to alarm enabled, the point shall immediately cause annunciation.

(3) Alarm Processing

Assigning an alarm to the point shall automatically cause the system to perform the following actions when an alarm occurs:

The alarm shall be time stamped to the nearest second and logged in the Event database with the Point Name, Alarm type, Alarm Priority, Point Description, New value and Engineering Units

The point value which is in alarm shall turn red (or other configurable color) and flash on any standard or custom display which uses that point

An Unacknowledged alarm entry shall be made in the system alarm summary for Low, High and Urgent Alarms

The audible alarm shall sound (if configured)

The alarm annunciation indicator shall flash

In addition, the alarm banner of the Operator Interface shall show the most recent (or optionally oldest), highest priority, unacknowledged alarm in the system.

(4) Dedicated Alarm Banner and Alarm Indicator

A dedicated alarm banner shall appear on all displays showing either the most recent or oldest (configurable), highest priority, unacknowledged alarm in the system. This banner shall be clear when there are no unacknowledged alarms for the operator to process.

An alarm indicator shall also appear on all displays. This indicator shall flash red (or another configured color) when there are any unacknowledged alarms pending in the system. This indicator shall remain solid red if there are alarms, which have not returned to normal but which have all been acknowledged. The indicator shall be clear if there are no points in an alarm condition.

(5) Alarm Logging

As well as being logged on the printer, alarms shall be logged to an event file for future retrieval in alarm reports or archived to removable media.

(6) Alarm Response Function Keys

The following dedicated function keys shall be provided on the computer keyboard for alarm action:

ACKNOWLEDGE

After moving the cursor to the point in alarm on the screen and selecting the point the operator shall be able to acknowledge an alarm by pressing this key. This action shall be logged in the event file and on the printer showing the operator ID with the message.

ALARM SUMMARY

By pressing a dedicated key at any time the operator shall be able to view a display showing all currently active alarms. The alarm messages shall be color-coded showing priorities. The operator shall be able to view the alarms according to priority. It shall be possible to acknowledge alarms from this display and also go to the associated display defined for the point.

ASSOCIATED DISPLAY

After moving the cursor to the point in alarm on the screen and selecting the point the operator shall be able to bring up the display applicable to that alarm by pressing this key. Just selecting the associated display key directly shall bring up the associated display for the point currently on the alarm banner.

(7) Alarm Acknowledgment

The system shall provide for efficient alarm acknowledgment in a number of ways as follows:

Selection of any POINT.PARAMETER from a custom graphic and pressing the dedicated acknowledge push-button

Selection of the alarm banner and pressing the dedicated acknowledge button

Selection of the alarm in the alarm summary display and pressing the dedicated acknowledge button

By performing a page acknowledge from the alarm summary display

On acknowledgment by the operator, the flashing indicator shall turn steady, and the point value shall remain red on any system or custom graphic. The acknowledgment shall also be logged in the Event database identifying the operator or workstation that acknowledged the alarm. If the point goes out of alarm before being acknowledged by the operator, the alarm shall be shown by a different indication and remain in the list until specifically acknowledged by the operator. If a point is not acknowledged within a configurable period of time, then an additional area based alarm can be generated.

(8) Alarm Filtering

The Alarm Summary shall be able to filter the alarms displayed to the operator. The filtering criteria shall include as a minimum:

Individual Priorities (i.e. Urgent, High, Low)

Ranked Priorities (i.e. Urgent only, Urgent & High only, Urgent, High & Low)

Unacknowledged Alarms only

Individual Areas only

(9) Additional Alarm Information

The FSS shall provide support for an additional message to be tagged to the alarm. This message shall provide the operator with additional information on the alarm but shall not clutter the alarm summary. It shall appear in a separate message summary at the same time as the alarm appears in the alarm summary. The messages can be pre-configured and then simply attached to individual points by means of a message ID.

(10) Advanced Alarm Management

The FSS shall be capable of advanced alarm management, which includes set stages of alarm handling.

The stages shall be:

Silence alarm condition
Acknowledge and action alarm condition
Respond to alarm condition by using pre-defined responses
Optionally reset alarm

All actions shall be recorded in the event file for retrieval and auditing purposes.

When an alarm is silenced, an instruction page for the alarm shall be displayed. The alarm may then be acknowledged from this page and alarm handling action completed.

Once the alarm is acknowledged and appropriate action has been taken, the operator may move to the response page to select from up to 100 user-defined responses to be logged in the event file. Alternatively, the operator shall be able to enter his or her own response, which shall also be logged in the event file. At the same time the alarm is removed from the alarm file. Optionally, the point shall remain on the alarm summary until a manual reset operation is performed.

It shall be possible to enable/disable this feature on a point-by-point basis given the appropriate system privilege level.

k. Reporting

The system shall support a flexible reporting package to allow easy generation of report data. The reports provided shall include pre-configured standard reports for common requirements such as Alarm Event reports and custom report generation facilities that are configurable by the user.

(1) Standard Reports

The following pre-formatted reports shall be available on the system:

Alarm/Event Report
Operator Trail Report
Point Trail Report
Alarm Duration Report
All Point Report
After Hours Alarm Report
Point Attribute Report
Generic or Custom Report

(Note: additional application specific reports shall be described later in this document)

Configuration of these reports shall only require entry of the schedule information, and other parameters such as Point Name or wildcard, filter information, time interval for search and destination printer to fully configure the report. Specifically, no programming or scripting shall be required.

(2) Alarm/Event Report

A report shall be provided to produce a summary of all events of a specified type for nominated points occurring in a time period. The time period may be specified as an absolute start and end date and time, or as a period relative to the current time. This report shall also be able to produce a summary of all changes made by a specific operator.

(3) Operator Trail Report

A report shall be provided to produce a summary of all operator actions relating to a specific operator in a specified period.

(4) Point Trail Report

A report shall be provided to produce a summary of all events of a specified type occurring in a period on nominated points.

(5) Alarm Duration Report

A report shall be provided which calculates the total amount of time a nominated point or group of points has been in an alarm condition over a given time period. The time period may be specified as an absolute start and end date and time, or as a period relative to the current time.

(6) All Point Report

A report shall be provided to produce a list of point information, including point name, description, point type, engineering units, and current values. Report configuration shall allow filtering based on a wide variety of criteria.

(7) After Hours Alarms Report

A report shall be provided to produce of summary of all Alarms occurring during the period specified by the operator as "After Hours".

(8) Point Attribute Report

A report shall be provided to points selected by one of the following attribute criteria:

Out-of-service
Alarm suppressed
Abnormal input levels
In Manual mode

(9) Additional Generic or Custom Reports

In addition, configurable report generation facilities shall be provided to allow custom reports to be produced. They shall be able to be configured at any time with the system online, and shall be able to access any database values. At least two methods of custom report generation shall be available, including the following:

Microsoft Excel

The FSS shall provide the facility for the use of Microsoft Excel as a reporting tool - allowing calculations such as summations, maximal, minimal and standard deviations, and the production of graphs, charts and tables. Systems that do not provide support for Microsoft Excel 2000 in this respect shall not be acceptable.

Data accessible for Excel reporting shall include alarms, events, and point parameter values.

ODBC

The FSS shall be capable of providing selected data in an ODBC format for the purpose of extracting data and creating custom reports. It shall be possible to access tables of data from the FSS through an ODBC compliant tool such as Crystal Reports.

It shall be possible to incorporate the activation of custom reports created through the ODBC compliant tool through the standard FSS report subsystem. Example reports shall be provided to illustrate how to access the ODBC data in the FSS.

A report detail display shall allow naming of reports, scheduling information and the destination of the report. The report destination shall be a printer, operator interface or internal file. The report output format shall be HTML (Hypertext Mark-up Language), Microsoft Word or RTF format.

(10) Report Activation

Reports shall be activated in one or more of the following ways:

Periodic activation at user specified intervals
Operator Demanded
Event Initiated e.g. Change in point value
Application Initiated

l. User Definable database

In order to support other types of data such as user entered or calculated

data from application programs, the system shall also provide a User Definable database area that can be fully integrated into the system. Data contained in this database shall be accessible by:

Custom Graphics
Custom Reports
Application Programs
Network Applications using a Network API

m. Point Initiated Programs (PIPS)

In addition to standard point processing functions, the system shall allow additional processing through the use of standard PIPS that may be attached to any points. Typical functions to be provided by these PIPS are listed below:

Arithmetic Calculation
Boolean Calculation
Maximum/Minimum Value
Composite Alarms
Integration
Run Hours Totaled
Group Alarm Inhibit
Report Request by Point Change
Application Program Request (By point value change or cyclic period)
Alarm Transportation
Value Transportation
Door Activity Task Request
Security Area Seal / Unseal
Alarm or Point Value Change Graphic Call-up
Value Change Group or Area Alarm Inhibit

n. Historical Data Archiving

The system shall support archiving of historical data to allow a continuous record of history to be built up over a period of time. Archived data may be stored on the hard disk of the system or a remote network drive or moved off-line to removable media such as floppy disk, cartridge tape, DAT tape, or optical disk. The number of archives maintained on the system before transferal to off-line media shall only be limited by the size of the hard disk or remote network drive. The system shall allow the user to define the specific intervals of history to be archived to avoid archiving of unnecessary data.

Once archived, the data shall be available for re-trending through the system trend facilities in combination with the current on-line history or other archives. Providing the archived history is present on the FSS Server's hard disk or remote network drive, the trend facilities shall be able to access it transparently for display, when a user scrolls beyond current on-line history limits.

o. Time Schedules

It shall be possible to specify time schedules for the control of all FSS points. A large number of individual points shall be controlled by a single time schedule. A single time schedule shall define the control to any combination of day and time e.g. Mon-Fri 7:00 to 18:00, Thursday 7:00 to 22:00 and Saturday-Sunday 9:00 to 14:00. The FSS time schedule shall also provide the ability to override the normal schedule for holidays or special

occasions.

Configuring time schedules shall be done through a graphical user interface whereby the operator selects the appropriate time span from a calendar. Systems where times and days shall be manually entered is not acceptable.

Where the control device supports an internal time schedule program, the FSS shall be able to upload, display, modify and download the control device time schedules. Support for the control device time schedules shall be in addition to the FSS time schedules.

1.4.3.10 Open Integration

The system shall be capable of communicating with any of the following Open Protocol Standards as required by the specified requirements:

a. Modbus

The system server shall provide an integrated interface to devices using the Modbus RTU protocol, where the FSS server shall be the 'master' and the external device or system shall be the "slave". The Modbus Interface shall support the following function codes:

Modbus Function Code	Meaning
01	Read Coil/Status
02	Read Input Status
03	Read Holding Registers
04	Read Input Registers
05	Force Single Coil
06	Preset Single Register
16	Preset Multiple Registers

The system shall also support user definable data formats for Modbus devices to accommodate the wide variety of formats in use in the industry.

b. BACnet (ANSI / ASHRAE 135 1995)

The system shall be capable of communicating to other building subsystems using the ASHRAE standard BACnet. The system shall be capable of acting as both a BACnet Operator Workstation and a BACnet Gateway. The BACnet capability shall support all of the following standard BACnet objects:

Analog Input
Analog Output
Analog Value
Averaging
Binary Input
Binary Output
Binary Value
Calendar
Command
Device
Event Enrollment
File
Group
Loop
Multistate Input

Multistate Output
Multistate Value
Notification Class
Program
Schedule
Trendlog

(1) BACnet Operator Workstation

The BACnet Operator Workstation shall support the following BACnet Interoperability Building Blocks:

ReadProperty-A (DS-RP-A)
ReadPropertyMultiple-A (DS-RPM-A)
WriteProperty-A (DS-WP-A)
WritePropertyMultiple-A (SW-WPM-A)
COV-A (DS-COV-A)
COV Unsubscribed-A (DS-COVU-A)
Alarm and Event-Notification-A (AE-N-A)
Alarm and Event-ACK-A (AE-ACK-A)
Alarm and Event-Summary-A (AE-ASUM-A)
Dynamic Device Binding - A (DM-DDB-A)
Dynamic Object Binding – A (DM-DOB-A)
DeviceCommunicationControl – A (DM-DCC-A)
TimeSynchronization – A (DM-TS-A)
UTCTimeSynchronization – A (DM-UTC-A)
ReinitializeDevice - A (DM-RD-A)
Connection Establishment - A (NM-CE-A)
List Manipulation-B (DM-LM-B)
Object Creation and Deletion – B (DM-OCD-B)

(2) BACnet Gateway

The BACnet Gateway shall support the following BACnet Interoperability Building Blocks:

ReadProperty-B (DS-RP-B)
ReadPropertyMultiple-B (DS-RPM-B)
WriteProperty-B (DS-WP-B)
WritePropertyMultiple-B (SW-WPM-B)
COV-B (DS-COV-B)
COV Unsubscribed-B (DS-COVU-B)
Alarm and Event-Notification-B (AE-N-B)
Alarm and Event-ACK-B (AE-ACK-B)
Alarm and Event-Summary-B (AE-ASUM-B)
Dynamic Device Binding - B (DM-DDB-B)
Dynamic Object Binding – B (DM-DOB-B)
TimeSynchronization – B (DM-TS-B)

Interfacing to the system via BACnet shall be possible through either ISO 8802-3 (Ethernet) or BACnet over IP.

c. OLE for Process Control (OPC)

The system server shall provide an integrated OPC Client and integrated OPC Server.

The OPC Client shall support the mandatory OPC Release2.0 Data Access as a minimum.

The OPC Server shall support OPC Release1.0A and OPC Release 2.0 Data Access OPC interfaces as a minimum.

d. AdvanceDDE

The FSS server shall provide an AdvanceDDE Client to allow connection to any AdvanceDDE servers as specified by the AdvanceDDE standard from Rockwell Software.

1.4.3.11 Data Exchange

The FSS shall have the capability to interface to the point database of other systems (i.e. nodes) on a TCP/IP network. This shall enable both the acquiring of point data and issuing control outputs to other systems.

a. Data Exchange with Microsoft Excel

The system shall be capable of exporting bulk data to Microsoft Excel. Systems that do not provide support for Microsoft Excel 2000, or which use Windows 3.x Dynamic Data Exchange (DDE) shall not be acceptable.

As a minimum the following shall be supported:

Allow retrieval of data either periodically or snapshot
Allow retrieval of data via POINT.PARAMETER requests
Allow retrieval of tag names, descriptions etc
Allow retrieval historical data
Writing of values from Excel back to the supervisory system

b. Paging and External Annunciation of System Alarms

The system shall provide for sending alarm text from configured points to the following external systems:

Alphanumeric pagers
Digital mobile phones with text message (SMS) support (Optional)
SNMP message (Optional)

Each point's paging priority threshold shall be individually configurable, and individually enabled or disabled. Each external device configured in the system shall have individually selectable times and days of operation, an alarm priority threshold, and an alternative device for use in escalation of unacknowledged alarms.

c. Database Configuration Tool

A database configuration tool shall be provided with the FSS that shall allow configuration of all point records, printers, controllers, and Operator Workstation connections. This utility shall be in the form of a relational database and operate in a true 32 bit graphical environment such as Windows 2000. The utility shall also have the ability to export information to and import information from Microsoft applications such as Microsoft Excel. Systems that do not provide support for Microsoft Excel 2000 in this respect shall not be acceptable

Users with sufficient security access shall be able to configure the database while the system is on-line. Configuration shall not require the need for any programming, compiling or linking and shall not require

shutting down or restarting of the system. In addition, historical data collection shall not be interrupted for points not affected by configuration changes.

It shall be possible to launch the database configuration tool from the operator workstation interface. The utility shall have the ability to configure database changes and download them either from the FSS server directly, or remotely via the network. The remote download is to provide password protection.

It shall be possible to modify a range of communications and other parameters for each device. The parameters of a particular device made available for modification shall be specific to the device or hardware item being configured – for example baud rate, parity, data and stop bit information in the case of serial devices. Hardware configuration utilities that rely solely on text-based configuration files shall not be acceptable.

All documentation for the configuration utility shall be provided on-line. The help facility shall operate using standard Microsoft features such as context sensitive help using the F1 function key.

The utility shall provide features that reduce configuration time of the FSS. These features shall include adding multiple points, controllers etc. at once. The utility shall automatically increment names or numbers of any information that is required to be unique by the FSS (such as point names). The user shall be able to select multiple items (such as points) and then edit fields that are common to all selected items to assist in global changes. Standard copy and paste facilities are to be provided by the utility.

The utility shall also support free format text fields, which the user can use for additional information such as cabinet or wire numbers. These additional fields shall be simple extensions to existing items in the database such as FSS points.

A filtering mechanism shall be provided with the utility so that the user need view only relevant information. The filter shall provide standard choices for the user to select, and also provide user defined filtering.

Database management reports shall be provided by the utility as standard. The utility shall also provide support for ad-hoc reporting facilities for engineering use.

d. Application Programming Interface

Two types of application programming interface (API) are required, the first is for applications written on the FSS server and the second is for applications that are required to run on network based clients (that are not necessarily Operator Workstations).

The FSS API's shall have support for either Visual Basic or C++ or both. Proprietary programming languages are not acceptable.

The API on the system server requires the following functions as a minimum:

Read and write to points in the database
Access to historical data
Initiate supervisory control actions

Access to the alarm/event subsystem
Access to user-defined database
Provide a prompt for operator input.

The API on the network-based clients requires the following functions as a minimum:

Read and write to points in the database
Access to historical data
Initiate supervisory control actions
Access to user-defined database

e. Server Scripting Engine

The system shall have the ability to extend its functionality easily by the addition of small script code to certain server functions. This shall enable additional customer specific functionality to be easily added to point, report and server processing. For example, a script shall enable a calculation to be performed and a number of points to be controlled based on another point going into alarm state. Scripts shall be able to be attached to point processing, report generation, server startup and shutdown, or executed on a periodic basis.

