AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		7

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0006	13 Sep 2004		

6. ISSUED BY CODE

US ARMY ENGINEER DISTRICT, FORT WORTH
ATTN: CESWF-CT (RM 2A19)
PO BOX 17300
FORT WORTH, TX 76102-0300

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE FACILITY CODE

(X)

☒ 9A. AMENDMENT OF SOLICIATION NO. W9126G-04-R-0046

9B. DATED *(SEE ITEM 11)* 24 August 2004

☐ 10A. MODIFICATION OF CONTRACT/ORDER NO.

10B. DATED *(SEE ITEM 11)*

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a)By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (*Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

The Solicitation for DESIGN-BUILD MISCELLANEOUS CONSTRUCTION, RENOVATION, AND ALTERATION PROJECTS, FORT HOOD, TEXAS, is amended as follows:

See Continuation Sheets

NOTE: Proposal Receipt date is 23 September 2004, 4 p.m., as previously announced.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA *(Signature of Contracting Officer)*	16C. DATE SIGNED

Item 14. Continued.

CHANGES TO DOCUMENTS 00 - INTRODUCTORY, BIDDING, AND CONTRACT REQUIREMENTS

1. Project Table of Contents: Replace the project table of contents with the accompanying new table of contents bearing the notation "ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046."

2. Bidding Schedule: Replace the Bidding Schedule, pages 00010-1 through 00010-19, with the accompanying new Bidding Schedule bearing the notation "ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046."

CHANGES TO THE SPECIFICATIONS

3. Replacement Sections: Replace the following Sections with the accompanying new sections of the same section number and title, each bearing the notation "ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046:"

01320 PROJECT SCHEDULE

CHANGES TO APPENDICES

4. Appendix K – FACILITIES FUNCTIONAL REQUIREMENTS:

a. Add the following new Appendix K subsections to this Appendix, bearing the notation “ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046:”

K21 MASTER FURNITURE LIST

b. Replace the following Appendix K subsections with the accompanying new subsections, of the same number and some with modified titles, each bearing the notation “ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046."

APPENDIX K COVER PAGE AND INDEX
K1 ADMINISTRATION FACILITIES
K3 BARRACKS MODULE
K4 BATTALION HEADQUARTERS
K7 COMPANY OPERATIONS MODULE
K8 COMPANY OPERATIONS SUPPLY MODULE
K10 DAYROOM
K13 TACTICAL VEHICLE MAINTENANCE (TVM)
K14 UNIT STORAGE BUILDING
K16 VAN DOCK
K17 VAN DOCK COMMO BUILDING
K18 COMMUNICATION DISTRIBUTION NODE BUILDING

CHANGES TO THE DRAWINGS

5. **Volume I (New Construction)**

a. Replacement Drawings: Replace the drawings listed below with the attached new drawings(s) of the same number, bearing the notation "AM #0006":

a104.cal A104 VEHICLE MAINTANCE FACILITY FLOOR PLAN
a105.cal A105 MODULAR ADMIN FACILITY FLOOR PLAN
a107.cal A107 STORAGE FACILITY FLOOR PLAN
a108.cal A108 BARRACKS FLOOR PLAN
a110a.cal A110A MODULAR BATTALION HQ FLOOR PLAN A
a110b.cal A110B MODULAR BATTALION HQ FLOOR PLAN B
a110c.cal A110C MODULAR BATTALION HQ FLOOR PLAN C
a110d.cal A110D MODULAR BATTALION HQ FLOOR PLAN D
a111.cal A111 MODULAR BATTALION HQ GROUPING PLAN
a112.cal A112 MODULAR COMPANY OPS FLOOR PLAN
a117.cal A117 COMMO NODE FLOOR PLAN

6. **Volume IIB (Renovation Work)**

1. Sheet G-006; Note 11. Add the following:

"The areas of the building that are not to be renovated will be occupied by the user. The contractor shall maintain and keep in operation all mechanical, electrical, fire alaem/sprinkler, utility, etc. systems in the non-renovated portions of the building while work is on-going in the renovated portions of the building. The contractor shall provided temporary systems and equipment if necessary to keep the non-renovated portions of the building in operation while they are occupied."

2. Sheet G-007; Note 8. Add the following:

"Keying of new locksets shall be an extension of the keying schedule of the building being renovated, Coordination keying meeting shall take place during the design phase of the building with the government."

3. Sheet 12; Keyed Note 17, add "on all sides of the building".

4. Sheet 13; Keyed Note 5, door shall be insulated metal door.

5. Sheet 16; Keyed Note 1, show location of drawing.
Keyed Note 17, add "on all sides of building."

6. Sheet 17; Keyed Note 1A, add note to all vehicle repair bays.
Keyed Note 5; door shall be insulated metal door.
Keyed Note 32; Doors shall be metal

7. Sheet 25; Keyed Note 5; exterior doors shall be insulated metal
Interior doors hollow metal doors
Keyed Note 17A and 17B, add "entire building"
Keyed Note 32, doors shall be metal
Keyed Note 7, add to list

8. Sheet 28; note what mechanical equipment is on 2nd floor.
Add vehicle exhaust in all repair bays.

9. Sheet 32; Note 5; add “and door”
   Note 17; add “and all sides of building”
   Add note 5 to the doors on drawings that are missing note

10. Sheet 33; Note 5, doors shall be insulated metal doors
    Note 26, provide loading requirements for mezzanine floor
    Note 38; provide mail box requirements. Ceiling in mail box room shall be gyp bd. Ceiling.
    The restroom and mechanical rooms are wrong locations on all drawings. Mechanical/electrical rooms are different then architectural drawing. Doors are wrong in this location, etc.

11. Sheet 41; Note 5, doors shall be insulated metal doors.
    Note 38, mail box requirements. Ceiling shall be gyp bd ceiling in this room.

12. Sheet 48; Note 5, doors shall be insulated metal doors.
    Note 21; mesh partitions shall be to the ceiling.
    Note 38; mail box requirements?
    Note 16; show on drawings.

13. Sheet 55; Note 31, mesh partitions installed to the ceiling.

14. Sheet 68; Note 31; mesh partitions installed to the ceiling.

15. Sheet 70; Note 10A, add “and hardware”

16. Sheet 88; Note 31; mesh partitions installed to the ceiling.

17. Sheet 101; Note 31; mesh partitions installed to the ceiling.

18. Sheet 103; Note 10A; add “and hardware”.

19. Sheet 114; Note 31; mesh partitions installed to the ceiling.

20. Sheet 116; ceiling in mailbox room shall be gyb bd ceiling.

21. Sheet 55; A-102; Building 9424. Note 31, mesh partitions installed to the ceiling.

22. Sheet 129; Bldg 9424; ceiling in mailbox room shall be gyb bd ceiling.

23. Sheet 140; Bldg 9425; Note 31, mesh partitions installed to the ceiling.

24. Sheet 142, Bldg 9425, reroof areas where mech equipment was removed.

25. Sheet 152, Bldg 9426, drawing shows all note 4’s. No note 4 shown.

26. Sheet 153, Bldg 9426, Note 40; add “all sides of bldg.”

7. **Volume IIC (Renovation Work)**

    1. Sheet 159; Note 5A; add “and door”.

2. Sheet 160; Note 5; doors shall be insulated metal doors
   Note 38; provide requirements of mailboxes. Ceiling in mail room shall be gyp board ceiling.
   Note 2 (General Notes); add “and doors”.
   Provide new VCT everywhere where VCT was removed.
   On Note 23A on drawing add “all” after the word “AT”.