The scripting engine shall support a standard scripting language such as Microsoft's VBScript. Access to the scripts shall be though an inbuilt scripting editor which provides key work support and syntax checking as well as an extensive range of online help including a large number of worked examples. Proprietary scripting languages shall not be acceptable.

Scripting functionality shall be in addition to a full Application Programming Interface as described above in paragraph d.

f. Diagnostic Capture Tool

The FSS shall enable easy diagnostics of the health of the system. All diagnostic information shall be viewable through an easy to use user interface and shall be able to be easily exported as a stand alone collection of material for later analysis. This information shall include the following:

Communications traces to selected controllers
All system log files
Details on system software installation
Application status information

It shall not be necessary to be an expert user in the system to gather diagnostic information.

1.4.4 ACA Subsystem Performance Requirements

1.4.4.1 General

a. The ACA Subsystem shall be a fully integrated capability of the FSS.

b. The ACA Subsystem shall perform functions for access control, intrusion detection, and duress alarms.

c. Management of the ACA Subsystem shall take place at a Management Operator Workstation installed in the Security Management Office Room

322-03. This workstation shall also serve as a System Operator Workstation for monitoring and control.

d. Prime 24x7 operation and monitoring of the ACA Subsystem shall take place at any one of the System Operator Workstation used for monitor and control.

e. All alarms and events shall be concurrently routed in real time to all monitor and control System Operator Workstations, communicated to the CCTV Surveillance Subsystem, and radio paged to the security staff.

f. Program selectable intrusion detection and duress alarms shall be reported to the Post PMO.

g. The door open status of the fire exit doors from the Inpatient Services Unit and the L&D Unit shall be radio paged to the nursing staff in these units.

h. All valid and invalid access attempts, and all alarm and event data shall be stored on the database server.

1.4.4.2 Distributed Databases

a. All Area Control Units (ACU) shall have distributed intelligence. Normal access control decisions shall be made at the local ACU without reference to the system database server.

b. In the event of failure in the communication link between an ACU and the system database server, the ACU shall be capable of buffering a minimum of 500 ACA transactions until communication is re-established with the system database server.

c. Changes in the database server data shall be capable of being downloaded to the relevant ACU via the integrator network LAN. Such downloading of data shall not disrupt normal data communications over the LAN.

1.4.4.3 Remote Alarm Reporting

a. Post PMO

(1) Any combination of intrusion or duress alarms that require immediate military police response shall be communicated to the Post PMO via the existing Post Alarm System. To implement this function, provide an interface to a port on the existing Post Life Safety Network switch in the new BACH facility. The network protocol used shall be industry standard TCP/IP. The System Contractor shall field coordinate the exact configuration and location of this interface.

(2) The selection of alarms to be routed to the Post PMO shall be under software control and can be changed at any time from the management operator workstation. The initial list of alarms to be programmed for remote reporting time of system activation shall be coordinated with the Contracting Officer.

b. Section 16755 RADIO PAGE SYSTEM

(1) Interface with the Section 16755 RADIO PAGE SYSTEM shall be a hardwired connection to an input port on the radio page encoder/cpu.

(2) All alarms shall be routed to the Radio Page System for transmission to alphanumeric pagers carried by the BACH security staff.

(3) Transmitted alphanumeric alarm information shall include the type, location, and date and time of the alarm event.

(4) A door open alarm signal for Fire Stair Door 2W1 shall be radio paged to the nursing staff in the the Inpatient Services Unit.

(5) A door open alarm signal for Exit Door 219-13 from the L&D Staff Lounge shall be radio paged to the nursing staff in the the L&D Unit.

1.4.4.4 Access Control

a. Access control operation can be activated by a valid proximity card, keypad entry of valid Personal Identification Number (PIN), request to exit (REX) device, door remote unlatch switch, internal time clock, manual operator workstation computer keyboard entry, alarm condition and event response.

b. The proximity card described in the photo badging subsystem shall be used. An initial quantity of 900 cards is required.

c. A medium security type of keypad shall be used.

d. Door access control signals shall operate an existing electric door strike or a provided electromagnetic lock.

e. Automatic REX devices shall be provided on the secure (protected) side of each door that requires entry control and free egress. This shall allow unrestricted egress without having to manually activate any egress device and with no alarm reporting. A motion detection device shall be used that automatically activates the door release device and activates an alarm shunt signal for an adjustable period of time whenever anyone is within an adjustable range of up to 1.8 M (6 feet) from the door.

f. Key operated door remote unlatch switches shall be provided for the remote unlatching of designated doors as indicated on the Telecommunications Drawings.

g. The system shall be designed to allow any controlled door electric strike or electromagnetic lock to be connected for fail safe latched or fail safe unlatched in the event of a power failure.

Unless otherwise defined by the Contracting Officer, all controlled doors shall be connected for fail safe unlatched in the event of a power failure.

h. Changes in status of controlled doors can be recorded and retrieved at any time.

1.4.4.5 Door/Grill Alarm Sensor Devices

Magnetically operated switches shall detect the unauthorized opening of doors and grills of protected areas.

1.4.4.6 Volumetric Motion Detector Alarm Sensor Device

a. Volumetric motion detectors shall sense intruder motion in The Pharmacy

area during the time periods when the area is not staffed and is secured.

b. The motion detectors can be activated to secure the area in any one of several ways:

Automatically at default times from the system.

Manually from a System Operator Workstation.

By use of an access card and PIN at a card/keypad unit outside an entry door when leaving the area.

c. When the area is secured, authorized entry into the area by use of a valid card and PIN shall shunt the motion detector until the person exits the area and reactivates the the motion detector by use of the card reader and keypad.

A backup time out period shall be programmed to reactive the motion detectors should the person forget to do so upon exiting the area.

d. Volumetric motion detectors shall utilize passive infrared sensors. An alarm shall be reported only if the sensors detect motion in the area covered.

1.4.4.7 Duress Alarm Sensor Devices

Duress alarm switches shall allow personnel in critical and high risk areas to quickly signal for assistance.

1.4.4.8 Tamper Conditions

A tamper condition at an ACU, card reader, keypad, remote door unlatch switch, or motion detector shall be immediately processed as an alarm.

1.4.4.9 Electronic Supervision

a. Electronic supervision circuitry shall monitor and report a fault condition in any data or signal line that shall cause the loss of data communications or alarm signaling transmission capability. This shall include fault conditions such as an open circuit, short circuit, or ground. Any such fault condition shall immediately be processed as an alarm.

b. Signal lines from each alarm sensor device shall be electronically supervised.

1.4.4.10 CCTV Surveillance Subsystem Interface

Alarm events shall be communicated to the CCTV Surveillance System in order to initiate programmed video monitoring protocols.

1.4.4.11 Cardholder Management System

Security related cardholder/passholder information shall be stored in a relational database such as Microsoft SQL Server.

The cardholder database shall support at least 10000 cardholders. The cardholder database shall be delivered with at least 40 user definable fields for storing data specific to the requirements of different applications. It shall be possible to increase or decrease this number of

user definable fields.

a. Cardholder Database

It shall be possible to define labels and field types for each of the user definable fields. It shall be possible to define lists of choices for certain user fields to avoid unnecessary typing, for example, defining a list of department names. It shall also be possible to modify the layout of cardholder fields on the display screen to alter the look to particular user's requirements. It shall also be possible to create more complicated calculations between user fields. For example, creating the value of one user field based on the value of two others. It shall be possible to define default values for all user fields, which shall be applied when the cardholder is first added to the system.

(1) Searching and Sorting

It shall be possible to define which user fields in the cardholder database are searchable fields. All searchable fields shall be able to be used to call up a list of cardholders who match a certain criteria. In addition, it shall be possible to search on multiple cardholder characteristics at one time, for example, all cardholders in department "X" who have a supervisor of "Y". A list of matching cardholders shall be displayed and an appropriate choice may be made.

(2) Multi-selection

It shall be possible for multiple cardholders to be selected and a single edit to be performed on all of these cardholders selected. For example, it shall be possible to select all cardholders in department "X" and change their address to "Z" in a single operation.

(3) Templates

The FSS shall define templates in order to add groups of cardholders with predefined characteristics. A template shall contain all the relevant details for a particular group of cardholders such as all their user fields and access levels. When adding a new cardholder to this group using the template, the cardholder shall be added with the same characteristics as defined in the template.

b. Cardholders and Cards

It shall be possible to assign a single cardholder multiple cards for use in the FSS. Multiple cards assigned to a single cardholder shall be able to be in different states. For example, it shall be possible for a single cardholder to have both an "active" card assigned and an "inactive", "lost" or "stolen" card assigned.

It shall also be possible to support different technologies of access control cards in the one system. For example, a single cardholder may have a proximity card, a magnetic stripe card and a biometric template assigned to them.

Cards may be created and assigned to cardholders separately. It shall be possible to "return" a card when a cardholder no longer requires it, and then reassign it to another cardholder without having to delete and recreate the card.

When cardholders or cards are deleted or expired, or when a card is returned from use by a cardholder, the system shall automatically download this to the field controllers so that these cards no longer provide access.

c. Access Permissions, Time Periods and Zones

(1) Time Periods

The FSS shall support a minimum of 256 time periods.

The operator shall be able to access a summary display listing all time periods and their descriptions. From this display the operator shall, if the operator is configured for the time period's area code, be able to go to a time period detail display showing the time periods configurable parameters.

Once the changes have been saved the operator shall be required to download the new data before it is enabled in the Access Control System. This shall allow operators to make a number of changes but only be required to download once.

Each time period detail display containing changed data that has not been downloaded shall clearly indicate this to the operator via a flashing warning message. Download of this data shall cause the warning message to disappear.

(2) Zones

The FSS shall support up to 1024 zones. Each zone shall consist of the following:

Description
Area code.
Up to 128 card readers or floor points.

The operator shall be able to access a summary display listing all zones and their descriptions. From this display the operator shall, if the operator is configured for the zones area code, be able to go to a zone detail display showing the zone configurable parameters.

Zones shall be automatically created when card readers are configured in the system. Zones are defined by the card readers, which allow entry to the physical space, which the zone represents. One reader may only be defined as entering one zone. Each reader shall indicate the zone it allows entry to and optionally the zone from which one has exited.

(3) Access Permissions

The FSS shall support up to 1024 access permissions. Each access permission shall consist of the following:

Description
Area code.
Up to 256 zone and time period pairs.

The operator shall be able to access a summary display listing all access permissions and their descriptions. From this display the operator shall, if the operator is configured for the access permission's area code, be able to go to an access permission detail display showing the access

permission's configurable parameters.

Once the changes have been saved the operator shall be required to download the new data before it is enabled in the Access Control System. This shall allow operators to make a number of changes but only be required to download once.

Each access permission detail display containing changed data that has not been downloaded shall clearly indicate this to the operator via a flashing warning message. Download of this data shall cause the warning message to disappear.

d. Security

Managing cardholders shall only be available to operators who are at a certain security level. Both cardholders and cards shall also conform to standard FSS Operator Security features, such as area assignment, as defined in this Section.

It shall be possible to define an operator as only a cardholder administrator. All other functions in the FSS shall be restricted to this operator except for cardholder administration functions.

e. Assigning Access to Cardholders

Cardholders may have up to 8 different access levels assigned to them. Each of these access levels may define a separate set of readers and times that shall allow the cardholder access. Operators shall be presented with a list of all access levels already assigned to the cardholder and all access levels which are currently unassigned.

f. Deleting Cardholders

Cardholders may be deleted but retained in the database for future reference if required. It shall then be possible to "undelete" the cardholder should this be required. It shall also be possible to permanently delete the cardholder record in order to prevent unnecessarily large databases from developing.

g. Card/Cardholder Expiry

Cardholder and card expiry dates may be defined down to a resolution of date and time in minutes.

It shall be possible to assign cardholders and cards separate expiry dates, enabling a card assigned to a cardholder to expire before the cardholder expires. However, it shall not be possible for the card expiry date to exceed the cardholder expiry date of the cardholder to which a card is assigned.

Expiry dates may be set up by default to be a particular given date, or a relative period from the time the cardholder was created (e.g. 1 year).

It shall be possible to assign a cardholder a commencement date and have their assigned cards automatically become active on this commencement date.

h. Cardholder Alarms

It shall be possible to specify that the cardholder generate an alarm when

they use their card. This setting may override the alarm setting of the reader to which a cardholder may be presenting their card.

i. Cardholder Events

All changes to cardholders in the system shall be logged in the event summary and shall list the new value of the cardholder field. Similarly, any time a cardholder accesses a card reader, an event shall be listed in the event summary. It shall be possible to automatically view all the events generated for a particular cardholder directly from the cardholder displays without having to run a separate report.

j. Uses Before Expiry

It shall be possible to define the number of times that a cardholder may use their cards. This number shall be decremented every time the cardholder uses their card at a reader until the number is 0, when the cardholder shall no longer have access.

k. Photo Identification Badges

It shall be possible to capture portraits and signatures for all cardholders and then create photo identification badges using these images.

Image capture and printing of photo identification badges shall be fully integrated into the FSS system and shall use the same database. Any system, which uses a separate photo badging system or separate database, shall not be acceptable.

Capture devices shall include Video Capture cards, Digital Cameras, scanners and signature tablets and capture facilities shall support both the MCI and TWAIN standards for image capture. Devices may be connected directly via PC boards or through serial or USB ports. If using a Video Capture card for image capture, a live preview facility shall be provided. Import and export facilities for images shall also be available.

The system shall provide a tool for the creation of photo badging card layouts. This shall allow the incorporation of standard display creation facilities such as image import, a variety of fonts and text effects, a variety of tools for drawing objects and a facility for linking to the cardholder database and any user fields within this. This tool shall be the same tool as used for the creation of custom graphics in the FSS system as described in this Section so as to reduce training and maintenance requirements for the system.

In addition, it shall also be possible to incorporate bar codes and automatic magnetic stripe encoding facilities into the photo badging system.

l. Visitor Management System

The system shall provide a facility to manage and track visitors to the facility. This shall include both visitors who are given access control cards and visitors who are merely escorted by employees. It shall be possible to store information that defines who the visitor is, what company they represented and whom they were visiting in the facility. This information shall be displayed on a different display to that of a standard cardholder so that operators can enter visitor information easily and without the distraction of all the standard cardholder user fields.

All information about when a visitor arrived and when a visitor departed shall be recorded in the standard system event summary.

For visitors who are assigned access control cards, it shall be possible to automatically expire their cards after 1 day to prevent visitors from removing valid cards from the facility.

m. Cardholder Application Programming Interface

It shall be possible to provide an Application Programming Interface (API) to allow controlled access to the cardholder database. The purpose of this is to allow third party applications to be able to read and write to the cardholder database in a secure and controlled way.

n. Cardholder Management Subsystems

(1) Shift Management

The system shall be capable of managing the access control of teams of cardholders assigned to shifts on a per team basis. It shall be possible to assign appropriate access levels for each team for each shift e.g. day shift, night shift, other and no shift. The FSS shall automatically reassign cardholders' access levels to the pre-configured level when the cardholders change their current working shift.

(2) Data Exchange with Enterprise Management Systems

The system shall be capable of exchanging cardholder information with Human Resources modules of Enterprise Management Systems such as SAP and PeopleSoft. Cardholder information shall be sent from the EMS to the system on a regular basis and automatically imported into the system in order to ensure that the Human Resources module and the system cardholder database have the same information.

1.4.4.12 Software Functions

a. Event Initiated Programs

Physical and software outputs or groups of outputs shall be assignable through configurable algorithms to an input point. When an input changes state the outputs assigned shall be activated as specified by their physical or configured output modes.

When alarm events of individual or groups of points are suppressed by event initiated programs, any occurrence of such alarm events during the suppress mode shall not be enunciated, reported or journalized.

b. Event Management

Events shall consist of alarms, changes of state in a monitored status point, cardholder movements, changes in system status and operator actions.

All journal events shall be recorded as necessary to include event description, condition, message, time of occurrence, operator responsible and any other information or tags.

Access Event Summary: There shall be an online display that shows all access events (as distinct from event summary). This shall indicate the

date, time, door and cardholder who attempted the access and whether access was granted or denied.

It shall be possible to have access events automatically removed from the system after a configurable period of time, for example after 3 months. This is to allow the system to meet some stringent government privacy requirements.

c. Report Management

The system shall support a flexible reporting package to allow easy generation of report data. The reports provided shall include pre-configured standard reports for common requirements such as Alarm Event reports and custom report generation facilities that are configurable by the user.

(1) Standard Reports

The following pre-formatted reports shall be available on the system:

Door History
Group Card Trail
Cardholder List
Occupancy
Access Data Import/Export
Card Usage
Access Permissions
Time Period
Zone Information
Cardholder Details
Cardholder Zone

(2) Door History Report

A report shall be provided to list all cardholders who presented a card at any specified door or group of doors monitored by the FSS within a specified time period. The time period may be specified as an absolute start and end date and time, or as a period relative to the current time. The report shall contain the time and date and card number for each card presentation.

(3) Group Card Trail Report

A report shall be provided so that when requested, the report shall search the database for cards corresponding to specified search criteria based on any cardholder field. It shall then show all doors accessed by these cardholders in a specified time period. The time period may be specified as an absolute start and end time, or as a period previous to the current time. The report shall contain the date and time of access and the point identifier of each door accessed.

(4) Cardholder List Report

A report shall be provided to produce a comprehensive listing of cards and cardholders.

It shall be possible to provide searching and filtering criteria based on any cardholder field. The cardholder details on which the report is based shall allow details to be specified as a range, or as matching or partially

matching as applicable.

(5) Access Data Import/Export Report

A report shall be provided to create a file containing cardholder related details in an ASCII format ready to be exported from the system into a third party database package. It shall also be possible to import ASCII files into the system to update the system from information from other third party database systems. The following information shall be able to be configured for import or export in the report:

Cardholder Details
Zones
Time periods
Access permissions

In order to reduce duplication and report file size, the operator shall be able to choose to only include cardholders that have been modified since a particular date.

It shall be possible to configure the report such that after an import operation, a download to the field devices shall take place automatically.

(6) Card Usage Report

A report shall be provided which calculates the total number of access movements (including no movements) for cardholders over a given period of time. The time period may be specified as an absolute start and end date and time, or as a period relative to the current time. This report shall provide the ability to search by cardholder fields as defined by the specified search criteria based on any cardholder field.

(7) Access Permissions, Zone, and Time Period Information Reports

A number of reports shall be provided which lists configuration information for access permissions, zones and time periods. These reports shall allow the system administrator to check and confirm the configuration of the access control parts of the system.

(8) Cardholder Details Report

A report shall be provided to produce a comprehensive listing of cardholders that match a set of search criteria.

It shall be possible to provide searching and filtering criteria based on any cardholder field. The cardholder details on which the report is based shall allow details to be specified as a range, or as matching or partially matching as applicable.

(9) Cardholder Zone Information Report

A report shall be provided which lists zones in the facility to which cardholders have access. This report is to allow system administrators to check which parts of their facility are accessible by which cardholders.

d. Deadman Timer

The system shall provide a Deadman timer facility for continuous monitoring of each Operator Workstation to safeguard possible loss of guard operator.

The Deadman timer shall be able to function as follows:

If there is no operator activity for a configured period of time, then the operator shall be signed off. If the operator does not sign back on to the system within the specified Deadman timer period, the system shall activate those output control points that are specifically configured for alerting external assistance. These special output points shall be referred to as Deadman points. A warning message can be configured to warn the operator before they are logged off.

It shall be possible for the Deadman timer to be configured such that if alarms are not acknowledged in a pre-configured period of time regardless of other activity on the system, then an alarm shall be generated and a Deadman point controlled to a pre-configured alarm state. To facilitate the acknowledgement of these alarms, a special toolbar button is provided.

It shall also be possible to generate periodic Deadman alarms, which ensure that the operator has alarms to acknowledge regardless of the normal activity on the system.

e. Reader Data Handoff

It shall be possible to configure a reader such that when an access card is presented to a reader, information about the cardholder, reader name, date, time and other cardholder fields is dumped to a file or serial port in real time. A configuration file shall be available to change the order or fields that shall be dumped in this manner. This information can then be accessed by other third party systems for the purposes of calculating time and attendance information.

1.4.5 Infant Protection Alarm Subsystem Performance Requirements

1.4.5.1 General

a. The Infant Protection Alarm Subsystem shall be a fully integrated capability of the system.

b. Infant abduction alarms from the Infant Protection Alarm Subsystem shall be received and processed the same as all other alarms. These shall include infant exit alarms and infant tag tamper alarms.

c. The Infant Protection Alarm Subsystem shall detect and report alarms if an attempt is made to abduct an infant from the L&D Unit or the Inpatient Services Unit. To protect the infants in these units, an interactive tag will be strapped to each infant in the units. The tags will signal an alarm if there is any unauthorized attempt to remove the infant from the secured nursing unit (exit alarm), or if there is an unauthorized removal of the tag strap from the infant (tag tamper alarm).

d. Operation and management of the Infant Protection Alarm Subsystem shall take place at Infant Protection Workstations installed in the designated Nurse Station of each Unit.

e. All alarms shall be concurrently routed in real time to all Operator Workstations, radio paged to the security staff, and radio paged to the nursing staff in the alarmed unit.

1.4.5.2 Infant Exit Control

a. In order to deter the abduction of infants, exit doors from each secured nursing unit shall be controlled in the event a tagged infant moves in the proximity of the door. When a tagged infant enters a Low Frequency (LF) reader wakeup field in front of the exit door, the infant tag shall be forced to transmit its ID code and the exit warning ID within 0.5 seconds. The Infant Protection Alarm Subsystem shall then report an Infant Near Exit alarm on the Infant Protection Workstation in the area, transmit the alarm to the Section 16755 RADIO PAGE SYSTEM for paging of security and nursing staff, and transmit the alarm to the system database and Operator Workstations. The Infant Protection Alarm Subsystem shall also latch one of the local relays (EXB) which commands the electromagnetic locks on the doors to lock. The relay shall be activated for a period up to 30 seconds, in order to provide nurses time to respond. The other local relay (EXB), shall be closed which activates a dome light/buzzer at the door. The light/buzzer shall remain activated until the nurses acknowledge the alarm. The electromagnetic door locks shall have an interface to the existing facility Fire Protection System to unlock the doors in the event of a fire.

b. A Remote Display Unit (RDU) and an associated card reader shall be located near the secure side of each designated exit door listed below to allow authorized staff to quickly suspend an infant tag, so that an infant can be taken out of the secured nursing unit without generating an exit alarm. When the infant is returned to the secured nursing unit, the RDU and card reader shall allow the authorized staff to reactivate the infant tag. The RDU shall be inoperative until activated by the associated card reader when the card reader senses a prox card from a staff member that is authorized to to take the infant out of the secured nursing unit. The RDU shall remain active for a programmed short period of time to allow the transaction to occur, and then the RDU shall automatically become inactive.

(1) L&D Unit Exit Doors to be equipped with an RDU and associated card reader: 212-01B and 212-26.

(2) Inpatient Services Unit to be equipped with an RDU and associated card reader: 216-22, 216-23, 217-28A.

1.4.5.3 Infant TAG Tamper Alarms

In order to deter the abduction of infants, the tags must remain on the infants at all times. If the tag is ever removed from a infant, a Tamper Alarm shall be reported which alerts the staff to find and secure the infant. For tamper alarms to be reliable, RF readers shall adequately cover all areas of the secured nursing units to ensure that the tamper alarm signals from the infant tag are detected. If a infant tag is removed and the tamper alarm signal is not reported, then a infant could be removed from the unit without alarms and door lockdown.

1.4.5.4 Operator Interface

The Infant Protection Alarm Subsystem, through integration to the system, shall support up to 10 Operator Workstations that can be used concurrently to access the system data to configure the system. The operator workstations shall enable the real-time display of any alarms on graphical floor plans. The graphical display shall provide the ability to select the following views: (a) all tags in the system, or (b) a specific tag.

The system operator interface shall enable tags to be easily added or

deleted from the system, by either using a button press to identify the tag ID code, or by typing in the tag ID code.

1.4.5.5 Alarm Management

The Infant Protection Alarm Subsystem shall support several different types of alarms for the tags, including:

a. Tamper Alarm

A strap attaching a baby tag has been tampered or disconnected. The tag's name, description and location are displayed in the alarm line.

b. Near Exit Alarm

A tag has moved into the proximity of an exit door that is monitored with an LF reader. The tag name, description and new location are displayed in the alarm line.

c. Battery Alarm

The battery of a tag is low and should be replaced. The tag name, description and its location are displayed in the alarm line.

d. Failed Communications Alarm

The network is not working or the data base server has been shut down. No tag location or alarm condition can be performed while this alarm is active.

e. Lost Alarm

The tag cannot be detected by any reader in the system. The tag name, description and its last-known location are displayed in the alarm line.

1.4.5.6 Reporting

Comprehensive reporting capabilities shall be provided with Standard Reports, which are easily configured using fill in the blank forms (e.g. Alarm / Event Query - list alarms and events using search filters). At a minimum, the following are system-specific reports that shall be able to be generated:

Reports which details all of the operational details, such as: Tag Activation, Tag Strap Attachment, Tag Strap Removal, and Discharges.

1.4.6 CCTV Surveillance Subsystem Performance Requirements

1.4.6.1 General

a. The CCTV Surveillance Subsystem shall be a fully integrated capability on the system.

b. The CCTV Surveillance Subsystem shall perform functions for capturing, viewing, controlling, monitoring, and recording of video surveillance scenes throughout the facility and site.

c. 24x7 operation for monitoring and control functions of the CCTV Surveillance Subsystem shall take place at any System Operator Workstation.

d. The Operator Workstation installed in the Emergency Service Reception Room 103-03 shall also be used for constant 24x7 monitoring and control of the video images from video cameras located within the Emergency Service area, Ambulance Garage, and adjacent indoor and outdoor circulation paths.

e. All alarms routed over the system LAN from the ACA Subsystem shall be received and processed for automatic initiation of special monitoring and recording protocols for the alarm point and a designated zone associated with the alarm point.

f. All images from all video cameras shall be digitally recorded on video camera servers at all times. As many video camera servers shall be provided as are required for recording of all images from all video cameras. Recording parameters shall be as specified and verified by the System Contractor.

g. The CCTV Surveillance Subsystem shall be sized to accommodate the initial installed quantity of video cameras plus the capacity to support the addition of at least 25% more video cameras.

1.4.6.2 Digital Video Server

a. The Digital Video Server shall function as the database for all video cameras and shall contain a database of all video cameras and their configuration.

b. The Digital video Server shall:

(1) Manage the system database, containing details including:

System configuration
Camera configuration and settings
Recording configuration and settings
Configuration of Quad Views and Sequences
Details of recordings
Schedules
Operator security details
Configuration of Surveillance and Alarm Monitors
Configuration of Video Motion Detection
Protocols for displays associated with specific alarm events

(2) Manage communication between the Operator Workstations and the Camera Servers.

(3) Allow alarms/events anywhere in the system to initiate recording protocols.

(4) Report any camera failures or recording failures to the Maintenance Workstation.

(5) Provide a full audit log of all system status and operator actions.

c. The CCTV Surveillance Subsystem shall run a pair of similarly configured Digital Video Database Servers in a hot backup configuration where at any point in time, one is the acting Primary and the other is acting as the Hot Backup. An on-line database duplication mechanism shall be supported.

d. Simply having each Database Server scan each Camera Server, or

requiring the Camera Servers to send all updates to both Database Servers is not acceptable.

1.4.6.3 Camera Servers

a. The Camera Server(s) shall be capable of supporting a large amount of disk space for online video storage and access to high capacity archiving mechanisms for the removal of stored video to off-line media.

b. The Camera Server shall:

Manage live video from camera streamers.

Transmit live video to Operator Workstations.

Receive camera control commands from Operator Workstations and then send the commands to cameras.

Store live video to hard disk from all video cameras at all times.

Transmit previously stored video to Operator Workstations.

Archive previously stored video to off-line storage media.

Retrieve archived video from off-line storage media.

Provide video motion detection.

Export the recordings into MPEG format so that it can be viewed using standard tools including Microsoft's Video Player.

c. The Camera Servers shall rely on the Database Server for all camera database information.

d. The system shall support multiple Camera Servers, with no limit to the number of Camera Servers used.

e. Camera Servers shall be sized to accommodate the requirements of the video cameras and desired recording frame rates.

(1) Recording frame rates shall nominally be 2 to 5 frames/second with no active events or motion, and at least 15 frames/second during an active event or motion period. Default frame rate settings shall be defined as part of the systems application design, and submitted with the design analysis data.

1.4.6.4 FSS Relationship

In relation to the CCTV Surveillance Subsystem, the FSS shall:

Limit and grant operators access to live and recorded video images

Send requests to record video

Provide indication of any cameras or recordings which have failed

1.4.6.5 Operator Workstations

a. Operator view shall be provided using one or more Operator

Workstations. These are connected via a TCP/IP network to the FSS. They are capable of viewing live video and recorded video from the Camera Servers. They also provide levels of operator security.

b. Operators shall be able to select and control Pan-Tilt-Zoom (PTZ) cameras. This control shall be via the Operator Interface or via the numeric keypad. That is, it shall be possible for an operator to pan, tilt or zoom or control the iris for a particular camera by depressing and releasing keys on this keypad, using the mouse, or using a joy stick. In addition, it shall be possible to capture live CCTV and place it in the Windows clipboard.

1.4.6.6 Live Video

The live output from cameras shall be viewed through a series of displays. These shall support:

Single camera view
Quad view of up to four cameras
Sequence view of camera preset positions
Modifying settings for a camera
Modify recording settings for a camera
Adding and deleting cameras
Creating schedules for recordings and video motion detection
Modifying Video Motion Detection settings and tuning

Users shall be able to select a camera from a tree control listing the cameras available to the user.

The system shall also support multiple monitors in the following way:

Alarm monitor: When an alarm occurs in the ACA Subsystem or Infant Protection Alarm Subsystem, the live video output of the camera associated with that alarm shall be switched directly to an alarm monitor.

Surveillance monitor: Operators shall be able to send any Quad View, Sequence View or Single Camera View to a surveillance monitor.

In both these cases, these additional monitors shall be either connected to an Operator Workstation using a multi-monitor PC card or to other PCs.

a. Single Camera

From this display, the user shall be able to:

View the live output from the selected camera.

Pan, tilt, zoom and focus the camera using a joystick attached to the Operator Workstation PC.

Pan, tilt, zoom and focus the camera using a pointing device attached to the Operator Workstation PC. Standard Windows 2000 pointing devices such as a mouse or touch-screen shall be supported.

For cameras which support continuous pan, tilt, zoom (PTZ), a mouse shall be able to be used for continuous PTZ directly in the live video window. By dragging the mouse up or down, left or right in the video window, the operator shall be able to tilt the camera up or down, or pan the camera left or right. Zooming shall also be provided using the mouse in a similar

way.

Manually store the current frame of video (snapshot) as a bitmap image file. The file name shall be automatically generated by the software and include the camera name, date and time of the recording (to millisecond precision).

Indicate whether video motion detection is currently enabled for the selected camera.

b. Quad View

The CCTV Surveillance Subsystem shall support quad views. A quad view consists of up to four related cameras viewed simultaneously on a single display.

The quad view shall be divided into four quadrants. For each quadrant the quad view shall have a camera or be blank. Within each quadrant the quad view shall be configured to cycle between any of the cameras accessible to the user on a configurable time basis.

There shall be no limit to the number of cameras that can be assigned to a single Quad View. There shall also be no limit to the number of available Quad Views.

c. Sequence View

The CCTV Surveillance Subsystem shall support sequence views. A sequence view consists of a single camera view, which can be cycled on a time basis. PTZ equipped cameras, which support preset positions, can have these presets cycled on a time basis. In this way an operator can view a variety of presets on a series of PTZ cameras. Fixed cameras can also be included in the sequence and cycled accordingly.

There shall be no limit to the number of cameras that can be assigned to a single Sequence View. There shall also be no limit to the number of available Sequence Views.

d. Camera settings

Users shall be able to change important settings for an individual camera. The details are grouped into several sections:

Camera Details
Camera Connection
Camera PTZ Control
Security
Camera Deletion

Only users with the highest level of security are permitted to modify camera connection details, camera PTZ control or delete cameras.

(1) Camera Details

The user shall be able to configure the following parameters for each camera:

Name
Location

Description
Camera Number (for fast numeric keypad call-up)

(2) Camera Connection

The user shall be able to configure the following parameters for each camera:

Camera Streamer Type

Resolution: The available resolutions shall be 704x480 pixels, 352x240 pixels and 176x112 pixels (depending on the functionality of the camera and camera streamer).

Video Quality: The supported frame rates (in frames per second) shall be 30, 25, 20, 15, 10, 5, 3, 2 and 1. Slower frame rates of 1 frame every 2, 3, 5, or 10 seconds shall also be available.

Streamer IP Address

Streamer Camera Number (when connected to a multiple port Camera Streamer)

Choice of frame rate or bandwidth limited streaming

Unicast or multicast transmission of video

PAL or NTSC camera format

Choice of five levels of video compression

(3) Camera Control

The user shall be able to configure any appropriate camera to be PTZ controllable. The following camera types shall be supported as a minimum:

Video Controls Limited (VCL) Orbiter cameras.
Ademco Video RapidDome cameras
Cameras supporting the Pelco P protocol
American-Dynamics Speed Dome
Hernis Scan System's Cameras
Axis Streamer supported PTZ cameras and devices

The following PTZ characteristics shall be tunable on a camera-by-camera basis from the camera definition pages:

Pan speed
Tilt Speed
Zoom speed
Focus speed
Iris speed
Increment step size

For the VCL Orbiter and Ademco Rapid Dome camera ranges, the following additional functionality shall be provided:

Configuration of Privacy Zones. The CCTV Surveillance Subsystem software shall allow the user to select the regions for privacy zones and automatically download the configuration to the camera.

Configuration of Camera Tours. The CCTV Surveillance Subsystem software shall allow the user to fully configure all required camera tours, automatically downloading the configuration to the camera. The user shall be able to select the required camera tour in a similar way as presets are selected. A camera tour may be configured to be a "home" camera tour, similar to a home preset.

For the Pelco "P" and Hernis cameras, ability to control the washer and wiper shall be provided from within the CCTV Surveillance Subsystem software.

(4) Security

The following parameters shall be configurable for each camera:

Area: Allows the system to be configured to only allow users to view specified cameras. These areas shall be the defined by the FSS.

Control Level: Determines if a user is allowed to operate the PTZ controls for a camera. Also used to allow higher-level users to take control of cameras. These Control Levels shall be defined by the FSS.

Control Reservation Period: Once a particular user has controlled the camera no other user can control the camera until this reservation period has expired. If this user controls the camera again within the period, the reservation period is reset. Users with higher security permissions shall be able to take control of the camera at any time.

(5) Camera Deletion

The "Delete" function shall allow a user with the highest-level security to delete the camera from the system. Deleting a camera shall delete all the records relating to the camera from the database. The name of the camera shall no longer appear in the list of cameras. All camera settings shall be deleted.

The user shall also be asked if they also wish to delete video clips captured for the camera. If the video clips are not deleted they shall stay on the Camera Server and archive media unless they are later individually deleted. The camera name shall also continue to appear in the list of cameras used for searching the video clip database.