3. Sheet 167; Note 6; delete the word “REPLACE” and add “NEW”.
   Provide a Note 31, clarify.

4. Sheet 174; Provide notes for Area B. Keyed notes are missing on drawing.

5. Sheet 181; Note 33 on drawing is not shown correctly. Clarify and provide new note.

6. Sheet 195; Note 5; provide insulated metal doors.
   Note 6; delete “REPLACE” and add “NEW”.
   Add notes to all new renovations in Area B.

7. Sheet 202; Note 6; delete “REPLACE” and add “NEW”.
   Provide Note 9 to keyed notes.

8. Sheet 208; Provide Note 7 on list of Keyed Notes.

9. Sheet 209; Note 5; provide insulated metal doors.
   Note 6; delete “REPLACE” and add “NEW”.

10. Sheet 216; Note 6; delete “REPLACE” and add “NEW”.
    Provide Note 33 to the list of keyed notes.

11. Sheet 222; Provide missing demo notes to drawings.

12. Sheet 230; Note 6; delete “REPLACE” and add “NEW”.
    Provide new ceiling grid and ceiling panels where these were removed. No notes show this.

13. Sheet 237; Provide new ceiling and ceiling grid where ceiling was removed. No notes show this.

14. Sheet 244; Note 6; delete “REPLACE” and add “NEW”.
    Provide new ceiling where ceiling was removed and new VCT/base. No notes are shown on drawing.

15. Sheet 251; Note 6; delete “REPLACE” and add “NEW”.
    Provide gyp board ceiling in mailroom.

16. Sheet 258; Provide Note 6 to the keyed notes.

17. Sheet 265; Note 6; delete “REPLACE” and add “NEW”.
    Provide gyp board ceiling in mailroom.

8. **Volume IID (Renovation Work)**

1. Sheet 273; Note 38; requirements for mail boxes and gyp board ceiling in mail room.

2. Sheet 280; Note 5, provide insulated metal doors.

3. Sheet 287; same as comment 2 above.

4. Sheet 294; Note 38, provide requirements for mail boxes and gyp board ceiling in mail room.
   Provide Note 1 on drawing.

5. Sheet 301; Note 21; provide new mesh partitions.
   Note 38; provide requirements for mail boxes and gyp board ceiling in mail room.

6. Sheet 307; Note 21, do not salvage mesh partitions.

7. Sheet 308; Note 5, provide insulated metal doors.
   Note 21, provide new mesh partitions.

8. Sheet 320, Note 21, do not salvage mesh partitions.

9. Sheet 321, Note 5, provide insulated metal doors.
   Note 21, provide new mesh partitions.

10. Sheet 333, Note 21, do not salvage mesh partitions.

11. Sheet 334, Note 5, provide insulated metal doors.
    Note 21, provide new mesh partitions.

12. Sheet 346, Note 21, do not salvage mesh partitions.

13. Sheet 347, Note 5, provide insulated metal doors.
    Note 21, provide new mesh partitions.
    Note 38, provide requirements for mail boxes and gyp board ceiling in mail room.

14. Sheet 353, Note 21, do not salvage mesh partitions.

15. Sheet 354, Note 5, provide insulated metal doors.
    Note 21, provide new mesh partitions.
    Note 38, provide requirements for mail boxes and gyp board ceiling in mail room.

16. Sheet 360, Note 21, do not salvage mesh partitions.

17. Sheet 361, Note 5, provide insulated metal doors.
    Note 21, provide new mesh partitions.
    Note 38, provide requirements for mail boxes and gyp board ceiling in mail room.

18. Sheet 368, Note 5, provide insulated metal doors.
    Note 21, provide new mesh partitions.
    Note 38, provide requirements for mail boxes and gyp board ceiling in mail room.

19. Sheet 374, Provide notes on drawings. There are no notes provided.

20. Sheet 382, provide requirements for mail boxes and gyp board ceiling in mail room.

END OF AMENDMENT

PROJECT TABLE OF CONTENTS

(AM #0002) VOLUME I

(AM #0002) CONTRACT REQUIREMENTS AND NEW CONSTRUCTION

DOCUMENTS 00 - INTRODUCTORY, BIDDING, AND CONTRACT REQUIREMENTS

00001 PROJECT TABLE OF CONTENTS
00010A SOLICITATION, OFFER AND AWARD, SF-1442
00010B PRICE PROPOSAL SCHEDULE
00100 INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS
00105 OFFEROR'S CHECKLIST
00110 PROPOSAL SUBMISSION INSTRUCTIONS, EVALUATION AND BASIS OF AWARD AM#2
00500 FORMS
00600 REPRESENTATIONS AND CERTIFICATIONS
00700 CONTRACT CLAUSES
00710 WAGE RATES AND AFFIRMATIVE ACTION PLAN
00800 SPECIAL CONTRACT REQUIREMENTS
00800A APPENDIX A EXAMPLES OF EMBEDDED SYSTEMS

DIVISION 01 - GENERAL REQUIREMENTS

01000 DESIGN AND CONSTRUCTION SCHEDULE
01010 GENERAL PROJECT DESCRIPTION AND DESIGN REQUIREMENTS
01011 SPECIAL PROJECT REQUIREMENTS
01012 DESIGN AFTER AWARD
01016 DESIGN DOCUMENT REQUIREMENTS
01310F PROJECT MEETINGS
01312A QUALITY CONTROL SYSTEM (QCS)
01320F PROJECT SCHEDULE
01330 CONSTRUCTION SUBMITTAL PROCEDURES
01340 COLOR/FINISH SAMPLE BOARDS
01355 ENVIRONMENTAL PROTECTION
01356A STORM WATER POLLUTION PREVENTION MEASURES
01368 SPECIAL PROJECT PROCEDURES FOR FORT HOOD
01420 SOURCES FOR REFERENCE PUBLICATIONS
01421 BASIC STORM WATER POLLUTION PREVENTION PLAN
01421R SWPP PLAN INSPECTION AND MAINTENANCE REPORT FORM
01430 DESIGN QUALITY CONTROL
01451 CONTRACTOR QUALITY CONTROL
01500 TEMPORARY CONSTRUCTION FACILITIES
01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS
01561 DUST CONTROL
01572A CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT
01580 BULLETIN BOARD AND PROJECT SIGNS
01670A RECYCLED / RECOVERED MATERIALS
01720 SURVEY, LAYOUT, AND OTHER DATA
01725 ALTERATIONS TO EXISTING FACILITIES
01770F CONTRACT CLOSEOUT