If the user chooses to delete video clips captured for the deleted camera, all video clips related to the deleted camera shall be deleted. The camera name shall be removed from the list of cameras used for searching the video clip database.

1.4.6.7 Recording

For the initial installation, the CCTV Surveillance Subsystem shall be programmed and equipped for a default setting to record all live video at all times. However, the recording capability defined below shall be provided to accommodate any changes in the recording application program.

The following methods of recording live video shall be supported:

User activated
Event activated

Scheduled
Video motion detection
Snapshot

a. User Activated

The user shall be able to configure the following parameters for each camera:

(1) Pre-Record Duration: The amount of pre-recorded video that shall be associated with a user request for recorded video. This shall allow the Camera Server to capture video prior to the user request, as well as after the request. Shall be selectable from a list of values ranging between 0 seconds and 5 minutes.

(2) Frame Rate: Video quality required for user activated recording. It shall be possible to have different frame rates for user and event-activated recordings. Shall be selectable from the entire range of frame rates supported for the camera.

(3) Record Duration: User activated recordings shall terminate after this period. Shall be selectable from a list of values ranging between 0 seconds and 5 minutes.

(4) Retention Period: The default period that the Camera Server shall retain user-activated recordings before being deleted. The retention period of individual recordings shall be able to be changed on a per-recording basis. Shall be selectable from a list of values ranging between one hour and forever.

b. Event Activated

There shall be at least four priorities of alarms/events in the FSS:

Event (journal priority)
Low priority alarms
High priority alarms
Urgent priority alarms

The following settings shall be individually configurable for each alarm and each camera:

(1) Pre-Record Duration: The amount of pre-recorded video that shall be associated with an alarm/event. This shall allow the Camera Server to capture video prior to the alarm/event, as well as after the alarm/event. Shall be selectable from a list of values ranging between 0 seconds and 5 minutes.

(2) Post Record Duration: Event activated recordings shall terminate after this period. Shall be selectable from a list of values ranging between 0 seconds and 5 minutes.

(3) Frame Rate. Video quality required for event activated recording. It shall be possible to have different frame rates for user and event-activated recordings. Shall be selectable from the entire range of frame rates supported for the camera/streamer.

(4) Retention period. The default period the Camera Server shall retain event-activated recordings before being deleted. The retention period of

individual recordings shall be able to be changed as necessary. Shall be selectable from a list of values ranging between one hour and forever.

The pre-record and post-record durations in the paragraph above define the maximum allowable limits for each camera. They shall be configured on a camera-by-camera basis. However each alarm or event causing video to be recorded shall also be capable of individual configuration with pre and post alarm periods being selected from a range defined by the maximum settings for the camera.

CCTV Surveillance Subsystem requiring a single pre and post record event period to be defined for all alarms and events on an individual camera are not acceptable.

In the case of multiple alarms/events relating to the same camera, a video clip shall be created for each alarm/event.

For cameras that support PTZ Presets, a specified preset location shall be selected automatically when the alarm/event occurs prior to the event activated recording commencing. For example, when an alarm is detected on a security door, the alarm shall trigger a PTZ camera to move to a preset position, which is pointing at the door prior to the CCTV Surveillance Subsystem commencing recording.

c. Scheduled

The CCTV Surveillance Subsystem shall support the ability to schedule recordings for each individual camera for times in the future. For each scheduled recording the user shall be able to configure:

Start time
Stop time
Frame rate for the recording
Retention period before the recording shall be deleted
Recurrence (if this is to be a recurring schedule)
Description (at least 255 characters)

There shall be no limit on the number of schedules that can be entered for the system. There shall be no limit to the number of schedules per camera.

d. Motion Detection

The CCTV Surveillance Subsystem shall be able to activate recordings automatically when motion is detected on any cameras that have video motion detection enabled. The enabling of video motion detection shall be either:

On a continuous basis
Scheduled for particular times, dates, days, months etc

The CCTV Surveillance Subsystem shall be able to support video motion detection algorithms, which can be executed by the a video streamer or the Camera Server. The Camera Server-based algorithm shall be able to provide the following functionality:

Detect and track objects
Learn the scene
Adapt to a changing outdoor environment
Ignore environmental changes including rain, hail, wind, swaying trees and gradual light changes

The user shall be able to configure the following parameters for each camera:

Detection Type: Continuous or scheduled

Actions to Perform When Motion is Detected: When motion is detected, the following actions shall be performed automatically:

Generate an alarm in the Security System of configurable priority (journal, low, medium, high)

Start a recording, with the following configurable settings:

(1) Pre-Record Duration: The amount of pre-recorded video, allowing the Camera Server to capture video prior to the detection of motion, as well as after the detection of motion. Shall be selectable from a list of values ranging between 0 seconds and 5 minutes.

(2) Post Record Duration: Motion detection activated recordings shall terminate after this period. Shall be selectable from a list of values ranging between 0 seconds and 5 minutes or until motion has stopped.

(3) Frame Rate. Video quality required for motion detection activated recordings. Shall be selectable from the entire range of frame rates supported for the camera/streamer.

(4) Retention period. The default period that motion detection activated recordings shall be retained by the Camera Server before being deleted. The retention period of individual recordings shall be able to be changed as necessary. Shall be selectable from a list of values ranging between one hour and forever.

Send video to an operator workstation or alarm monitor: Automatically switch an operator workstation or alarm monitor to view the camera which has motion detected.

Motion Finished Time: The amount of time where no motion (inactivity) is detected before the previous motion is classified as completed. This shall be used for allowing recordings to continue until motion has finished.

The CCTV Surveillance Subsystem shall provide a means of automatic and manual tuning of the Video Motion Detection for each camera. Incorporated within this tuning are the following:

Selection of the frame rate used for detection
Optimization for directions of movement
- In any direction
- Across the camera view
- Towards and away from the camera

Sensitivity level to fine tune the motion detection algorithm

The CCTV Surveillance Subsystem shall also provide the ability to only detect motion in particular regions of the camera view. The ability to graphically select these regions using the mouse shall be provided, with at least eight (8) regions permitted per camera. Each region shall be able to be individually tuned and have separate tuning parameters.

This method of tuning shall also provide a live tuning window whereby these

settings and regions can be altered and tested prior to be being used. This live tuning window shall show the live video as well as the regions of interest. During the time that motion is detected within a region, the border of the region shall change to a different color. In this way, tuning can be performed to achieve the desired performance. Text shall also be provided in the window to alert the user that motion has been detected.

e. Snapshot

The CCTV Surveillance Subsystem shall provide every operator with the ability to record the current frame of video. This snapshot of video shall be stored as a bitmap file. The file name shall be automatically generated by the CCTV Surveillance Subsystem software and include the camera name, date and time of the recording (to millisecond precision). An audible sound shall be produced by the Client computer, to ensure that the operator has feedback when the snapshot is taken.

f. Recorded Video

The CCTV Surveillance Subsystem shall allow camera output to be recorded for the following conditions:

Activated by an alarm or event
Manually activated by a user viewing a live camera
Scheduled recording
Video Motion Detection

Event activated recording is a process that allows a segment of video or a snapshot to be associated with a Security System alarm or event.

User activated recording occurs when a user viewing live video chooses to record the currently viewed camera output by selecting the "Record" button.

Scheduled recording allows video to be recorded between start and stop times on defined days.

Video Motion Detection activated recording is a process that allows a segment of video or a snapshot to be recorded when motion is detected by the CCTV Surveillance Subsystem.

Recorded video is stored on the Camera Server. The Operator Workstation shall be able to query the Database Server to locate relevant recorded video and to then replay that video at the Operator Workstation.

(1) Search

The CCTV Surveillance Subsystem shall provide a simple search for all video recorded. The user selects the time indicator which shows a calendar and time line. The user selects the required search period.

Once the time criterion is entered, the "search" is selected. Video recorded during the selected period shall be returned by the search.

The user shall be able to search on combinations of cameras by clicking on an "Advanced Search" icon as described in the next section.

(2) Advanced Search

The CCTV Surveillance Subsystem shall provide an advanced search of

recorded video. The search shall be based on recording time, camera and recording details.

The user shall select from the list of cameras. It shall also include any cameras that have been deleted from the system but still have video stored on a Camera Server or on archived media. If a camera has been deleted and all video associated with the camera has been deleted, the camera name shall not appear in this list.

The time criterion shall be selected from a calendar and time line control. Days containing recorded video shall be shown in bold on the calendar control. Cameras shall be able to be added and removed from the search list.

The user shall be able to choose to filter the search based on the following criteria:

Alarm or event type for alarm/event activated recordings
Recording type (schedule, event, operator, video motion detection, all)
Area
Point name
Event description
Operator name
Camera name or number

Wildcards shall be accepted for the Point ID, description, area, priority and value for alarm/event activated recordings.

(3) Search Results

The CCTV Surveillance Subsystem shall show the results of the basic and advanced searches in a table format, such that the user is able to select columns within the list to sort the output.

Functionality shall be provided to allow the user to see a list of recordings for a camera from the past 24 hours without needing to use one of the searches.

1.4.6.8 Viewing Recordings

a. The recorded video shall be available to all users, which have adequate security. Each user shall only be able to view recordings from cameras they have security access to view.

b. A display shall be provided to view recordings from any Operator Workstation. From this display, the operator can select the recording he/she wishes to view, which shall be immediately shown in an embedded video player.

c. The following information and controls shall be provided on this display:

(1) A navigation panel to allow the user to select the required camera

(2) A calendar control (similar to Microsoft Outlook) to select the desired date. All days which have recordings for the chosen camera shall be displayed in bold font.

(3) A table listing all the recordings on the chosen camera for the chosen day. The user shall be able to select the required recording from

this table. Each column shall be able to be sorted by selecting the column heading. This table shall display the following information as a minimum:

The time each recording was activated.

The duration of each recording.
The type of recording (operator activated, alarm/event activated, video motion detected, or scheduled).

The Operator or user that activated the recording (for operator activated recordings).

The Name, Description and Value of the Security System Server or Control System Server which activated the recording (for alarm/event activated recordings).

(4) An embedded video player with controls (buttons) similar to a VCR. The information displayed on the video player and the controls provided shall include:

The time and date of the frame being displayed.

A slider control which is used to move backwards and forwards through the recording.

Play, pause and stop buttons.

Step forward and step backward buttons, to move through the recording frame by frame.

Fast forward and rewind buttons, to play the recording at speeds of x2, x4, x8, x16, etc (to a minimum of x1024).

A snapshot button, to allow for the frame being displayed to be stored as a bitmap file (in a similar way to the snapshot button for live video).

Information about the chosen recording. The following information as a minimum shall be displayed with the chosen recording:

The type of recording (operator activated, alarm/event activated, video motion detection or scheduled).

The Operator or user that activated the recording (for operator activated recordings).

The Name, Description and Value of the Security System which activated the recording (for alarm/event activated recordings).

The sub-priority of the recording (for alarm/event activated recordings).

The frame rate that the recording was recorded at.

The resolution of the recording.

The compression used.

The recording start time and date (including pre-record).

The recording end time and date.

The date and time that the recording shall be deleted by default (which can be changed as required).

Operator comments and notes about the recording (made by the scheduled recording configuration automatically or by an operator).

When a recording is displayed, the exact frame of video when the recording was activated shall be shown. The slider shall be positioned accordingly along with the frame time. It is not appropriate to show the first frame in the recording, as the recording may have pre-record.

Buttons to allow the operator to archive, delete or export the chosen recording

1.4.6.9 System and User Audit Trail

It is a requirement that all user actions on the CCTV Surveillance Subsystem Operator Workstation be recorded in a log file along with the FSS's actions. User actions include:

Interventions such as manual recording and configuration setting changes
Cameras viewed
Video replayed
Video exported
Cameras pan/tilt/zoomed and preset switching

This log shall also contain a history of the status of the CCTV Surveillance Subsystem components. It shall list the status of all cameras, streamers, servers and other system components including when they were disabled or failed.

The log of user and system actions shall be available in text format and automatically included with any video recordings that are exported.

1.4.6.10 Digitally Signed Recordings and Audit Logs

It is a requirement for all exported recordings and exported audit logs to be digitally signed. This is required to prove authentication (origin of the recording and audit log) and integrity (exported recording and audit log have not been altered or tampered with).

The CCTV Surveillance Subsystem shall provide a default digital certificate for signing the exported recordings and audit logs. Customization shall also be provided to allow for the user to supply his/her own digital certificate.

A utility shall be provided to display the exported recording, view the audit log and verify the digital signatures. A visual indication shall be provided to whether the exported recording and audit log have been altered or tampered with.

Watermarking of recordings is not an acceptable method to prove authentication and integrity as it alters the recording and audit log.

1.4.6.11 Storage

a. Online Storage

The system shall hold a configurable amount of video in online storage. The amount of video stored on-line shall only be limited by the disk capacity of the Camera Servers. The initial capacity shall allow the on-line recording of the live video from all cameras in the system for at least a 30 day period.

For each Camera Server a limit on available storage space for on-line video shall be configurable.

The system shall support RAID 0+1, 1, 3 or 5 for video recordings (clips).

b. Off-Line Storage

Camera Servers shall provide a DVD read-write off-line media device for archiving and restoring video. Camera Server shall use a standard archiving method such as Microsoft Remote Storage Services to handle offline media. Off line storage shall be provided to archive at least one year of live recordings.

If a user attempts to replay video stored in off-line media then the Camera Server shall automatically restore and play the video, or prompt the user to the make the media containing the video available.

1.4.6.12 Operator Workstation

a. Video Integration User Tasks

(1) The following system tasks shall be performed from the Operator Workstation:

View live video
Adjust the PTZ position of a camera
Live video is automatically displayed on a monitor when an event occurs
Search through the stored video clips of a camera
An operator records an incident
An operator records a snapshot of the current viewed video
Add a new camera to the system
Change the configuration settings for a camera
Provide alarm/event activated recording from the integrated Security System
Search for video clips from different cameras
Create a sequence (camera tour)
Conduct a sequence (camera tour)
Create a quad view
View a quad view
View live video from a custom schematic
Add live video to a custom schematic
Configure, schedule and tune video motion detection
View the audit log

(2) The following tasks shall also be performed from the Operator Workstation:

View the organization's Intranet from within the Operator Workstation window.

b. Security Integration User Tasks

It shall be possible to perform the following tasks in the FSS from the CCTV Surveillance Subsystem Operator Workstation:

Acknowledge an alarm
Reset an acknowledged alarm
Control a security or control system point
Run a report containing security information
Run a report containing process control information
Respond to a security alarm
View security and control system information on a process control schematic
Configure a security report
Configure a point control schedule
Change an access level and download it to all affected access controllers
View Access Controller details

All alarms and events from the CCTV Surveillance Subsystem and all other FSS Subsystems shall appear and be able to be managed from the same display on the Operator Workstation.

The system shall support the display of live video within custom display screens of the FSS. The CCTV Surveillance Subsystem shall support the simultaneous display of dynamic data from the FSS and live video.

The system shall support the display of dynamic Intranet information on CCTV Surveillance Subsystem displays.

1.4.7 Detail Drawings

The Contractor shall submit to-scale Detail Drawings as specified in the Submittals paragraph including:

a. System block diagram, network diagrams including all servers and interfaces, riser diagrams, wiring and schematic diagrams, cable run sheets including number of conductors and wire number (ID), custom assembly details, and installation details.

b. Cable riser diagrams shall indicate all network cables and all subsystem cables.

c. Riser diagrams shall indicate the identification number (ID) for all equipment components as shown on the Telecommunications Drawings.

d. Installation details shall indicate layout and mounting of equipment, equipment relationship to other parts of the work, including clearances required for maintenance and operation, and plan and elevation details that indicate the exact and totally coordinated physical location and size of each individual item of equipment.

e. Installation details for equipment and cabling that is surface mounted on the back panel of GFGI modular furniture shall include the make and model of the surface mounted boxes and wireways, and details for any mounting hardware.

f. Details for the custom assembly of equipment shall indicate the

assembly configuration, elevations and dimensions. Typical custom assembly details include equipment panels, and equipment mounted in a rack or cabinet.

g. Legend of graphic symbols used on all drawings.

h. Details shall indicate anchoring and bracing provided for seismic protection in accordance with the requirements of the Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

a. The Security System Contractor and Installer shall each have the minimum qualifications specified, related to the type of system specified for this project.

b. The Government reserves the right to accept or reject the System Contractor or Installer based upon qualifications and ability to conform to specified requirements of this Section. System Contractors and Installers that do not have the specified qualifications shall not be acceptable and shall not be allowed to perform the work of this Section.

c. The Government shall determine the acceptability of any proposed System Contractor and Installer based on submitted and verified documentation that substantiates that the proposed System Contractor and Installer have the qualifications specified in this Section.

d. No Contractor shall procure or install the system cabling or equipment unless said Contractor is separately and distinctly qualified as the System Contractor and or Installer in accordance with the qualifications specified in this Section.

e. The System Contractor shall submit documented verification of the specified qualifications as part of the Data qualifications submittal. The Government shall have the right to request, inspect and verify references and resumes of all technical and managerial personnel assigned to the project. Qualification documentation shall include, but not be limited to the information outlined below.

(1) A list of projects performed by the System Contractor and Installer during the last five years explicitly involving the type of system specified in this Section. The list shall include the name of the facility where the work was done, and the name, title, address and telephone number of a point of contact for the listed facility that can verify the work done. Lists shall be restricted to the facilities where the type of system delivered and installed are similar to and serve the same purpose as the system specified in this Section. Lists shall explicitly identify the make and model of the systems provided, and the total scope of work done for each and every facility on the list.

(2) An organization chart for the System Contractor and Installer project team that shall perform the work of this Section.

(3) List and resumes of the principal personnel that will be assigned to work on this project and their assigned work responsibility and

relationship with the project management structure. This shall include the following personnel:

System Project Manager
System Application Designer
CAD Staff (that will prepare submittal drawings)
Installation Technical and Supervisory Personnel
Acceptance Testing Personnel
Training Personnel

For each individual, this shall include his or her education and experience explicitly relevant to their work assignment on this project, and also include the certificate for factory training where this qualification is specified. Experiences with other types of systems unrelated to the type of system specified in this Section are irrelevant and shall not be included.

(4) Define the work and services that will be performed at locations other than on the project site, and furnish the address and telephone number of the locations where such off-site work is to be done. This shall include, but not be limited to, the locations for the following work and services: project management; system application design and documentation; testing and training plans; repair and maintenance services; repair and maintenance supplies warehouse.

(5) Telephone number that shall be answered by staff 24 hours per day, 365 days per year, to obtain repair parts and maintenance service.

(6) A letter from Honeywell stating that system being provided satisfies all functional and product requirements specified in this Section.

(7) A letter from the Honeywell guaranteeing the availability of parts as specified.

1.5.1.2 System Contractor Qualifications

a. The System Contractor shall be Honeywell.

b. System Contractor personnel assigned to this project shall be factory trained or certified for the make and model of systems provided by Honeywell to satisfy the specifications in this Section and shall have a minimum of five years experience performing the services that they will perform for this project.

c. The System Contractor shall maintain a full complement of repair parts for the provided system and shall be able to furnish on-call maintenance service 24 hours per day, 365 days per year as specified herein.

1.5.1.3 Installer Qualifications

a. The Installer shall be regularly engaged in the business of installation of the type of system specified in this Section.

b. The installation supervisor that will be assigned to this project shall be factory trained or certified for the make and model of system provided by the System Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience in the installation of the specified types of system equipment and cables.

c. Installer personnel that will be assigned to this project shall have a minimum of three years experience in the installation of the types of system equipment and cable specified in this Section.

1.5.2 Regulatory Requirements

1.5.2.1 Design and Installation Work

All design and installation work shall comply with NFPA 70 NEC, NFPA 99, and EIA ANSI/TIA/EIA-569-A.

1.5.2.2 Electromagnetic Interference (EMI)

a. Installed system shall conform to the EMI standards specified in 47 CFR 15 rules and regulations, for EMI caused by computing devices.

b. Within the normal BACH environment, the installed system shall not generate nor be susceptible to any harmful electromagnetic emission, radiation, or induction that degrades, obstructs, or interrupts the operation of the installed system, and any computer system, life safety system, or patient monitoring system in the facility.

c. In the event that any part of the system is subject to CFR technical standards different from those set forth herein, including without limitation the requirement that those computing devices marketed for use in business or industrial environments are certified by the FCC to comply with the Class B limit of the FCC Rules, such CFR standards shall apply in lieu of those set forth herein.

d. In the event that, at the time of system acceptance testing, the applicable CFR technical standards shall differ from those set forth above, the system as installed shall conform to such then applicable CFR technical standards.

e. In the event of a breach of the representations and warranties contained herein, the System Contractor at their own expense shall take all measures necessary to put the offending system into compliance with the applicable CFR technical standards, or replace the offending system with an acceptable substitute.

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

All products delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, or other contaminants.

1.6.2 Delivery Coordination

Coordinate deliveries with the Contracting Officer to insure a timely installation.

1.6.3 Loss Liability

The System Contractor shall be liable for any loss due to delivery and storage problems.

1.6.4 Delivery Restrictions

a. No products or installation material shall be delivered to the job site more than one month prior to commencement of its installation.

b. System products shall not leave the factory prior to six months before the time that the facility is ready for installation of the products. Obtain prior written approval of the shipping date from the Contracting Officer.

1.6.5 Contractor Responsibility

The System Contractor shall be responsible for all handling and control of products provided under this contract.

1.7 SEQUENCING AND SCHEDULING

a. Each part of the system shall be installed and phased into operation as required by the project schedule.

b. Schedule and coordinate work with all other trades and suppliers whose work is critical to the successful installation of the system.

c. Furnish and install all required items for a complete and operating installation so as to cause no delay in work by Others, or completion of the project.

d. Final inspection and acceptance testing of each system shall be performed after the system installation has been completed and all pre-testing checks and commissioning has been successfully completed.

1.8 WARRANTY

a. Warranty shall be in accordance with Section HSPECIAL ITEMS and CLOSEOUT SUBMITTALS.

b. Warranty the operational and physical integrity of the provided system, including a warranty against all defects in design, equipment, materials, software, workmanship, and improper installation and adjustments, for a period of at least one year from the date that the fully operational system is accepted by the Government after satisfactory completion of final inspection and acceptance tests. This warranty shall not cover any malfunctions or damage caused by misuse, abuse or neglect. If the System Contractor or Manufacturer warranty is for a period longer than one year, the longest warranty period shall govern. The System Contractor shall furnish a warranty document with the Data submittal.

c. During the warranty period any maintenance, adjustments or repairs shall be made in accordance with the Warranty Maintenance specifications herein. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The System Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the System Contractor or Manufacturer, and can be express delivered to BACH if not available locally.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be express shipped for delivery within two (2) days after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be express shipped for delivery within three (3) to five (5) days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

The System Contractor shall keep an adequate quantity of installation spare parts onsite to preclude work stoppages and to meet other contingencies that might arise prior to the final inspection and acceptance of the system.

1.9.1.3 Post Acceptance Spare Parts

a. After the system has been acceptance tested and turned over to the Government for operation, furnish the minimum type and quantity of onsite spare parts as itemized below.

Quantity	Items
1	Proximity Card Reader
1	Proximity Card Reader/Keypad
1	Keypad
3	Door Position Switches
1	Electromagnetic Lock
1	RF Reader
1	LF Reader
1	Each type of Video Camera Head Assembly
2	Heater/Fan Assembly for outdoor cameras

b. Spare parts shall be maintained onsite by the System Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period.

c. The system contractor shall recommend any additional onsite spare parts deemed necessary by the Manufacturer and or the System Contractor. Furnish to the Contracting Officer the cost of recommended additional spare components as a separate line item.

1.9.1.4 Special Maintenance Tools, Equipment and Software

a. Special maintenance tools, equipment and software are defined as those items that are uniquely required, due to Manufacturer make or model of the provided products, to install, setup, initialize, program, and maintain any

component or function of the installed system. This does not include any standard or general tools, equipment or software that are normally found or used in an electronics or telecommunications systems maintenance shop.

b. Furnish one (1) set of any special maintenance tools, equipment and software.

c. Deliver all special maintenance tools, equipment and software to the Government upon successful completion of the final inspection and acceptance testing of the system.

1.9.2 Warranty Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

b. For the first level of response to a call for service, as authorized by BACH, the System Contractor can utilize BACH maintenance personnel that have been trained for the system being serviced in accordance with the requirement of Section H OPERATION & MAINTENANCE TRAINING.

c. The System Contractor shall provide an on-line diagnostic maintenance support capability as specified herein.

1.9.3 Warranty Maintenance Service Response Time

a. Maintenance service shall be provided on a 24 hour per day, 7 days per week basis for on-premises maintenance within 12 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

b. A 24-hour telephone answering service shall be available to receive after hour maintenance service calls and dispatch on-call service personnel within the required response time.

c. Repair of a major malfunction shall be accomplished within 24 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

(1) Complete failure of any Major Functional Component of the system, including:

FSS Integrator Network
ACA Subsystem
Infant Protection Alarm Subsystem
CCTV Surveillance Subsystem

(2) Failure of any one of the following major components:

Operator Workstations
Database Servers
ACU
LF Reader
RF Reader

d. Repair of minor malfunctions shall be completed within 72 hours of the reported failure. A minor malfunction is any failure that does not

constitute a major malfunction.

1.9.4 Post Warranty Maintenance Service

For maintenance service after the warranty period, the System Contractor shall offer a Service Agreement to BACH. Include a copy of the proposed Service Agreement with the Data submittal.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

a. If the provided system requires additional products that are not specified or indicated on the drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided.

b. Product specifications are minimal requirements. If the provided system and system application design require enhanced product specifications that exceed those specified herein in order to satisfy the configuration, capability, and performance requirements, then the product with the enhanced specifications shall be provided.

2.1.3 Product Modifications

Modification of products that nullifies the UL listing or other agency approval is not permitted.

2.1.4 Identical Products

Products of the same classification shall be identical. This requirement includes all component equipment, modules, assemblies, parts, and materials.

2.1.5 Nameplates and Equipment Markings

a. Each major equipment component shall have the Manufacturer's name, model, and serial number on a plate secured to the equipment. Also, all compliance with regulatory requirements, such as UL and CFR, shall be indicated on the nameplate or on adjacent labels.

b. All controls shall be plainly and permanently labeled with the identification of the function served. Stick on marker tapes is not acceptable.

c. Markings on any exposed surfaces shall not be destroyed by housekeeping solutions normally used in medical facilities.

2.1.6 Mounting Alignment Capability

Wall mounted components shall have an adjustable mounting alignment capability to compensate for improperly aligned backboxes and to insure a plumb, square, and level installation.

2.1.7 Model and Enhancements

a. The system and all product components shall be the Manufacturer's latest model, design, version, and quality in production at time of delivery and installation.

b. Any product hardware or software enhancement that becomes available after delivery and installation, and up to time of system acceptance, shall be brought to the attention of the Contracting Officer upon announcement by the Manufacturer and shall be made available to BACH. If such enhancements customarily are provided at no additional cost, the Government shall automatically be entitled to such enhancements. If such enhancements customarily are provided at additional cost, the Contracting Officer has the option to accept or reject such enhancements.

c. Submit a letter to the Contracting Officer from the Manufacturer guaranteeing that the Manufacturer shall inform the Government of, and make available to the Government, all commercially available enhancements to the system hardware or software at the then current price. Include the letter with the Data submittal.

d. Substitutions, modifications, or improvements to a system hardware and software are permissible provided that such substitution, modifications, or improvements shall not reduce or degrade the performance or product requirements, nor violate regulatory requirements. No such substitutions, modifications, or improvements shall be made without the written consent of the Manufacturer and Contracting Officer. Such consent shall not be unreasonably withheld or delayed.

2.1.8 Software and License

a. Provide all software required for the specified capability, configuration, performance, and operation of the system.

b. The Government shall be granted a nonexclusive, fully paid perpetual license to use software provided. The Government receives no title or ownership rights to such Software.

c. Software maintenance that is provided to any or all other customers without charge shall be provided to the Government.

2.1.9 Equipment Design for Outdoor Areas

All equipment installed in outdoor areas shall be designed and constructed to withstand and operate under the environmental conditions on the BACH site.

2.2 SERVERS

a. General

(1) Three (3) types of servers:

Database Servers
Digital Video Database Servers
Camera Servers

(2) Rack mounted units

(3) Each stand alone server shall include a server CPU, computer keyboard, mouse, video monitor, UPS, and software.

(4) Where multiple servers are installed in the same location, a KVM Switch with a single computer keyboard, video monitor, and mouse shall be used for all server CPUs.

(5) The CPU shall be specifically designed for server application.

(6) Server operating system, and application programs for each function served.

(7) Servers shall provide the capability and performance specified in this Section.

(8) All data communication across any interface shall be delayed no more then 250 ms.

(9) The CPU of all Servers shall include fault tolerance features including dual hard drives with 100% mirroring of programs and data with built-in fault diagnostics and failure alarm reporting.

(10) A failure of any one of the servers shall NOT cause the system to cease operation.

(11) For the failure of a Camera Server, all cameras which were managed by that Camera Server shall be able to be dynamically re-allocated to other Camera Servers. This shall only be done through the software, without requiring changes to cabling or the network.

b. Common characteristics for all types of servers.

Processor:	Multiprocessor Pentium IV, 2.4GHz
RAM:	1.5 GB DDR SDRAM
Hard Disk:	Dual 80 GB, 10,000 RPM
NIC:	100 Mbps, Ethernet compatible, TCP/IP protocol
Disk Controller:	Raid 0+1, 1, or 5
Removable Media:	32x CD Drive
Operating System:	Windows 2000 Server
Monitor:	381 mm (15 inch) trade size LCD

c. Database Servers

Database Software:	SQL Server 2000

d. Digital Video Servers

NIC:	Dual 1 Gbps

e. Video Camera Servers

Read/Write Media:	DVD Drive with 8X DVD+R, 4X DVD+RW, and 4X DVD-R

2.3 OPERATOR WORKSTATIONS

a. Common characteristics for all types of operator workstations

(1) CPU

Processor:	Pentium IV, 2.4GHz
RAM:	512 MB DDR SDRAM
Hard Disk:	80 GB
NIC:	100 Mbps
Operating System:	Windows 2000
Graphics Card:	Dual Display, 128MB RAM, AGP 8x interface, 32 bit color, supported graphics 640x480 VGA, 800x600 SVGA, 1024x768 XGA, 1280x1024 SXGA, 1600x1200 UXGA, and 2048x1536 QXGA, vertical refresh rates up to 85Hz, RGB analog and DVI digital video output

(2) Color Video Monitor

Screen Trade Size:	541 mm (21.3 inches)
Screen Viewable Size:	541 mm (21.3 inches)
Display Type:	LCD Flat Panel/TFT color active matrix
Video Input:	RGB Analog, DVI-I Digital
Image Max H-View Angle:	±170°
Image Max V-View Angle:	±170°
Analog Video Format:	Analog RGB
Image Brightness:	250 cd/m^2 white luminance
Image Contrast Ratio:	500:1
Max Sync Rate (VxH):	>75 Hz x 93 kHz
Resolution (Max):	Up to 1600 x 1200 pixels

b. All Operator Workstations shall each be equipped with two (2) Color Video Monitors.

c. The Maintenance Operator Workstation shall also be equipped with a 56K Modem for connection to the telephone system for the functions listed below.

(1) Under log on and password control features, the Honeywell can dial into the system and remotely perform troubleshooting routines throughout the system in order to identify the cause of a failure.

(2) Correct software problems.

(3) Download software upgrades from the system Manufacturer.

2.4 UPS

a. UPS shall be UL 1778 listed, and comply with the requirements of 47 CFR 15.

b. UPS Volt-Amp capacity shall be at least 130 percent of the total volt-amp load of the equipment connected to the UPS. Power requirement calculations shall be included with design data submittal to verify power requirements.

c. Upon an ac power line outage, the UPS shall automatically transfer to battery power within 4.2 milliseconds of sensing ac power line loss, and provide at least 30 minutes of full power for operation of the equipment connected to the UPS. On-battery output voltage shall be 115 VAC, +/- 5 percent.

d. The UPS shall use sealed, maintenance free type batteries that have an expected life of at least three years. The batteries shall always be powered from a constant voltage or "float type" battery charger. Recharge

time to 90 percent capacity after discharge to 50 percent capacity shall not exceed 10 hours.

e. Surge energy rating shall be at least 320 joules. Surge peak current capability shall be at least 26 ka.

f. UPS visual indicators on the UPS front panel shall indicate on-line operation, output overload, low battery, and replace battery.

2.5 LAN

a. The LAN shall be a dedicated network for the FSS. Use of the BACH HIS LAN is not acceptable.

b. LAN shall be provided for communication between the system elements. All interfaces to the LAN shall be a minimum of 100BaseTX Ethernet. The LAN may use additional technologies within the backbone for greater speed or distance. Acceptable types are:

FDDI
100BaseFX
1000BaseSX or 1000BaseLX Gigabit Ethernet
Asynchronous Transfer Mode (ATM)

c. LAN hardware and software shall be as required by the system Manufacturer and the system application design for the configuration, capability and performance specified in this Section.

d. The LAN shall be fault tolerant and include network administration with alarms that indicate any failures which would prevent the transmission of code calls, and radio paging data. The alarms shall be indicated on the failed LAN hardware and transmitted to the Maintenance Workstation.

e. The LAN shall use standard network cables. Acceptable cable types are:

Optical Fiber
Category 6 UTP

2.6 PHOTO BADGE MAKER

a. Laminated card printer/encoder, with capability to laminate both sides of the card.

b. Print smart cards with card encoding for both proximity and magnetic strip technologies.

c. 300 dpi resolution with edge to edge printing.

d. 4MB of memory.

e. Print and laminate a full color card in less then 40 seconds.

f. Produce up to 120 single-sided, laminated cards per hour.

g. Log-on security controls to restrict printing access to authorized staff only.

h. Reject card hopper.

2.7 PROXIMITY CARD READERS AND KEYPADS

a. Wall mount unit.

b. Two (2) types: Card Reader
Combination Card Reader and Keypad

c. Digital signal processing.

d. Read range of up to 200mm (8 inches)

e. HID compatible

f. 100 msec card read cycle.

g. Programmable audible tones and three color lamp to indicate access status.

2.8 PHOTO BADGE CARDS AND HOLDERS

a. Combination proximity smart card and magnetic strip card.

b. Sized, encoded, photo printed and laminated for BACH use.

c. Clear plastic card holder (same as existing at BACH)

2.9 REX DEVICES

a. Surface mount unit.

b. Passive infrared (PIR) motion sensor device.

c. Adjustable for both single and double door width.

d. Sensing pattern adjustable to provide optimum detection within 300 mm (12 inches) to 1829 mm (72 inches) of door. The pattern shall be submitted for coordination and approval by the Contracting Officer.

2.10 DOOR REMOTE UNLATCH SWITCHES

a. Flush wall mount tamperproof unit.

b. Two position key operated momentary contact switch. The two positions shall be labeled Enter and Closed. The enter position shall operate the lock on the door used for entry into the protected area. The closed position shall be an off position. The key shall be removable only when the switch is in the closed position.

c. Stainless steel cover plate. The cover plate shall be engraved to indicate the switch positions and the direction required to turn the key for the enter and exit positions.

d. Furnish 5 keys for each switch.