DIVISION 02 - SITE CONSTRUCTION

02220 DEMOLITION
02713A BITUMINOUS BASE COURSE
02722A GRADED-CRUSHED AGGREGATE BASE COURSE
02741A HOT-MIX ASPHALT (HMA) FOR ROADS
02748A BITUMINOUS TACK AND PRIME COATS
02754A CONCRETE PAVEMENTS FOR SMALL PROJECTS

DIVISION 12 - FURNISHINGS (AM #0005)

12400 DEPARTMENT OF THE ARMY - UPH FURNISHINGS PROGRAM (AM #0005)

DIVISION 13 - SPECIAL CONSTRUCTION

13280A ASBESTOS ABATEMENT
13282N —METALS ENCOUNTERED IN PAINT DUST DURING CONSTRUCTION
13284F REMOVAL, RECYCLING AND DISPOSAL OF REGULATED MATERIALS
13805 ONE-WAY FREQUENCY MODULATION (FM) UTILITY MANAGEMENT & CONTROL SYSTEM (UMCS)DIGITAL CONTROL UNIT FT HOOD
13815 AUTOMATED METER READING SYSTEM

APPENDICES

A **(AM#2) NOT USED** ~~FACILITY FUNCTIONAL REQUIREMENTS (TO BE ADDED BY AMENDMENT)~~
B GEOTECHNICAL REPORT
C FORT HOOD INSTALLATION DESIGN GUIDE
D TECHNICAL SUPPLEMENT TO THE DESIGN GUIDE FOR FORT HOOD
E ELECTRICAL REQUIREMENTS

1E SCENARIO #1 POP (POINT OF PRESENCE)MAIN TELECOMMUNICATIONS CLOSET
2E 1114th SIGNAL BATTALION DIRECTORATE OF INFORMATION MANAGEMENT BUILDING COMMUNICATIONS WIRING STANDARD
3E **(AM#5) SITES 9 (17000 BLK) & 13 (TVM)** ~~PLAN, 17000 BLOCK~~
4E PLAN, 16000 BLOCK
(AM#2) 5E SITE 11(TVM 41ST) & SITE 12 (TVM 37TH)
(AM#2) 6E DELETED (AM #0005) ~~SITE 13 (TVM 27TH)~~
(AM#2) 7E SITE 14 (TVM 25TH)
(AM#5) 8E SITE 15 (TVM) ~~SITE 15 (TVM16TH)~~
(AM#2) 9E SITE 2 (LZ PHANTOM)
(AM#2) 10E SITES 3 (49000 BLK), 4 & 5(4900 BLK)
(AM#2) 11E SITE 6 (MOTOR POOL RD)
(AM#2) 12E SITE 10 (1900 BLK)
(AM#2) 13E SITE 24 (200/300 BLK)
(AM#2) 14E SITE 23 (800 BLK)
(AM#2) 15E SITES 21 & 22 (3500 BLK)
(AM#2) 16E SITE 30 (HAAF 700 BLK)
(AM#2) 17E SITE 1 (DOL AREA)
(AM#2) 18E SITES 25, 26, &27 (9500 BLK)
(AM#2) 19E SITE 20 (TANK DESTROYER & 78TH)
(AM#2) 20E 4600 BLDG AREA
(AM#2) 21E COMMUNICATIONS - SITES 3 (49000 BLK), 4 & 5(4900 BLK)
(AM#2) 22E COMMUNICATIONS - SITE 2 (LZ PHANTOM)
(AM#2) 23E COMMUNICATIONS - SITE 20 (TANK DESTROYER & 78TH)
(AM#2) 24E COMMUNICATIONS - SITES 21 & 22 (3500 BLK)
(AM#2) 25E COMMUNICATIONS - SITE 23 (800 BLK)
(AM#2) 26E COMMUNICATIONS - SITE 24 (200/300 BLK)
(AM#2) 27E COMMUNICATIONS - SITES 25, 26, &27 (9500 BLK)
(AM#2) 28E COMMUNICATIONS - SITES 8 (16000 BLK) & 9 (17000 BLK)
(AM#2) 29E COMMUNICATIONS - SITE 30 (HAAF AREA)
(AM#2) 30E COMMUNICATIONS - SITE 10 (1900 BLK)

F REGULATED MATERIALS SCHEDULE
G SAMPLE OF A READY FOR OCCUPANCY CHECKLIST
H SWD ARCHITECTURAL AND ENGINEERING INSTRUCTIONS MANUAL (AEIM)

I DD FORM 1354 AND SAMPLE
J DRAWINGS
K ~~RELOCATABLE~~ FACILITIES FUNCTIONAL REQUIREMENTS (AM #0005)
K1 ADMINISTRATION FACILITIES (AM #0005)
K2 ARMS ROOM (AM #0005)
K3 BARRACKS MODULE (AM #0006)
K4 BATTALION HEADQUARTERS (AM #0005)
K5 NOT APPLICABLE ~~BRIGADE HEADQUARTERS~~ (AM #0005)
K6 CLASSROOM (AM #0005)
K7 COMPANY OPERATIONS MODULE (AM #0006)
K8 COMPANY OPERATIONS SUPPLY MODULE (AM #0006)
K9 COVERED STORAGE (AM #0005)
K10 DAYROOM (AM #0005)
K11 LAUNDRY (AM #0005)
K12 STORAGE BUILDING (AM #0005)
K13 TACTICAL VEHICLE MAINTENANCE (TVM) (AM #0005)
K14 UNIT STORAGE BUILDING (AM #0005)
K15 VEHICLE MAINTENANCE (AM #0005)
K16 VAN DOCK (AM #0005)
K17 VAN DOCK COMMO BUILDING (AM #0005)
K18 COMMUNICATION DISTRIBUTION NODE BUILDING (AM #0005)
K19 MAIL KIOSK (AM #0005)
K20 GUARD HOUSE (AM #0005)
K21 MASTER FURNITURE LIST (AM #0006)

(AM #0004) VOLUME II RENOVATION WORK

(AM #0004) VOLUME IIA DESIGN AND PERFORMANCE REQUIREMENTS
(AM #0004) VOLUME IIB DRAWINGS
(AM #0004) VOLUME IIC DRAWINGS
(AM #0004) VOLUME IID DRAWINGS

-- End of Project Table of Contents --

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE
(To be attached to SF 1442)

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
BASE BID: All work required by the plans and specifications exclusive of work required by Option Bid Items.					
0001	Bldg 4614	1	LS	***	$_____
0002	Bldg 4615	1	LS	***	$_____
0003	Bldg 4616	1	LS	***	$_____
0004	Bldg 4617	1	LS	***	$_____
0005	Bldg 9410	1	LS	***	$_____
0006	Bldg 9413	1	LS	***	$_____
0007	Bldg 9418	1	LS	***	$_____
0008	Bldg 9419	1	LS	***	$_____
0009	Bldg 9420	1	LS	***	$_____
0010	Bldg 9421	1	LS	***	$_____
0011	Bldg 9422	1	LS	***	$_____
0012	Bldg 9423	1	LS	***	$_____
0013	Bldg 9424	1	LS	***	$_____
0014	Bldg 9425	1	LS	***	$_____
0015	Bldg 9426	1	LS	***	$_____
0016	Bldg 9427	1	LS	***	$_____
0017	Bldg 10001	1	LS	***	$_____
0018	Bldg 10002	1	LS	***	$_____
0019	Bldg 10003	1	LS	***	$_____
0020	Bldg 10004	1	LS	***	$_____
0021	Bldg 10005	1	LS	***	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
0022	Bldg 10006	1	LS	***	$_____
0023	Bldg 10007	1	LS	***	$_____
0024	Bldg 10008	1	LS	***	$_____
0025	Bldg 10009	1	LS	***	$_____
0026	Bldg 10010	1	LS	***	$_____
0027	Bldg 10011	1	LS	***	$_____
0028	Bldg 10016	1	LS	***	$_____
0029	Bldg 10018	1	LS	***	$_____
0030	Bldg 10020	1	LS	***	$_____
0031	Bldg 10021	1	LS	***	$_____
0032	Bldg 10022	1	LS	***	$_____
0033	Bldg 10033	1	LS	***	$_____
0034	Bldg 10040	1	LS	***	$_____
0035	Bldg 10045	1	LS	***	$_____
0036	Bldg 12002	1	LS	***	$_____
0037	Bldg 12003	1	LS	***	$_____
0038	Bldg 12004	1	LS	***	$_____
0039	Bldg 12008	1	LS	***	$_____
0040	Bldg 12010	1	LS	***	$_____
0041	Bldg 12019	1	LS	***	$_____
0042	Bldg 12020	1	LS	***	$_____
0043	Bldg 16010	1	LS	***	$_____

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Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
0044	Bldg 87009	1	LS	***	$_____
0045	Bldg 90038	1	LS	***	$_____
0046	**(AM#6) Design Costs for Renovation Work**	**1**	**LS**	*******	**$_____**
0047	Operation and Maintenance Manuals	1	LS	***	$ 75,000
0048	Final Record Drawings	1	LS	***	$ 100,000
0049	Warranty Work (All Contract Work) The monetary value of this bid item shall equal at least 1 per cent of the total of all bid items preceding it. A value less than 1 per cent will result in a determination of non-responsive bid. See Contract Specification Section 01770 CONTRACT CLOSEOUT, paragraph “Contractor’s Response to Construction Warranty Service Requirements.”	1	LS	***	$_____

TOTAL BASE BID $_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
OPTIONS:					
0050	Site 1 DOL New Hardstand (170′ x 200′) see sheet C-3 **[See additional items under SAF Options]**		Option No. 1	$_____	
0050A	Site 1 Open storage cover (155′ x 200′) see sheet A-102		Option No. 2	$_____	
0050B	Site 1 Utilities and base preparation for relocatables to provide Admin Facility (2 modules for total 5000 SF)		Option No. 3	$_____	
0050C	Relocatable Module "Admin" (2500 SF ea. Sheet A105)	$_____(ea) Total 2 required:	Option No. 4	$_____	
0051	Site 2 LZ Phantom Repair, base and overlay access Road with 2" HMAC see sheet C-4 **[See additional items under SAF Options]**		Option No. 5	$_____	
0051A	Site 2 Utilities and base preparation for relocatables to provide Admin Facility (2 modules for total 5000 SF)		Option No. 6	$_____	
0051B	Relocatable Module "Admin" (2500 SF ea. Sheet A105)	$_____(ea) Total 2 required:	Option No. 7	$_____	
0051C	Site 2 Utilities and site slab for relocatables to provide Unit Storage Facility (2 modules for 6600 SF)		Option No. 8	$_____	
0051D	Relocatable Module "Unit Storage" (3300 SF ea. Sheet A103)	$_____(ea) Total 2 required:	Option No. 9	$_____	
0051E	Site 2 Lighting area 500′ x 1600′		Option No. 10	$_____	
0051F	Site 2 Fencing area 500′ x 1600′		Option No. 11	$_____	
0052	Site 3 49000 Block, Provide new access drive. See sheet C-5 **[See additional items under SAF Options]**		Option No. 12	$_____	