2.11 ELECTROMAGNETIC LOCK ASSEMBLIES

a. Electromagnetic locks shall contain no moving parts and shall depend solely upon electromagnetism to secure a door by generating at least 544 kg (1200 pounds) of holding force. The electromagnetic lock shall release

automatically in case of power failure and shall require manual reset to resume normal function. The lock shall interface with the local processors without external, internal or functional alteration of the local processor. The electromagnetic lock shall incorporate an end of line resistor to facilitate line supervision by the system.

b. Armature: The electromagnetic lock shall contain internal circuitry to eliminate residual magnetism and inductive kickback. The actuating armature shall operate on 24 Volts dc and shall not dissipate more than 12 Watts. The holding current shall be not greater than 500 milliamperes. The actuating armature shall take not more than 300 milliseconds to change the status of the lock from fully secure to fully open or fully open to fully secure.

c. Tamper Resistance: The electromagnetic lock mechanism shall be encased in hardened guard barriers to deter forced entry.

d. Power Supply: As required by the system application design.

e. Mounting Method: The door electromagnetic lock shall be suitable for use with existing single and double door with mortise or rim type hardware, and shall be compatible with right or left hand mounting. Provide any required mounting material.

2.12 ACU

a. Surface wall mount unit.

b. Plug-in input/output modular circuitry cards to process system data for ACA Subsystem field devices, including card readers, keypads, door position switches, overhead door/grill switches, REX devices, volumetric motion detectors and duress alarm switches.

c. Electronic supervision of all lines from field devices.

d. Tamper alarm.

e. Either internal battery backup or external UPS providing at least one hour of power backup.

f. Door lock. Furnish 5 keys.

2.13 DOOR POSITION SWITCHES

a. Magnetic activated reed switch.

b. Two sections: switch and magnet.

c. Switch and magnet shall snap-lock into 19 mm (3/4 inch) diameter hole for recessed mounting.

d. Operate on steel doors.

e. Life expectancy of at least 10 million cycles.

f. UL rated for indoor and outdoor use.

g. Accommodate gap requirements at each installed location.

h. DPDT switch with common, normally opened and normally closed leads available for opened or closed loop application.

2.14 OVERHEAD DOOR AND SECURITY GRILL SWITCHES

a. Magnetic activated reed switch.

b. Two sections: switch and magnet.

c. Cast heavy duty switch housing for direct floor mounting.

d. Cast heavy duty magnet housing for direct door mounting.

e. DPDT switch with common, normally opened and normally closed leads available for opened or closed loop application.

f. Switch and magnet shall accommodate gap requirements at each installed location.

g. Factory wired stainless steel flexible armored cable between the switch and the outlet cover plate.

h. Stainless steel cover plate installed with tamperproof screws.

2.15 VOLUMETRIC MOTION DETECTORS

a. Surface mount unit.

b. Passive infrared (PIR) motion sensor.

c. PIR sensor must be activated by a motion before an alarm condition is reported.

d. Detection sensing pattern shall be adjustable to cover the protected area. The pattern shall be submitted for coordination and approval by the Contracting Officer.

e. DPDT outputs with common, normally open and normally closed leads available for open or closed loop application.

f. Tamper alarm.

2.16 DURESS ALARM SWITCHES

a. Surface mounted under a countertop, on the side of a desk or wall mounted.

b. Switch assembly configuration shall prevent accidental activation of the switch.

c. Latching contacts with manual reset.

d. Contacts for opened or closed loop application.

e. At concealed mount locations under counter tops and on desk mounts, provide factory wired stainless steel flexible armored cable between the switch and the outlet cover plate.

f. Stainless steel outlet cover plate installed with tamperproof screws.

2.17 INDOOR CAMERA ASSEMBLIES

a. The Indoor Camera Assembly shall be an integrated assembly of an Indoor Fixed Mount Dome, a Color CCD High Resolution Camera, and a Lens, as specified herein for indoor installation.

b. Specified video camera and optics characteristics are minimal, and shall be enhanced if required by the system application design for the scene coverage per the attached Schedule of Video Surveillance Scenes.

c. Low voltage power supplies shall be furnished and installed in Comm Rooms.

2.17.1 Indoor Fixed Mount 203mm (8") Dome

a. The fixed mount 203mm (8") dome shall consist of a low profile, discreet 203mm (8") diameter camera dome with fixed camera mount. Configurations shall be as required for hard ceiling, suspended ceiling, and wall pendant mount, including mounting hardware.

(1) The fixed mount dome shall feature a fixed camera mount capable of 360° horizontal positioning of the camera.

(2) The fixed mount dome shall accommodate the camera/lens packages specified herein.

(3) The dome shall have available support rails as required for mounting in a suspended ceiling.

b. The lower viewing window part of the dome shall meet or exceed the following design and performance specifications:

(1) Maximum of diameter of 216mm (8.50") and a maximum height of 114mm (4.50").

(2) Shall be of acrylic material, optically clear with minimal distortion in any portion of the dome.

(3) Shall be available in black opaque with smoked window and a maximum of 1 f-stop light loss, smoked bronze with a maximum of 1 f-stop light loss and opaque white with a clear viewing window with virtually 0 f-stop light loss. System Contractor shall coordinate selection with the Contracting Officer.

2.17.2 High Resolution Color CCD Camera

The color CCD high resolution camera shall meet or exceed the following performance characteristics:

Interline Transfer Imager:	8.5mm (1/3-inch), NTSC signaling
Scanning System:	525 lines, 2:1 interlacing
Pixel Array:	768 (H) x 494 (V)
Horizontal Resolution:	480 TV lines
White Balance:	Automatic
White Balance Range:	2500 - 9500K
Iris Control Range:	1/60 to 1/10,000 second
Iris Control:	Electronic/passive
Automatic Gain Control:	Selectable by DIP switch

Minimum Illumination:	0.4 lux at 30 IRE, f1.2
Video Output:	1 V p-p, 75 ohms
Signal-to-Noise Ratio:	>52dB (AGC off)
Synchronize System:	Internal or line lock
Vertical Phase:	Adjustable, 0° ±120°
Backlight Compression:	Selectable by DIP switch
Signal Processing:	Digital
Extended Dynamic Range:	12x improvement in range between brightest and darkest parts of the video

2.17.3 Vari-Focal Length Auto Iris Lenses

a. The lens shall be a 8.5mm (1/3") format, variable focal length, auto iris lens, along with any accessories that may be required for a complete lens system.

b. The lens shall meet or exceed the following performance characteristics:

(1) CS mount.

(2) Used with 8.5mm (1/3") or smaller format cameras.

(3) Provide DC-drive auto iris, manual zoom and manual focus adjustments.

(4) Provide high resolution optics in a compact body.

(5) Automatically compensate for changing light conditions utilizing DC-drive voltages from the amplifier circuitry resident in the camera.

(6) Be equipped with a 4-pin "square" connector for auto iris functions.

(7) Lenses shall be available, and provided as required to cover the video surveillance scenes specified in the 3.12 Attachment, in eight vari-focal lengths and have a maximum and minimum f-stop of:

(1.3mm to 3.4mm) f1.4~f360
(2.5mm to 6.0mm) f1.4~f125
(2.8mm to 12.0mm) f1.4~f360
(3.0mm to 8.0mm) f1.4~f360
(3.5mm to 8.0mm) f1.4~f90
(5.0mm to 40mm) f1.6~f360
(5.0mm to 50mm) f1.4~f185
(5.5mm to 82.5mm) f1.8~f360

The lenses shall have a minimum object distance of:

(1.3mm to 3.4mm f1.4) <0.2m
(2.5mm to 6.0mm f1.4) 0.2m
(2.8mm to 12.0mm f1.4) 0.3m
(3.0mm to 8.0mm f1.4) 0.2m
(3.5mm to 8.0mm f1.4) 0.3m
(5.0mm to 40mm f1.6) 0.5m
(5.0mm to 50mm f1.4) 0.5m
(5.5mm to 82.5mm f1.8) 0.5m

2.18 OUTDOOR CAMERA ASSEMBLIES

a. The Outdoor Camera Assembly shall be an integrated assembly of an

Outdoor Pan and Tilt Positioning Drive Unit, a Color CCD High Resolution Camera and Lens, and an Integral Environmental Enclosure Assembly, as specified herein for outdoor installation.

b. Specified characteristics are minimal, and shall be enhanced if required by the system application design for the scene coverage per the attached Schedule of Video Surveillance Scenes, or if required to assure that a licence plate can be read at a distance up to 80 meters.

c. Low voltage power supplies shall be furnished and installed in Comm Rooms.

d. The total assembly shall be constructed with protection against rain and dust, have an operating temperature range of -45°C to +50°C, and be operation in 145 km/h wind conditions.

e. Mounting hardware shall provide for wall or pole mount.

2.18.1 Outdoor Camera Pan And Tilt Positioning Drive Unit

a. The outdoor camera pan and tilt drive unit shall consist of an integral, environmental, variable speed/high speed pan and tilt drive unit with continuous 360° rotation.

b. The outdoor camera pan and tilt drive unit shall meet or exceed the following characteristics:

(1) General Construction: Die-cast, extruded, and sheet aluminum; stainless steel hardware

(2) Finish: Gray polyester powder coating

(3) Viewing Window: 5.84mm (0.23-inch) thick optically clear tempered glass

(4) Drive Unit: Cogged belt drive with .9° stepper motor operation in microstep mode

(5) Motors: Sealed bearings attached without gear head attached

(6) Limit Stops: Nonmechanical; programmable for manual panning, auto/random scanning, and frame scanning

(7) Wiring: Internally prewired with no exposed wiring from the mount to the camera enclosure

(8) Programming: Built-in, user-friendly menu system for on-screen setup; programming stored on non-volatile memory chip

(9) Azimuth Zero: Programmable to 0° point to correspond to true or magnetic north compass readings

(10) Azimuth/Elevation: Programmable on-screen readout of azimuth from 0° to 359° and elevation -83° to +33°

(11) Direction Display: Programmable on-screen readout of compass directions (N, NE, NW, E, SE, S, SW, and W)

(12) Mode of Operation: Selectable at power-up

(13) Zones: Eight, programmable in size with 20-character label for each and with the ability to blank the video in the zone

(14) Auxiliary Output: One, which shall be an open collector at 32 VDC maximum at an output of 40 mA and which shall deactivate automatically after two seconds of activation

(15) Pattern: One for a maximum of six minutes or two for a maximum of three minutes each

(16) Receiver: Integral with automatic sensing for selection of protocol

(17) Protocol: Coaxitron; P and D, RS-485/422

(18) Addressing: Selectable DIP Switches

(19) Speed: Variable and proportional to depth of zoom

(20) Pan Rotation: 360° continuous rotation

(21) Pan Speed

(Winds 80 km/h): Manual control variable from 0.1° to a maximum of 40° per second, Turbo mode up to a maximum 100° per second, Preset mode up to a maximum 100° per second

(Winds 145 km/h): Manual control variable from 0.1° to a maximum of 40° per second, Turbo mode up to a maximum 50° per second, Preset mode up to a maximum 50° per second

(22) Vertical Tilt: +33° to -83° unobstructed

(23) Tilt Speed

(Winds 80 km/h): Manual control variable from 0.1° to a maximum of 20° per second, Turbo mode up to a maximum 30° per second, Preset mode up to a maximum 30° per second

(Winds 145 km/h): Manual control variable from 0.1° to a maximum of 20° per second, Turbo mode up to a maximum 30° per second, Preset mode up to a maximum 30° per second

(24) Presets: 64, with 20-character label for each preset position

(25) Preset Accuracy: +/-.25°

(26) Park: Programmable to go to a preset location after a user-programmed time

(27) Safety Features: Built-in safety to keep from being overdriven and move in wind speeds up to 209 km/h while power is applied; damage-free motor assemblies if unit is back-driven while under power or no power applied

(28) Remote Data Port Compatible: Ability to control and set up unit through optional remote data port that is located in area with easy access; compatible with personal computers and PDAs such as Palm and iPaq

(29) RS422 Position Feedback: ASCII output of azimuth, elevation, and zoom factor

(30) RS422 Direct Positioning: ASCII command capability for exact positioning based upon azimuth, elevation, and zoom factor

(31) Third-Party Control Systems: Ability to plug in optional board that converts control signals from selected third-party controllers

2.18.2 High Resolution Color CCD Camera and Lens

Color video camera and optics with with the following characteristics:

Image Sensor:	6.35mm (1/4 inch) EX-View HAD CCD
Signal Format:	NTSC
Scanning System:	2:1 interlaced output
Pixels:	768(H)x494(V)
Horizontal Resolution:	470 TV lines
Lens:	F1.6 (f = 4-88mm optical)
Zoom:	22x optical, 10x electronic
Zoom Speed:	3.9 seconds
Zoom Readout:	Programmable on-screen readout
Horizontal Angle of View:	47° at 4.0mm wide zoom
	2.2° at 88 mm telephoto zoom
Focus:	Automatic with manual override
Maximum Sensitivity:	0.02 lux at 1/2 sec shutter speed
White Balance:	Automatic with manual override
Shutter Speed:	Automatic with manual override
	1/2 to 1/30,000 of a second
Iris Control:	Automatic with manual override
Gain Control:	Automatic/off
Video Output:	1 V p-p, 75 ohms
Video Signal to Noise:	>50 dB

2.18.3 Integral Enclosure Assembly

a. Integral Enclosure Assembly: Part of pan tilt unit assembled at factory

b. Access: Forward-opening lid with spring assist

c. Latch: Stainless steel clamp capable of being padlocked

d. Temperature Protection: Standard with factory-installed defroster/defoggers, thermostatically controlled heaters, thermal insulation, and sun shroud

e. Camera and Lens Assembly: Installed in the enclosure at the factory

f. Camera and lens Connectors: Plug-in type for easy removal

g. Wiper: Integrated into the enclosure without interference with the viewing range. Wiper can be programmed to delay between wipes and to automatically shut off after a specified time.

2.19 CAMERA POLES

a. The pole shall be constructed of heavy-gauge steel with a powder coat

finish. It shall be capable of a maximum load of 90 kg. Dimensions shall be 4592mm H x 102mm W x 102mm D. Two access openings shall be included, one at the lower end and one at the upper end of the pole.

b. Poles shall be mounted on the existing pole mount bases.

2.20 NETWORK ADAPTERS

a. ACA Network Adapters

The ACA Network Adapter shall provide network translation between the serial RS485 network used by the ACA subsystem and the Ethernet LAN used by the integrator network.

b. IP Network Adapters

The IP Network Adapter shall provide network translation between the LonWorks network used by the Infant Protection Alarm Subsystem and the Ethernet LAN used by the integrator network.

c. CCTV Network Adapters

The Network Adapter shall provide network translation between the analog video and PTZ controls network used by the CCTV Subsystem and the Ethernet LAN used by the integrator network.

2.21 RF READERS

The RF Readers shall be able to be mounted either in the ceiling or on the walls. The RF readers shall have 360° coverage, with an effective read range of at least 18 M (60 feet). If more that one RF reader detects the tag signal, it shall assign the tag to the reader with the highest signal strength. Using signal strength levels, multiple RF readers shall be able to be installed in a single room to narrow the location down to areas as small as a 10-foot radius. The RF readers shall operate at an unlicensed radio frequency, and have all necessary regulatory approvals.

2.22 LF READERS

The Low Frequency (LF) Readers shall be able to be mounted either in the ceiling or walls. The LF readers transmit a low frequency (for example: 125 kHz) RF field that is used to "wake-up" tags and force them to transmit their unique ID codes four (4) times within a half a second. The LF readers shall have an effective "wake-up" field that can be adjusted from a 1 meter width for a single door, up to a 9 meter (30-foot) width, with multiple LF readers, for a large entry area. If multiple LF readers are used to cover a large entry area, they shall support synchronization of their RF fields, so that zones do not exist where the fields cancel thereby generating zones where a tag would not see the "wake-up" signal. The RF field generated by the LF reader shall include an encrypted ID code (for the LF reader) that can be decoded by tags that enter the field.

2.23 BABY TAGS AND STRAPS

a. Tag Characteristics:

Technology:	LF & RF
Power Battery	1 Rechargeable 3V lithium battery 5 year life

Transmission Rate in RF area:	
In Motion:	Every 4.5 sec
Motionless:	Every 60 sec
Transmission Rate in LF area:	
In Motion:	4 transmissions, 400 ms apart every 1.8 sec
Motionless:	4 transmissions, 400 ms apart every 15 sec
Transmission on Tamper:	4 transmissions, 400 ms apart immediately after tamper occurs
LED Indication:	Low battery, transmission
Tag ID:	Unique factory programmed
Water Resistance:	Water proof and completely sealed housing

b. Features

(1) Tag automatically activated when attached to a baby.
(2) Tamper event when tag or ankle strap are tampered or removed.
(3) Latex free adjustable strap made from skin safe material that includes a soft pad to prevent irritation of skin.
(4) Reajustable strap to suit ankle shrinkage.
(5) Easy to clean.
(6) Disposable parts, ensuring re-use of tag up to 1000 times without compromising hygiene level.
(7) Tags rechargeable by placing them in a desktop charger supplied with the system. A number of tags can be recharging simultaneously.

2.24 DOME LIGHTS

A dome light configured with indicator lamps and a tone device that will be mounted over exit doors. The a red light will illuminate and the tone will sound when an exit alarm is activated. The light/tone will remain on until the exit alarm is acknowledged.

2.25 EXTERNAL RELAY BOXES

The External Relay Box shall be able to be connected directly to an RF reader, enabling the control of external electrical devices in response to three changes of state in the reader (e.g. presence of a tag, absence of a tag, or a tag button press). The External Relay Box shall have two independently controlled, voltage free contacts, capable to connect loads up to 5Amp/240V. The voltage free contacts shall be able to be configured to be Normally Open (NO), Normally Closed (NC), or Center (C) at startup.