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0052A	Site 3 Utilities and site slab for relocatables to provide Unit Storage Facility (2 modules for 6600 SF)	Option No. 13	$_____
0052B	Relocatable Module "Unit Storage" (3300 SF ea. Sheet A103)	$_____(ea)	
	Total 2 required:	Option No. 14	$_____
0052C	Site 3 Utilities and base preparation for relocatables to provide Admin Facility (2 modules for total 5000 SF)	Option No. 15	$_____
0052D	Relocatable Module "Admin" (2500 SF ea. Sheet A105)	$_____(ea)	
	Total 2 required:	Option No. 16	$_____
0052E	Site 3 Utilities and site slab for relocatables to provide Vehicle Maint Facility (2 modules for total 10000 SF)	Option No. 17	$_____
0052F	Relocatable Module "Vehicle Maintenance" (5000 SF Sheet A104)	$_____(ea)	
	Total 2 required:	Option No. 18	$_____
0052G	Site 3 Lighting, Highmast	Option No. 19	$_____
0052H	Site 3 Fencing	Option No. 20	$_____
0053	Site 4 4920 Block, Repair and Overlay existing hardstand. See Sheet C-6 **[See additional items under SAF Options]**	Option No. 21	$_____
0053A	Site 4 Utilities, site prep, site slabs, fencing for 2 relocatable Vehicle Maint Facilities (4 modules for 20000 SF)	Option No. 22	$_____
0053B	Relocatable Module "Vehicle Maintenance" (5000 SF Sheet A104)	$_____(ea)	
	Total 4 required:	Option No. 23	$_____
0054	Site 5 4926 Block, Overlay existing hardstand and construct loading dock See sheet C-7 **[See additional items under SAF Options]**	Option No. 24	$_____
0054A	Site 5 Utilities, site prep, site slab, for 1 relocatable Vehicle Maint Facility (2 modules for total 10000 SF)	Option No. 25	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0054B	Relocatable Module "Vehicle Maintenance" (5000 SF Sheet A104) Total 2 required:	$_____(ea) Option No. 26	$_____
0054C	Site 5 Utilities and base preparation for re-locatables to provide Admin Facility (2 modules for total 5000 SF)	Option No. 27	$_____
0054D	Relocatable Module "Admin" (2500 SF ea. Sheet A105) Total 2 required:	$_____(ea) Option No. 28	$_____
0054E	Site 5 Provide additional security fencing.	Option No. 29	$_____
0055	Site 6 Motor Pool Road, Construct 300'x400' hardstand. See sheet C-8	Option No. 30	$_____
0055A	Site 6 Provide Highmast Lighting	Option No. 31	$_____
0055B	Site 6 Provide Security Fencing	Option No. 32	$_____
0056	Site 8 16000 Block, New 4500SF Perm Classroom See Sheets C-9 and A106	Option No. 33	$_____
0057	Site 9 17000 Block, 16000 SF Perm Unit Storage Bldg. See Sheets C-10 And A107	Option No. 34	$_____
0058	Site 10 1900 Block, Hardstand See Sheet C-11	Option No. 35	$_____
0058A	Site 10 Fencing and site Work	Option No. 36	$_____
0058B	Site 10 Utilities and site slab for relocatables to provide Vehicle Maint Facility (2 modules for total 10000 SF)	Option No. 37	$_____
0058C	Relocatable Module "Vehicle Maintenance" (5000 SF Sheet A104) Total 2 required:	$_____(ea) Option No. 38	$_____
0059	Site 11 TVM See sheets C12, TV1 & TV2	Option No. 39	$_____
0060	Site 12 TVM See sheets C13, TV1 & TV2	Option No. 40	$_____
0061	Site 13 TVM See sheets C14, TV1 & TV2	Option No. 41	$_____
0062	Site 14 TVM See sheets C15, TV1 & TV2	Option No. 42	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0063	Site 15 TVM See sheets C16, TV1 & TV2	Option No. 43	$_____
0064	Site 16 Murphy Loop, New Parking South. See Sheet C17	Option No. 44	$_____
0065	Site 17 Murphy Loop, New Parking North. See Sheet C18	Option No. 45	$_____
0066	Site 18 7000 Block, Overlay-South See Sheet C-19	Option No. 46	$_____
0067	Site 19 7000 Block, Overlay-North See Sheet C-20	Option No. 47	$_____
0068	Site 20 Tank Destroyer at 78th, Utilities and Site Preparation for Battalion HQ Complex #1 (4 modules) See Sheets C21, A110A-D and A111.	Option No. 48	$_____
0068A	Relocatable Module "BN HQ – A" (3000 SF ea. Sheet A110A)	$ _____(ea)	
	Total 1 required:	Option No. 49	$_____
0068B	Re-locatable Module "BN HQ – B" (3000 SF ea. Sheet A110B)	$ _____(ea)	
	Total 1 required:	Option No. 50	$_____
0068C	Re-locatable Module "BN HQ – C" (3000 SF ea. Sheet A110C)	$ _____(ea)	
	Total 1 required:	Option No. 51	$_____
0068D	Re-locatable Module "BN HQ – D" (3000 SF ea. Sheet A110D)	$ _____(ea)	
	Total 1 required:	Option No. 52	$_____
0068E	Site 20 Utilities and Site Prep for Battalion HQ Complex #2 (4 modules) See Sheets A110A-D and A111.	Option No. 53	$_____
0068F	Relocatable Module "BN HQ – A" (3000 SF ea. Sheet A110A)	$ _____(ea)	
	Total 1 required:	Option No. 54	$_____
0068G	Re-locatable Module "BN HQ – B" (3000 SF ea. Sheet A110B)	$ _____(ea)	
	Total 1 required:	Option No. 55	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0068H Re-locatable Module "BN HQ – C" $ _____(ea)
(3000 SF ea. Sheet A110C)
Total 1 required: Option No. 56 $_____

0068I Re-locatable Module "BN HQ – D" $ _____(ea)
(3000 SF ea. Sheet A110D)
Total 1 required: Option No. 57 $_____

0068J Site 20 Utilities and Site Prep for 5 Company Ops Facilities (5 modules for total 15500 SF) See Sheet A112 Option No. 58 $_____

0068K Relocatable Module "Company Ops" $ _____(ea)
(3100 SF ea. Sheet A112)
Total 5 required: Option No. 59 $_____

0068L Site 20 Utilities and Site Prep for 5 Company Ops Supply (5 modules for total 10000 SF) See Sheet A113 Option No. 60 $_____

0068M Relocatable Module "Co Ops Supply" $ _____(ea)
(2000 SF ea. Sheet A113)
Total 5 required: Option No. 61 $_____

0068N Site 20 Utilities and Site Prep for 6 Arms Rooms (200 SF each) Option No. 62 $_____

0068O Relocatable Arms Room $_____(ea)
(200 SF ea. Sheet A113)
Total 6 required: Option No. 63 $_____

0068P Site 20 POV parking, fencing Sidewalks, etc. see sheet C-21 Option No. 64 $_____

0069 Site 21, 3500 Block-East, Repair existing base and overlay. See Sheet C-22 Option No. 65 $_____

0069A Site 21 Utilities and Site Prep for 16 Barracks (16 modules for total 24,800 SF); 1 Mail Kiosk (for 96 personnel); and one Commo. Node Bldg. See Sheet C-22 Option No. 66 $_____

0069B Relocatable Module "Barracks" $_____(ea)
(1550 SF ea. Sheet A108)
Total 16 required: Option No. 67 $_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0069C Relocatable Mail Kiosk (One 96 Box Size required) Option No. 68 $_____

0069D Communications Node Building See Sheet A117 Option No. 69 $_____

0070 Site 22, 3500 Block-**East** ~~West~~, Repair existing and overlay. See Sheet C-23 Option No. 70 $_____

0070A Site 22, Utilities and site slab for relocatables to provide Vehicle Maint Facility (2 modules for total 10000 SF) Option No. 71 $_____

0070B Relocatable Module "Vehicle Maintenance" (5000 SF Sheet A104) $_____(ea)
Total 2 required: Option No. 72 $_____

0070C Site 22, Utilities and site slab for relocatables to provide Unit Storage Facility (2 modules for 6600 SF) Option No. 73 $_____

0070D Relocatable Module "Unit Storage" (3300 SF ea. Sheet A103) $_____(ea)
Total 2 required: Option No. 74 $_____

0070E Site 22, Utilities and base prep. for relocatables to provide Admin Facility (2 modules for total 5000 SF) Option No. 75 $_____

0070F Relocatable Module "Admin" (2500 SF ea. Sheet A105) $_____(ea)
Total 2 required: Option No. 76 $_____

0071 Site 23, 800 Block, POV parking, sidewalks, fire lanes, drainage, etc. see sheet C-24A and C-24B Option No. 77 $_____

0071A Site 23, Utilities and Site Prep for 60 Barracks (60 modules for total 93,000 SF); 1 Dayroom Facility (2 modules total 3100 SF); 1 Laundry-Large (1 module 1550 SF); Mail Kiosk(s)(for 360 personnel); and one Commo. Node Bldg. See Sheet C-24A Option No. 78 $_____

0071B Relocatable Module "Barracks" (1550 SF ea. Sheet A108) $_____(ea)
Total 60 required: Option No. 79 $_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0071C Relocatable Module "Dayroom" $_____(ea)
(1550 SF ea. Sheet A101)
Total 1 required: Option No. 80 $_____

0071D Relocatable Module "Laundry" $ _____(ea)
(1550 SF ea. Sheet A109)
Total 1 required: Option No. 81 $_____

0071E Relocatable Mail Kiosk
(one 360 Box Size Required) Option No. 82 $_____

0071F Communications Node Building Option No. 83 $_____
See Sheet A117

0072 Site 24, 200/300 Block, POV parking Option No. 84 $_____
sidewalks, fire lanes, drainage, etc.
see sheet C-25.

0072A Site 24, Utilities and Site Prep Option No. 85 $_____
for 12 Barracks (12 modules for
total 18,600 SF); 1 Laundry-Small
(1 module 1200 SF); Mail Kiosk (for 72
personnel); and one Commo. Node Bldg.
See Sheet C-25

0072B Relocatable Module "Barracks" $_____(ea)
(1550 SF ea. Sheet A108)
Total 12 required: Option No. 86 $_____

0072C Re-locatable Module "Laundry-Small" $_____(ea)
(1200 SF ea. Sheet A109)
Total 1 required: Option No. 87 $_____

0072D Relocatable Mail Kiosk
(One, 72 Box Size required) Option No. 88 $_____

0072E Communications Node Building Option No. 89 $_____
See Sheet A117

0072F Site 24, Utilities and Site Prep Option No. 90 $_____
for 4 Battalion HQ Complexes
(16 modules) See Sheets A110A-D and
A111.

0072G Relocatable Module "BN HQ – A" $ _____(ea)
(3000 SF ea. Sheet A110A)
Total 4 required: Option No. 91 $_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0072H	Re-locatable Module "BN HQ – B" (3000 SF ea. Sheet A110B) Total 4 required:	$ _____(ea) Option No. 92	 $_____
0072I	Re-locatable Module "BN HQ – C" (3000 SF ea. Sheet A110C) Total 4 required:	$ _____(ea) Option No. 93	 $_____
0072J	Re-locatable Module "BN HQ – D" (3000 SF ea. Sheet A110D) Total 4 required:	$ _____(ea) Option No. 94	 $_____
0072K	Site 24, Utilities and Site Prep for 16 Company Ops Buildings (16 modules); 16 Company Ops Supply Buildings (16 modules), and 16 Arms Room Modules (200 SF each) See Sheets A-112 and 113.	Option No. 95	$_____
0072L	Relocatable Module "Company Ops" (3100 SF ea. Sheet A112) Total 16 required:	$_____(ea) Option No. 96	 $_____
0072M	Re-locatable Module "Co Ops Supply" (2000 SF ea. Sheet A113) Total 16 required:	$_____(ea) Option No. 97	 $_____
0072N	Relocatable Arms Room (200 SF ea. Sheet A113) Total 16 required:	$_____(ea) Option No. 98	 $_____
0073	Site 25, 9500 Block (West) Replace existing gravel with 10" Bituminous Aggregate Base, see sheet C-26	Option No. 99	$_____
0073A	Site 25, 2" HMAC overlay on item 0049 and construct 40,000SF new Hardstand (2"HMAC over 10" Bituminous Aggregate Base), Sidewalks, drainage, fencing, etc. see sheet C-26	Option No.100	$_____
0073B	Site 25, Utilities and base prep. for relocatables to provide Admin Facility (2 modules for total 5000 SF)	Option No.101	$_____
0073C	Relocatable Module "Admin" (2500 SF ea. Sheet A105) Total 2 required:	$_____(ea) Option No.102	 $_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0073D	Site 25, Utilities and site slab for relocatables to provide Vehicle Maint Facility (2 modules for total 10000 SF)	Option No.103	$_____
0073E	Relocatable Module "Vehicle Maintenance" (5000 SF Sheet A104) Total 2 required:	$_____(ea) Option No.104	$_____
0073F	Site 25, Utilities and site slab for relocatables to provide Unit Storage Facility (2 modules for 6600 SF)	Option No.105	$_____
0073G	Relocatable Module "Unit Storage" (3300 SF ea. Sheet A103) Total 2 required:	$_____(ea) Option No.106	$_____
0074	Site 26, 9500 Block (Center) Construct 40,000 SF Hardstand (2"HMAC over 10" Bituminous Aggregate Base), Sidewalks, Drainage, fencing, etc. see sheet C-27	Option No.107	$_____
0074A	Site 26, Utilities and base prep. for relocatables to provide Admin Facility (2 modules for total 5000 SF)	Option No.108	$_____
0074B	Relocatable Module "Admin" (2500 SF ea. Sheet A105) Total 2 required:	$_____(ea) Option No.109	$_____
0074C	Site 26, Utilities and site slab for relocatables to provide Vehicle Maint Facility (2 modules for total 10000 SF)	Option No.110	$_____
0074D	Relocatable Module "Vehicle Maintenance" (5000 SF Sheet A104) Total 2 required:	$_____(ea) Option No.111	$_____
0074E	Site 26, Utilities and site slab for relocatables to provide Unit Storage Facility (2 modules for 6600 SF)	Option No.112	$_____
0074F	Relocatable Module "Unit Storage" (3300 SF ea. Sheet A103) Total 2 required:	$_____(ea) Option No.113	$_____
0075	Site 27, 9500 Block (East). Construct access drives, fencing, sidewalks, drainage, etc. See Sheet C-28 **[See additional items under SAF Options]**	Option No.114	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0075A	Site 27, Utilities and base prep. for relocatables to provide Admin Facility (2 modules for total 5000 SF)	Option No.115	$_____
0075B	Relocatable Module "Admin" (2500 SF ea. Sheet A105)	$_____(ea)	
	Total 2 required:	Option No.116	$_____
0075C	Site 27, Utilities and site slab for relocatables to provide Vehicle Maint Facility (2 modules for total 10000 SF)	Option No.117	$_____
0075D	Relocatable Module "Vehicle Maintenance" (5000 SF Sheet A104)	$_____(ea)	
	Total 2 required:	Option No.118	$_____
0075E	Site 27, Utilities and site slab for relocatables to provide Unit Storage Facility (2 modules = 6600 SF)	Option No.119	$_____
0076	Site 28, Murphy Road at Bldg 728 POV parking, fencing, drainage, sidewalks, fire lanes, etc. see sheet C-29	Option No.120	$_____
0076A	Site 28, Utilities and Site Prep for 1 Company Ops Buildings (1 module); 1 Company Ops Supply Buildings (1 module), and 1 Arms Room Module (200 SF) See Sheets A-112 and 113.	Option No.121	$_____
0076B	Re-locatable Module "Company Ops" (3100 SF ea. Sheet A112)	$_____(ea)	
	Total 1 required:	Option No.122	$_____
0076C	Re-locatable Module "Co Ops Supply" (2000 SF ea. Sheet A113)	$_____(ea)	
	Total 1 required:	Option No.123	$_____
0076D	Relocatable Arms Room (200 SF ea. Sheet A113)	$_____(ea)	
	Total 1 required:	Option No.124	$_____
0077	Site 29, Murphy Road at Bldg 6976 POV parking, fencing, drainage, sidewalks, fire lanes, etc. see sheet C-30	Option No.125	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0077A	Site 29, Utilities and Site Prep for 1 Company Ops Buildings (1 module); 1 Company Ops Supply Buildings (1 module), and 1 Arms Room Module (200 SF) See Sheets A-112 and 113.	Option No.126	$_____
0077B	Re-locatable Module "Company Ops" (3100 SF ea. Sheet A112) Total 1 required:	$ _____(ea) Option No.127	$_____
0077C	Re-locatable Module "Co Ops Supply" (2000 SF ea. Sheet A113) Total 1 required:	$ _____(ea) Option No.128	$_____
0077D	Relocatable Arms Room (200 SF ea. Sheet A113) Total 1 required:	$_____(ea) Option No.129	$_____
0078	Site 30 Airfield Repair **(AM#6) of existing ECHO apron to repair or pave over trench drains** (See Sheet C-31)	Option No.130	$_____
0079	**(AM#6)Site 31 (4600 Block) Site work.**	**Option No.131**	**$_____**
0080	**(AM#6) Site 31 Security Guard House (2 required)**	**Option No.132**	**$_____**
0081	Waste Material Storage Unit Safety Storage Model 10N, Ref GSA Contract GS-28F-1099C (6 req.)	$_____(ea) Option No.133	$_____
0082	Waste Material Storage Unit GSA Safety Storage Model 40N, Ref Ref GSA Contract GS-28F-1099C (2 req.)	$_____(ea) Option No.134	$_____
0083	8" Pipe Guard – Complete installed at unspecified locations. Where RFP documents show pipe guards, include price in general site prep line item. Ref AEIM detail plate C22 (100 req.)	$_____(ea) Option No.135	$_____
0084	Furniture (Classroom)	Option No.136	$_____
0085	Furniture (Barracks Renovation)	Option No.137	$_____
0086	Furniture (Relocatable Modules)	Option No.138	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0087	Relocation of 3000 Soldiers (1500 lbs Property per soldier)	Option No.139	$_____(ea)
0088	Additional cost for stucco finish and 3:12 pitched gable roof on "Dayroom" module:	$_____(ea)	
	Total 1 Module	Option No.140	$_____
0089	Additional cost for stucco finish and 3:12 pitched gable roof on "Barracks" module:	$_____(ea)	
	Total 88 Modules	Option No.141	$_____
0090	Additional cost for stucco finish and 3:12 pitched gable roof on "Laundry" module:	$_____(ea)	
	Total 1 Module	Option No.142	$_____
0091	Additional cost for stucco finish and 3:12 pitched gable roof on "Laundry-Small" module:	$_____(ea)	
	Total 1 Modules	Option No.143	$_____
0092	Additional cost for stucco finish and 3:12 pitched gable roof on "Company Ops" module:	$_____(ea)	
	Total 23 Modules	Option No.144	$_____
0093	Additional cost for stucco finish and 3:12 pitched gable roof on "Company Ops Supply" module:	$_____(ea)	
	Total 23 Modules	Option No.145	$_____
0094	Additional cost for stucco finish and 3:12 pitched gable roof on "BN HQ A/B/C/D" module:	$_____(ea)	
	Total 24 Modules	Option No.146	$_____
0095	Additional cost for stucco siding on "Arms Room" module:	$_____(ea)	
	Total 24 Modules	Option No.147	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0096	**(AM#6) Design costs for site work, utilities, permanent and relocatable structures**	**Option No.148**	**$_____**