2.26 REMOTE DISPLAY UNIT (RDU)

The RDU shall provide the ability for authorized staff to view and change the status information(e.g. Active, Suspend, Allow Discharge, and Discharge) of a tag without having to log onto the Infant Protection Workstation. The RDU shall provide a simple LCD interface with input buttons for authorized staff to log on and change the status of the tag.

2.27 SYSTEM CABLING

a. System cabling shall be of the type, size and specifications as required by: the system Manufacturer; the configuration of the installed equipment that is being interconnected by the cabling; the system application design; the CMP rating as defined by NFPA 70.

b. The size of system power cable wires shall be as calculated using the system Manufacturer's instructions and guidelines, and system power requirements. Calculations shall be included with the design data submittal.

c. LAN UTP cables shall be Category 6 cables, conforming to ANSI/TIA/EIA-568-B and ANSI/TIA/EIA-568-B.2-1 standards for the Category of unshielded twisted pair (UTP). LAN fiber optic cables shall conform to ANSI/TIA/EIA-568-B and to ICEA S-83-596 standards.

d. Coaxial video cables shall be RG-6/U type as specified herein. The maximum length of any video cable shall not exceed 90M (300 feet).

(1) Physical Characteristics

Center Conductor:	18 AWG solid copper clad steel
Dielectric:	polyethylene
Shielding:	quadshield construction providing 100% shield coverage
Jacket:	environmentally sealed black PVC

(2) Electrical Characteristics

	Max Attenuation at 20 Degrees C (68 Degrees F)					
Frequency MHz:	5	55	300	450	550	1,000
Loss dB/30 M:						
RG-6/U	0.64	1.60	3.54	4.40	4.90	6.75

Nominal Impedance:	75 ohms
Nominal Capacitance:	16.3 pf/305 mm (/ft)
Nominal Velocity of Propagation:	83%
Nominal DC Resistance/1000 ft. @ 20 Degrees C (68 degrees F)	
Center Conductor:	32.0 ohms
Loop	35.7 ohms

2.28 EQUIPMENT MOUNTING RACKS AND CABINETS

a. LAN, Server, and UPS equipment located in Comm Room shall be mounted in either floor racks or wall mounted cabinets.

b. Floor mounted open frame equipment racks shall be welded steel relay racks with uprights to mount equipment 480 mm (19 inches) wide. Uprights shall be 75 mm (3 inch) deep channel, 32 mm (1.25 inch) wide, drilled and tapped 12-24 in a 13 mm (0.5 inch) pattern. Racks shall be provided with a standard top crossmember, and predrilled base plate to allow floor fastening. Racks shall be constructed of the heaviest gauge steel commercially offered by the approved manufacturer. Racks shall be painted semi-gloss gray or black. All racks in the facility are to be of the same color and finish. Rack height shall be as required by the system application design.

c. Wall mount cabinets shall be swingout type with a hinged front panel and hinged center section to allow easy access to both the front and rear of equipment mounted in the center section of the cabinets. Cabinets shall be constructed of the heaviest gauge of steel commercially offered by approved manufacturer. The center section shall have perforated vents on

the side panels, and be equipped with adjustable, front to rear mounting rails tapped with 10-32 holes on standard EIA 483 mm (19 inch) spacing. The rear section shall knockouts on the top and bottom surface panels. Cabinets shall be painted in a durable black finish.

PART 3 EXECUTION

3.1 EXAMINATION

System Contractor shall perform a site survey to verify all field conditions, become familiar with the details of the work and working conditions, verify dimensions in the field, and advise the Contracting Officer of any discrepancies before performing the work.

3.2 EXISTING CONDITIONS

3.2.1 Equipment Mounting Space

Equipment mounting space, as indicated on the Telecommunications Drawings, has been provided in the facility being constructed.

3.2.2 Rough-In

a. Existing rough-in, which has been generically designed to accommodate the installation of typical systems available in the marketplace, has been provided by the facility construction project. This includes cable trays, conduits, boxes, and enclosures as indicated in the Telecommunications Systems Drawings, to accommodate the installation of the specified system.

b. Existing riser conduits allocated for system cable routing into and out of Comm Rooms are identified on the Telecommunications Drawings.

c. All flush mounted components are intended to be installed in the existing rough-in boxes and enclosures, UON. All system cabling should use the existing rough-in conduits and cable trays. However, depending upon the products provided under this contract, rough-in changes or additional rough-in may be needed to achieve contract compliance. Provide any such rough-in changes or additional rough-in in compliance with the following requirements:

(1) Match existing construction.

(2) Comply with codes.

(3) Do not secure or support the rough-in from any mechanical or plumbing item.

(4) Wireways, conduit and boxes shall be metal. Non-metallic wireways, conduit, and boxes shall no be allowed.

(5) Boxes and enclosures in walls shall preserve the acoustical integrity of the partitions in which they are installed. Back-to-back boxes shall be installed in offset positions and shall be acoustically separated.

(6) All existing subsurface, structural and finished materials and surfaces shall be restored, in kind, to the satisfaction of the Contracting Officer.

(7) Junction box covers shall be painted to match existing system markings.

(8) Obtain approval in writing from the Contracting Officer before any such rough-in work is done. Submit any new proposed new or changed rough-in requirements in writing to the Contracting Officer.

d. Provide trim plates as required to adapt faceplates to the rough-in boxes provided by the facility construction project.

e. Existing holes in the top of metel doors have been provided by the facility construction project to mount the magnet part of the door position switches. Holes for mounting of the magnets in the top of wooden doors shall be drilled by the system contractor.

f. Conduits and junction boxes have been provided for the installation of cables required for ceiling mounted devices. Mounting provisions for ceiling mounted devices are not an existing condition. The system contractor shall provide all such ceiling mounting requirements. This includes cutting of finished ceiling materials, and the provision of required device support items. Finished ceiling tiles shall not be used for support of installed devices, such as ceiling mounted camera assemblies.

g. Coordinate all design and installation efforts with those of related trades that have provided the rough-in in the facility construction project to accommodate the installation of the system. In the event of any conflicts, delayed or improper preparatory work by others, notify the Contracting Officer for resolution. The Contracting Officer decision shall be binding.

3.2.3 Electrical Power and Grounds

a. Existing electrical power on the emergency equipment branch circuit has been provided by the facility construction project at a power receptacle in Comm Rooms for system equipment, and at a power receptacle adjacent to each system operator workstation. Reference the facility construction project Electrical Drawings for details.

b. Existing grounding buss bars have been provided as indicated on the Telecommunications Systems Drawings. Reference the facility construction project Electrical Drawings for details.

c. If any new electrical power circuits are required, the Telecommunications Systems Contractor shall define and submit the new power requirements to the Contracting Officer, who will coordinate the change with the existing Facility Contractor.

3.3 PREPARATIONS

As part of the project planning and system application design, and prior to the submittal of documents and plans, gather the data required to design and install the system, and plan the work. This shall include, but not be limited to the data listed below.

3.3.1 User Room Numbers and Names

Obtain from the Contracting Officer a listing of BACH user room numbers and room names cross referenced to the architectural room numbers and names indicated on the contract documents. The system application design shall

use the BACH user room numbers and room names for all system functions, applications software, and as-built documentation.

3.3.2 Interface and Interconnections

a. Coordinate and define the details of all interfaces and interconnections with other systems and equipment as specified herein. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of Drawings and Data submittals.

b. Interfaces and interconnections shall include:

Post Life Safety LAN
Section 16755 RADIO PAGE SYSTEM Encoder/CPU
BACH HIS (staff data for photo badge)
BACH Telephone System (modem connection)
Fire Protection System Control Modules
Auto Door Operator Push Pads
Electric Strikes and Power Supplies

3.3.3 Application Programming

Gather user data required to adequately program the system and set-up any unique functions as required by the system application design.

3.3.4 Video Camera Scenes

a. Verify the video camera scene information presented in the attached Schedule of Video Camera Scenes, and define detail data as required for camera system application design.

b. Using the detail scene data, investigate and define exact video camera requirements and installation details.

3.3.5 Planning Data

Gather data required to develop all required plans, including testing and training plans.

3.4 INSTALLATION

3.4.1 General

a. Installation shall be accomplished as indicated and specified, and in accordance with acknowledged industry and professional standards and practices, and the Manufacturer's instructions.

b. Installation shall comply with the requirements of NFPA 70, NFPA 99, EIA ANSI/TIA/EIA-568,and EIA ANSI/TIA/EIA-569-A.

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications, shall install and connect all equipment and system cabling.

d. During the entire installation the System Contractor shall maintain onsite a supervisor as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications.

e. Provide all tools and equipment needed to install the system.

f. Provide surface mount metal wireways and boxes for operator work station outlets that are required to be surface mounted on the backpanel of GFGI free standing modular furniture, as indicated on the Telecommunications Drawings.

g. All ac power plugs shall be tightly strapped to the ac power receptacle to prevent accidental unplugging of the ac power.

h. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT AND SYSTEMS

3.4.2 Equipment Installation

a. Appropriate waterproofing shall be used for outdoor installations.

b. Wall mounted panels shall be surface mounted in the Comm Rooms indicated on the drawings. Mounting of these panels in any other room, area or above finished ceilings shall not be acceptable. Panels shall be marked with the an identification number and function served.

c. The system LAN, server, and UPS equipment housed in Comm Rooms shall be wall or rack mounted. Under no circumstance shall any of this equipment be mounted on the floor.

d. Operator Workstation equipment that does not require attendant access for programming or operational activities (such as the CPU and UPS) shall be wall mounted in a protected area under the counter top at the workstation location. If the under counter mounted equipment can be kicked and damaged by staff sitting at the counter, then a protective shield shall be provided for the equipment.

e. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project.

f. Mounted equipment shall be firmly secured in place, plumb, square, and level.

g. Provide adequate equipment ventilation and adequate equipment accessibility for service and repair.

h. Installation shall comply with the requirements of Section 13080 SEISMIC PROTECTION FOR NONSTRUCTURAL BUILDING EQUIPMENT.

3.4.3 System Cabling Installation

a. Installation of system cabling shall be by the qualified Installer.

b. All cables and the installation of cables shall be in accordance with NFPA 70.

c. System cables shall be installed without kinks, sharp bends or deformations, in a manner to prevent abrasion.

d. System cabling shall be installed in cable trays, conduits and boxes.

e. Coordinate the system cable routing with the cable routing of other systems to assure that there will not be any EMI problems that will

adversely affect the performance of this system or any other specified project system.

f. Certify that system cable that are installed in the existing communications systems cable trays along with the cables from other systems shall not adversely affect the performance of this system or any other project system.

g. It is the responsibility of the System Contractor to notify the Contracting Officer of any routing conflict prior to placement of cable.

h. Cabling shall include adequate expansion loops at building seismic or expansion joints to accommodate seismic displacements.

i. Firestopping shall be provided in accordance with Section 07270 FIRESTOPPING.

3.4.4 Grounding

Equipment enclosures and all other non-current carrying exposed metal parts of electric equipment shall be grounded.

3.5 APPLICATION

3.5.1 AC Power Connections

AC power for all equipment shall be circuited to the emergency system equipment branch in accordance with NFPA 70 and NFPA 99.

3.5.2 Installation Setup

Contractor shall make all adjustments and perform all application programming as necessary to setup the system to function in accordance with specific user requirements for the overall system and each area covered by the FSS. Coordinate all such setup details with BACH users, install them as part of the system setup, and include the setup details in the Test Plans and O&M documentation. Examples of installation setup details that require user coordination include the following:

a. Default video resolution and quality settings to assure that scene images show the detail required for audit analysis.

b. Sound volume level for alert tone signals that have adjustable settings.

c. Time and date setup.

d. Setup and default settings for system networking, and for interfaces with the BACH HIS, and the Section 16755 RADIO PAGING SYSTEM.

e. Preprogrammed pager service messages.

f. Default pager listing and assignments.

g. Graphic display layouts for workstation video monitors.

3.6 INSPECTION, TESTING AND VALIDATION

3.6.1 General Requirements

a. System inspections shall be performed as specified herein, and in accordance with Section H CONTRACTOR QUALITY CONTROL: COMPLETION INSPECTION.

b. System testing and validation shall be performed as specified herein, and in accordance with the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS.

c. All inspection, testing and validation shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS; and CONTRACTOR QUALITY CONTROL.

d. Prepare and submit a Test Plan that includes the requirements of Section H TESTING AND VALIDATION OF EQUIPMENT AND SYSTEMS, and the requirements of this Section. Include step-by-step procedures and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including data indicating that calibration of the test equipment is current; test data sheets; and names and qualifications of the person(s) who shall perform the tests. Coordinate the Test Plan with the Commissioning Plan as specified in Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

e. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, testing and validation of the installed system. All test equipment shall be in current calibration and shall have a current calibration certification.

f. Qualified Security System Contractor personnel conducting acceptance tests shall be factory trained or certified and shall be completely knowledgeable regarding the system application design, installation, setup and operation.

g. The Contracting Officer reserves the right to approve the System Contractor's choice of testing personnel, and, upon rejection of any testing personnel by the Contracting Officer at any time, the System Contractor shall replace such testing personnel as soon as reasonably possible. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to review the qualifications of each person proposed for testing work.

h. The System Contractor shall conduct all inspections and testing in accordance with submitted and approved quality control, testing and commissioning plans and procedure, and requirements specified herein.

i. Notification of any planned inspection and testing shall be given to the Contracting Officer at least 30 days prior to any test, and in no case shall notice be given until after the System Contractor has received written Government approval of the submitted test plans, including procedures.

j. Inspection and testing shall be conducted during normal working hours with prior notice to the Contracting Officer so as not to interfere with orderly work processes.

k. System Contractor shall allow inspection of all work and workmanship, and witnessing of System Contractor performed readiness checks, integrated performance testing, and acceptance testing.

l. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition.

m. Results of each inspection and test shall be reported in electronic and hard copy form to the Contracting Officer.

3.6.2 Periodic Inspection and Testing

a. All work and workmanship shall be subject to inspection and testing as requested by the Contracting Officer at any and all times during preparation and installation.

b. The Contracting Officer, in his or her sole discretion, may reject defective work and workmanship and require its correction. The Government right to inspect, test, and reject, or its failure to exercise such right, as provided herein, shall in no way diminish the System Contractor's duty to inspect and reject work as necessary to comply fully with the requirements of the contract documents.

3.6.3 System Readiness Checks

Prior to the start of system testing and validation, the system shall be brought into complete working order in full compliance with specified requirements, system application design, and all setup requirements, including programming and adjustments. Then the System Contractor shall perform system readiness checks to certify that the system is ready for testing and validation.

3.6.4 Integrated Performance Testing

Perform all necessary performance testing of interoperability of the telecommunications systems with each other, and with other building systems (e.g. emergency power). Such testing is to demonstrate full integration and/or interface of systems and to demonstrate they function as a comprehensive system where necessary.

3.6.5 Final Inspection and Acceptance Testing

3.6.5.1 General Requirements

a. After installation has been completed, and system readiness checks and integrated performance testing have been successfully completed, the System Contractor shall notify the Contracting Officer that the system is ready for final inspection and acceptance testing. The System Contractor shall then conduct final inspection and acceptance tests in accordance with the approved Test Plan and Commissioning Plan, and the project schedule.

b. Draft as-built system drawings, and O&M manuals shall be made available by the System Contractor for use during performance of final inspection and acceptance testing. Final inspection or acceptance testing shall not be scheduled nor performed without this documentation.

c. The System Contractor shall demonstrate proper installation and

performance of the system in full compliance with all contract documents.

d. Upon successful completion of final acceptance tests, and 30 calendar days of consecutive operation in accordance with specified requirements without the occurrence of any major malfunctions, the System Contractor shall submit the final acceptance test report, including certificates of compliance stating that all specified requirements and conditions have been satisfied. The effective date for completion of the final system acceptance shall be the date when the system has satisfied the 30 days of operation without a major malfunction as specified above.

e. Video record acceptance tests in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTS AND O&M TRAINING.

3.6.5.2 Acceptance Testing

a. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements, system application design, and user setup requirements for the system. Each system operating mode shall be demonstrated to perform as required by operation of each individual system component under normal or simulated normal system conditions.

b. Testing shall include, but not be limited to, the following tests to demonstrate all requirements:

(1) Operation under ac power failure conditions. Include demonstration of UPS and battery backup capability under normal power loading conditions, and operation under emergency power conditions.

(2) Operation of electronic supervision circuitry.

(3) Operation of 100% of all components used by the staff in all modes of operation demonstrating that all functions and the proper sequence of events occur.

(4) All interface functions.

(5) All LAN and server operation.

(6) Viewing, recording, playback, and auditing of the video surveillance scene of all video cameras.

(7) Full capability of all application programs.

3.6.6 Corrective Action for Rejected Work

a. All deficiencies shall be corrected and another inspection and test performed as required to demonstrate compliance with all specifications to the Contracting Officer.

b. All corrective action shall be completed in a reasonable time consistent with project schedules and acceptable to the Contracting Officer.

c. If, after 30 calendar days from the start of acceptance testing, the system or any equipment component thereof fails to demonstrate complete and proper performance, the Government shall have the right to return the total system or any equipment component to the System Contractor. The System Contractor shall refund all costs thereof to the Government and shall

indemnify the Government from damages, costs, and expenses incurred in connection with such activity.

d. The actual date of return of any rejected system or equipment component shall be under the absolute control of the Government. The Government shall have the right to continue to utilize such system and equipment until the actual date of removal.