TOTAL OPTIONS NOS. 1 THRU 148 **$_____**

TOTAL BASE BID PLUS OPTION NOS. 1 THRU 148 **$_____**

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

Following items Subject to Availability of Funds

0097	Site 1 Construct new 120′ x 500′ POV parking with access Drive (See Sheet C3).	Option No.149	$_____
0098	Site 1 Overlay existing Base with 2″ HMAC inside fenced area.	Option No.150	$_____
0099	Site 2 Construct new 500′ x 1600′ Hardstand (2″ HMAC over 10″ Bituminous Aggregate Base), Area, Lighting, Gates Fencing, Drainage, etc.(See Sheet C-4).	Option No.151	$_____
0100	Site 3 Construct new 530′ x 940′ Hardstand (2″ HMAC over 10″ Bituminous Aggregate Base), Site Preparation Area Lighting, Fencing, Gate, Drainage, etc. See Sheet C-5)	Option No.152	$_____
0101	Site 6 Construct new 300′ x 400′ Hardstand (2″ HMAC over 10″ Bituminous Aggregate Base), Site Preparation, Area Lighting, Fencing, Gate, Drainage, etc. (See Sheet C-8)	Option No.153	$_____
0102	Construct New Van Dock (1 required) See Sheet A114	Option No.154	$_____
0103	Site 30 Construct new **(AM#6) expansion of ECHO apron, demo and relocate taxiway, new concrete apron and helipad, shoulders, lights re-striping, reflectors, etc.** ~~Airfield expansion.~~ (See Sheet C-31)	Option No.155	$_____
0104	Site 32 Demolish Building 4452	Option No.156	$_____
0105	Site 32 Demolish Building 4465	Option No.157	$_____
0106	Site 32 Demolish Building 4466	Option No.158	$_____
0107	Site 32 Demolish Building 4467	Option No.159	$_____
0108	Site 32 Demolish Building 4468	Option No.160	$_____
0109	Site 32 Demolish Building 4473	Option No.161	$_____

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

0110	Site 32 Demolish Building 4475	Option No.162	$_____
0111	Site 32 Demolish Building 4476	Option No.163	$_____
0112	Site 32 Exterior communications work to replace communications infra-structure demolished by items (78-85)	Option No.164	$_____
0113	**(AM#6) Design costs for SAF items 97-112.**	**Option No.165**	**$_____**

TOTAL OPTIONS NOS. 149 THRU 166 **$_____**

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

NOTES:

1. ARITHMETIC DISCREPANCIES (EFARS 14.407-2)

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

(1) Obviously misplaced decimal points will be corrected;

(2) In case of discrepancy between unit price and extended price, the unit price will govern;

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

(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 the 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.

2. If a modification to a bid based on unit prices is submitted, which provides for a lump sum adjustment to the total estimated cost, the application of the lump sum adjustment to each unit price in the bid schedule must be stated. If it is not stated, the bidder agrees that the lump sum adjustment shall be applied on a pro rata basis to every unit price in the bid schedule.