3.6.7 Warranty Period Inspection and Testing

a. In accordance with the Warranty Management Plan developed as part of the Section H CLOSEOUT SUBMITTALS, the System Contractor shall at the end of the 4th and 9th months after the time of acceptance observe the system in operation and conduct tests to demonstrate that system is continuing to perform as specified. This activity shall be coordinated with the Contracting Officer, and the Contracting Officer and a Customer Representative shall participate in this activity.

b. Include interviews of users to determine if the system is satisfying specified operational requirements, and that training has been adequate.

c. The System Contractor shall identify and correct any deficiencies found during these warranty period inspections and testing.

d. Results of each warranty period inspection and test shall be reported in writing to the Contracting Officer.

3.7 OPERATION AND MAINTENANCE TRAINING

a. Operation and Maintenance (O&M) training shall conform to the requirements of Section H OPERATIONS AND MAINTENANCE TRAINING, and the requirements set forth in this Section.

b. All specified demonstration and training shall be provided. This includes all specified onsite training, and factory training at the Manufacturer's facility.

c. All training shall be coordinated, monitored, recorded and documented in accordance with Section H SPECIAL ITEMS: TOTAL BUILDING COMMISSIONING - TELECOMMUNICATIONS SYSTEMS.

3.7.1 Training Plan

a. Develop and submit a Training Plan for approval by the Contracting Officer. The training plan shall describe the training to be provided in accordance with the requirements set forth below, and in accordance with Section H OPERATION & MAINTENANCE TRAINING. The Training Plan shall include, but not be limited to the following items:

(1) Describe the operation and maintenance training programs, and instructional materials to be provided.

(2) As coordinated with the user, the Training Plan shall define the number of staff members that will be expected to attend each training session, and the classrooms to be used for on-site training.

(3) Furnish the identity and qualification of training instructors, and the instructional schedules for all classes.

b. Provide training to the BACH staff in accordance with the approved training plan.

3.7.2 General Preparations

During the week prior to the start of training for any system, check the system to assure that it has been successfully commissioned and acceptance tested, and is in full-specified operation condition.

3.7.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train designated BACH staff in the operation and maintenance of the provided system.

b. The Contracting Officer reserves the right to approve the System Contractor's choice of training personnel, and, upon rejection of a trainer by the Contracting Officer at any time, the System Contractor shall immediately replace such trainers. Upon request, the System Contractor shall provide the Contracting Officer the opportunity to interview and review the qualifications of each proposed trainer.

3.7.4 Training Instructions

a. Training instructions shall cover all specified performance and capabilities of the system, and all of the items contained in the operating and maintenance manuals.

b. Maintenance technician training shall also include preventive maintenance, routine maintenance, repair and troubleshooting procedures.

c. Training courses and sessions shall be in accordance with SECTION H OPERATION & MAINTENANCE TRAINING.

3.7.5 Training Materials and Recordings

a. Furnish all training materials and handouts. Handouts shall be provided in the quantity needed for all of the BACH maintenance technicians, operations and user staff that will receive training.

b. Fifteen (15) copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer.

c. Video recordings of onsite training sessions shall be made in accordance with Section H SPECIAL ITEMS: VIDEORECORDING OF TESTING AND O&M TRAINING, and four (4) copies furnished to the Contracting Officer. This shall be a coordinated effort between the System Contractor training staff and the BACH education department staff.

3.7.6 Onsite Training Programs and Requirements

a. Training shall be provided onsite to all BACH staff as required throughout the contract and warranty period to train operations and maintenance staff for the provided system.

b. The onsite training program shall include two training courses, one for maintenance technicians, and one for user and operations staff.

c. Each course shall include classroom training and field training. Field training for BACH staff shall take place in the area where the staff will be working. classroom training shall be conducted in classrooms as coordinated with the user.

d. Multiple instructional units for each onsite course shall be conducted on a three shift, seven days a week basis as required to train all staff during their normal on-duty working hours.

e. The Contracting Officer shall designate qualified personnel to be instructed in the operation and maintenance of each system, schedule instructional sessions, and provide suitable onsite instruction facilities.

3.7.7 User and Operational Staff Training

a. User and operational staff training shall commence at a time acceptable to the Contracting Officer and near the time the system is scheduled for operational use by the BACH staff.

b. User and operational staff training shall consist of classroom instructions for all Major Functional Components of the system, and field instructions in each area where equipment is installed.

c. Nine (9) months after the system has been accepted by the Government for operational use, the user and operational staff shall be given a refresher course.

3.7.8 Technician Training

a. Before the system is turned over to the Government for operational use, training shall be provided for maintenance technicians designated by the Contracting Officer.

b. The onsite technician training course shall provide the number of instructional hours necessary to cover all aspects of system setup, programming, operations, preventive maintenance, routine maintenance, routine repair, and troubleshooting procedures for the system as installed.

c. Nine (9) months after the system has been accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system.

d. Technician training shall be provided at the Manufacturer's factory. Training shall include comprehensive instruction for complete setup, operation, maintenance and repair of the system, including the theory of operation, software installation and setup, maintenance programs, failure diagnostic programs, troubleshooting and repair. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training for factory certification as a maintenance technician.

3.8 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the System Contractor has been notified by the Contracting Officer that the facility is secured.

3.9 CLOSE OUT DOCUMENTATION

a. Prepare and submit all documents as required by SECTION H CLOSE OUT SUBMITTALS.

b. Contractor shall keep a record of all maintenance and repair performed during the warranty period and submit the record at the end of the warranty period.

3.10 CONTRACTOR QUALITY CONTROL

Quality control shall conform to the requirements of Section H CONTRACTOR QUALITY CONTROL.

3.11 SCHEDULES

3.11.1 Facility Security System

a. Provide a complete and operational FSS as specified in this Section, as indicated on the Telecommunications Drawings, as required by the system application design, and as further defined below.

b. Deliver and install all product items as required to comply with the approved installation schedule.

3.11.2 Indicated Items

Provide the quantity and type of system components as indicated on the Telecommunications Drawings.

3.11.3 System Equipment in Comm Rooms

The Telecommunication Drawings indicate space in Comm Rooms that has been designated for the installation of system equipment. As required by the system application design, furnish and install the type and quantity of integrator network components, network adapters, area control units, and power supplies in these designated locations.

3.11.4 UPS

Provide an UPS for all equipment that operates directly off of ac line power. At locations where the installed equipment includes both a computer and a monitor, the UPS shall be used to power both the computer and monitor.

3.11.5 Software

Provide all software programs as required for all specified capabilities and performance, and pertinent software manuals. Include all operating systems, utility programs, application programs, and a complete set of backup software.

3.11.6 System LAN

Provide all system LAN hardware, software and cabling as required by the system Manufacturer and the system application design. Install all LAN hardware in Comm Rooms.

3.11.7 Servers

a. Provide and interconnect all servers as required by the system application design.

b. The Telecommunication Drawings indicate space in Comm Rooms that has been designated for the installation of system equipment. As required by the system application design, furnish and install the type and quantity of servers in these designated locations.

3.11.8 Pagers

Pagers shall be furnished by the Section 16755 RADIO PAGE SYSTEM. Coordinate pager specifications with the Radio Page System Contractor. Obtain required number of pagers, as defined by the user, from the Contracting Officer.

3.11.9 Video Camera Assemblies

a. Provide outdoor camera assemblies at all indicated locations on all outdoor camera poles, in the ambulance garage, and in all dock areas.

b. Provide indoor camera assemblies at all indicated indoor locations. If a single indoor camera assembly cannot cover the entire Video Surveillance Scene at any indoor location, as defined in the attached Schedule of Video Surveillance Scenes, then provide additional indoor camera assemblies as needed to provide the required coverage.

3.11.10 Post Life Safety Network Connection

Coordinate with the Post DPW for the system connection as a autonomous Client node on the existing Honeywell EBI Central Fire and Security System that serves that entire Fort Wainwright, Alaska Post via a Post Life Safety Network switch in the BACH facility. Connection shall be made via a port on a Post LAN switch located within the BACH facility.

3.11.11 Product Samples

Provide one sample unit of each the items listed below for approval as part of the Samples submittal.

Photo Badge Card and Holder
Proximity Card Reader
Proximity Card Reader and Keypad
Keypad
Duress Alarm Switches
Indoor Camera Assembly
Outdoor Camera Assembly.
Baby Tag and Strap.

3.11.12 Photo Badge Cards & Holders

Furnish 1000 photo badge cards and holders. Process cards as required by the user, for the activation of the system, and for use by the existing Keyless Entry System.

3.11.13 Infant Tags and Straps

Furnish 20 infant tags and 900 straps.

3.11.14 LF and RF Readers

Provide the quantity of LF and RF Readers as required to cover all areas of the L&D Unit and the Inpatient Services Unit.

3.12 VIDEO SURVEILLANCE SCENES

a. The attached list of video cameras indicates the Video Surveillance Scene to be covered by each video camera.

b. Reference the Telecommunications Drawings for related video camera location, and the video surveillance scene area that is described in the Schedule.

c. Where the video surveillance scene for a pole mounted outdoor video camera includes a road, the road scene shall be limited to the segment of the road adjacent to the video camera that is within the field of view of the video camera.

(1) A summary indication of the location of all pole mounted outdoor video cameras is shown on the Site Plan drawing TC2.03. Site Parking Areas and Roads are indicated on this Site Plan drawing.

(2) The various entrances from the outside into the facility are identified on the TC3 Series Zone Plan drawings, as well as on the TC4 Series Floor Plans.

-- End of Section --

SCHEDULE OF VIDEO SURVEILLANCE SCENES				
INDOOR CAMERA ASSEMBLIES - FIXED FIELD OF VIEW				
CAMERA LOCATION & IDENTIFICATION				
DRAWING	ROOM/AREA		CAMERA	VIDEO SURVEILLANCE SCENE
SHEET	NUMBER	FUNCTION	ID#	
TC4.102	101-06	ER Corridor	S01	Entire Vest Room 102-05 including doors to/from Vest Room 102-05
TC4.103	103-02	ER Waiting	S01	ER Waiting Room Area South from North End of Entry Door from Vest Room 103-01 on the West and the Pay Phone Area on the East
TC4.107	107-01	ER Vestibule	S01	Vestibule Area including Both Doors
TC4.109	109-05	Service Elevator Lobby	S01	W1 & W2 Elevator Doors, Door into Corridor 109-12, and Lobby Area in front of all Doors
TC4.120	112-17	PAD Corridor	S01	Doors 112-15 and 120-02 into Records Rooms
TC4.120	112-17	PAD Corridor	S02	Door 120-02A into OP Records Room, and Door into Admiss Room 120-08
TC4.119	119-12	Public Corridor	S01	Cashier Door 120-09 and Entryway into Admiss Room 120-08
TC4.120	120-10	Cashier	S01	Room 120-10 Cashier Counter and Window, and Room 120-09 Cashier as can be viewed through the Window between the 2 Rooms
TC4.129	123-09	General Seating	S01	2 Food Service Cashiers Area, including Pay Lines (located to the north of the camera location)
TC4.123	123-10	Courtyard Entry Vestibule	S01	Both Vestibule Doors, and the Vestibule Room 123-10 Area between the Doors
TC4.124	124-01	Public Elevator Lobby	S01	G1 & G2 Elevator Doors, and the Lobby Area in front of the Elevators
TC4.125	125-06	Main Entry Lobby	S01	Entry Door 126-01, and the Lobby Area in front of Doors 126-01, 126-01A and 126-01B (gridline G.8/11.9 to J.4/11.9)
TC4.126	126-01	Main Entry Vestibule	S01	Doors 126-01, 126-01A and 126-01B, and the Vestibule Area in front of all Doors
TC4.138	128-11	Food Service Corridor	S01	Door 138-01, Door into Corridor 138-08, and the Corridor Area in front of the 2 doors
TC4.129	129-03	Service Elevator Lobby	S01	E1 & E2 Elevator Doors, and the Lobby Area in front of the Elevators
TC4.129	129-06	Service Elevator Lobby	S01	E1 & E2 Elevator Doors, and the Lobby Area in front of the Elevators
TC4.130	130-06	Staff Corridor	S01	Staff Pharmacy Entry Door 130-06, Room 130-21 Shipping/Receiving Window, and intersection from Corridor 130-19
TC4.131	131-10	Pharmacy & PT Waiting	S01	Total Pharmacy Dispensing Counter Windows Area from hinge side of Door into Room 131-01 to Door 131-09, and Area in front of the Windows
TC4.134	134-01	VA Clinic Waiting	S01	Waiting 134-01 seating area from vestibule Door 134-22A on the west to hinge side of door into Corridor 133-19
TC4.134	134-13	VA Clinic Corridor	S01	VA Clinic Corridor - looking East to end of Corridor 134-13
TC4.134	134-13	VA Clinic Corridor	S02	VA Clinic Corridor - looking West to end of Corridor 134-13
TC4.134	134-22	VA Entry Vestibule	S01	Vestibule Exterior Door and Interior Door 134-22A, and Vestibule 134-22 Area between Doors
TC4.139	139-05	Receiving/Processing	S01	Entire Receiving/Processing Room 139-05 area South from the North End of Overhead Door to Dock 139-03 on the East to the Hinge side of the door into Room 139-06, and including all Overhead Doors on the East side of the room
TC4.140	140-03	Corridor	S01	Doors 140-04A, 140-04B, and the Entire Corridor 140-03 Area to the East of the camera
TC4.141	141-14	Logistics Corridor	S01	Equipment Hold Room Door 141-01, and Issue Turn-In Room Door 140-04 to the North
TC4.144	142-07	VA Clinic Corridor	S01	VA Clinic Corridor North to Column Line 17
TC4.144	144-16	Staff Entry Vestibule	S01	Staff Entry Doors 144-16 and 144-16A, and the Vestibule Area between the Doors

TC4.114	1W1	Fire Exit Stairway 3	S01	Doors 1W1A and 1W1B, and the Stairwell Area between the Doors
TC4.105	1W4	Fire Exit Stairway 2	S01	Staff Entrance Door, and the Stairwell Area between the Entry Door and Door 1W4A
TC4.215	2W1	Fire Exit Stairway 3	S01	Door 2W1 from Inpatient Services Unit and the Stairwell Area South of the camera
TC4.203	209-12	Staff Corridor	S01	90 degree field centered on the 2W3 Stair Door and looking South along Corridor 204-02
TC4.212	212-01	Public Corridor	S01	Door 212-01B into Labor/Delivery Unit including the area around the door
TC4.211	212-26	Public Corridor	S01	Door 212-26 into Labor/Delivery Unit including the area around the door
TC4.216	216-22	Public Corridor	S01	Door 216-22 into Inpatient Services Unit including the area around the door
TC4.216	216-23	Public Corridor	S01	Door 216-23 into Inpatient Services Unit including the area around the door
TC4.217	217-28	Public Corridor	S01	Door 217-28A into Inpatient Services Unit including the area around the door
TC4.219	219-05	Public Corridor	S01	Door 219-13 from Labor/Delivery Unit Room 219-13 Staff Lounge including the area around the door
TC4.316	315-11	Staff Corridor	S01	Door 316-03 into Computer Room
TC4.315	315-15	Public Corridor	S01	Double Doors between Corridor 315-15 and Corridor 316-07 to the South and Door 315-15B to the East
TC4.317	323-01	Public Corridor	S01	Entire Corridor 316-07
TC4.324	324-01	Public Corridor	S01	Elevator Lobby 324-07, Door 324-04, Door 324-07, and Door 325-02

SCHEDULE OF VIDEO SURVEILLANCE SCENES				
OUTDOOR PAN/TILT/ZOOM (PTZ) CAMERA ASSEMBLIES				
CAMERA LOCATION & IDENTIFICATION				
DRAWING	ROOM/AREA		CAMERA	
SHEET	NUMBER	FUNCTION	ID#	PTZ VIDEO SURVEILLANCE SCENE
TC4.102	101-02	Ambulance Garage	S01	Entire Ambulance Garage 101-02 Area
TC4.139	139-03	Dumpster Dock	S01	Entire Dock/Dumpster 139-03 Area
TC4.139	139-04	Log/Food Service Dock	S01	Entire Log/Food Service Dock 139-04 Area
TC4.139	139-04A	Dock	S01	Entire Dock 139-04A Area
TC2.03, TC4.006		Outdoor Circulation/Parking	S01	Main Hospital Entrance, Main Entrance Road, and adjacent Parking Area PK1
TC2.03, TC4.006		Outdoor Circulation/Parking	S02	Staff Entry Stair Door 1W4, and Parking Areas PK2 & PK3
TC2.03, TC4.004		Outdoor Circulation/Parking	S03	Staff Entry Stair Door 1W4, Parking Areas PK4 & PK5, and Emergency Entrance
TC2.03, TC4.003		Outdoor Circulation/Parking	S04	Emergency Entrance, Stair 1W3 Door, North Loop Road, Parking Areas PK5 & PK6
TC2.03, TC4.038		Outdoor Circulation/Parking	S05	Staff Entry Stair 1E1 Door, Staff Entry Door 139-04 to Dock, Service Entrance and Doors to Docks, Parking Area PK7, East Road, North Loop Road
TC2.03, TC4.041		Outdoor Circulation/Parking	S06	East Road, and Parking Area PK8
TC2.03, TC4.043		Outdoor Circulation/Parking	S07	Staff Entry to Vestibule 144-16, East Road, and Parking Areas PK9 & PK10
TC2.03, TC4.045		Outdoor Circulation/Parking	S08	Stair CEP4 Exit, CEP Service Entry Doors 135-11 & 135-11A, Oxygen Tank Storage Area, East Road, and Parking Areas PK10 & PK11
TC2.03, TC4.036		Outdoor Circulation/Parking	S09	Stair CEP2 Exit, South Loop Road, and Parking Area PK12
TC2.03, TC4.035		Outdoor Circulation/Parking	S10	VA Entrance, and Parking Areas PK13 & PK14