3. Bidders must bid on all items.

4. Costs attributable to Division 01 - General Requirements are assumed to be prorated among bid items listed.

5. Responders are advised that this requirement may be delayed, cancelled or revised at any time during the solicitation, selection, evaluation, negotiation and/or final award process based on decisions related to DOD changes in force structure and disposition of the Armed Forces.

ACCOMPANYING AMENDMENT NO. 0006 TO SOLICITATION NO. W9126G-04-R-0046

Design-Build Miscellaneous Construction, Renovation & Alteration Projects
Fort Hood, Texas

Solicitation No. W9126G-04-R-0046

BIDDING SCHEDULE

NOTES: (cont)

6. EXERCISE OF OPTIONS (SWDR 715-1-1 (16 January 1996))

The Government reserves the right to exercise the option(s) by written notice to the Contractor either singularly or in any combination for up to 180 calendar days after award of the Base Bid without an increase in the Offeror's Bid Price. Completion of added items shall continue at the same schedule as the Base Bid unless otherwise noted in Section 01000 CONSTRUCTION SCHEDULE, paragraph 1 entitled SCHEDULE.

7. ABBREVIATIONS

For the purpose of this solicitation, the units of measure are represented as follows:

LS (lump sum)

END OF BIDDING SCHEDULE

SECTION 01320F

PROJECT SCHEDULE
AMENDMENTS NO. 0002 and 0006

PART 1 GENERAL

1.1 QUALIFICATIONS

The Contractor shall designate a scheduler who shall he responsible for the preparation of the project schedule and periodic updates. The Scheduler shall have three years of experience in construction scheduling, estimating, cost management, and impact/change order analysis. The Scheduler shall have the responsibility of coordinating and updating the schedule and providing required updates in a timely manner. **(AM#2) This Scheduler shall be a full time employee whose sole responsibility will be scheduling and who shall be on the site at all times during progress of the work. Qualifications of this individual shall be submitted to the Contracting Officer for review and approval with the Offeror' management/technical proposal submission.** ~~Qualifications of the scheduler shall be submitted to the Contracting Officer for review with the Preliminary Project Schedule submission.~~

1.2 SEQUENCING AND PHASING

The maintenance of traffic flow onto the Fort and through the various construction sites shall be given a high priority. As a result, the Contractor shall prepare a construction schedule that will consider the sequence and phasing of construction at the various sites in order to maintain the flow of traffic.

1.2.1 Sequencing

(AM #0006) ~~Fort Hood has 45 buildings to receive partial renovations, 5 new tracked vehicle maintenance sheds (TVMs), 1 new battalion classroom building, 1 new unit storage building, 1 new covered storage area, 4 new asphalted hardstand areas, 2 new POV parking areas, 4 asphalt overlays of existing hardstands, and 10 re-locatable vehicle maintenance structures with supporting utilities.~~

The function of each of these buildings and sites are key factors in deciding the construction priorities. The priorities are listed below:

Priority 1 – **(AM #0006) Buildings 9418, 9419, 9421, 9422, 9426, 9427, 10016, 10018, 10020, 10021, 10022, 4614, 4615, 4616, 4617, 9410, 10003, 10033, 16010, 87009, 90038, 9420, Site 1 (DOL Hardstand/Cover/Admin), Site 2 (LZ Phantom Hardstand), Site 3 (49000 Block Hardstand), Site 4 (4920 Block Overlay), Site 5 (4926 Block Overlay), Site 6 (Motor Pool Road Hardstand), Site 8 (16000 Block Classroom), Site 9 (17000 Block Storage), Site 10 (1900 Block Hardstand).** ~~Buildings 9418, 9419, 9421, 9422, 9426, 9427, 10016, 10018, 10020, 10021, 10022, 4614, 4615, 4616, 4617, 9410, 10003, 10033, 16010, 87009, 90038, 9420, Site 1 (S-1 DOL Hardstand/Cover), Site 2 (S-2 LZ Phantom Hardstand), Site 3 (S-3 49000 Block Hardstand), Site 4 (S-4 4920 Block Overlay), Site 5 (S-5 4926 Block Overlay), Site 6 (S-6 Motor Pool Road Hardstand), Site 8 (S-8 16000 Block Classroom), Site 9 (S-9 17000 Block Storage), Site 10 (S-10 1900 Block Hardstand).~~

Priority 2 – **(AM #0006) Buildings 10001, 10004, 10005, 10006, 10007, 10008, 10009, 10010, 10011, Site 11 (TVM), Site 12 (TVM), Site 13**

(TVM), Site 14 (TVM), Site 15 (TVM). ~~Buildings 10001, 10004, 10005, 10006, 10007, 10008, 10009, 10010, 10011, Site 11 (S-11 TVN 41st), Site 12 (S-12 TVN 37th), Site 13 (S-13 TVN 27th), Site 14 (S-14 TVN 25th), Site 15 (S-15 TVN 16th).~~

Priority 3 – **(AM#0006) Buildings 9413, 9423, 9424, 9425, 10002, 10040, 10045, 12002, 12003, 12004, 12008, 12010, 12019, 12020, Site 16 (Murphy Loop Parking South), Site 17 (Murphy Loop Parking North), Site 18 (7000 Block Overlay South), Site 19 (7000 Block Overlay North).** ~~Buildings 9413, 9423, 9424, 9425, 10002, 10040, 10045, 12002, 12003, 12004, 12008, 12010, 12019, 12020, Site 16 (S-16 Murphy Loop Parking South), Site 17 (S-17 Murphy Loop Parking North), Site 18 (S-18 7000 Block Overlay South), Site 19 (S-19 7000 Block Overlay North).~~

Priority 4 – **Site 3(Modules), Site 4(Modules), Site 5(Modules), Site 10(Modules), Site 20 (BN HQ, 4200 Block), Site 21 (3500 Block West), Site 22 (3500 Block East), Site 23 (800 Block), Site 24 (200/300 Block), Site 25 (9500 Block West), Site 26 (9500 Block Central), Site 27 (9500 Block East), Site 28 (Murphy Road and Bldg 728), Site 29 (Murphy Road and Bldg 6978), Site 30 (HAAF Apron Extension), Site 31 (4600 Block)** ~~Site 3-R1 (S-3-R1 Vehicle Maintenance), Site 3-R2 (S-3-R2 Vehicle Maintenance, Site 4-R1 (S-4-R1 Vehicle Maintenance), Site 4-R2 (S-4-R2 Vehicle Maintenance), Site 4-R3 (S-4-R3 Vehicle Maintenance), Site 4-R4 (S-4-R4 Vehicle Maintenance), Site 5-R1 (S-5-R1 Vehicle Maintenance), Site 5-R2 (S-5-R2 Vehicle Maintenance), Site 10-R-1 (S-10-R1 Vehicle Maintenance), Site 10-R-2 (S-10-R2), Site 7 (S-7 72nd & Terminal Hardstand).~~

Priority 5 – **(AM #0006) Site 32 (Demo 4400 Block), relocation, and furniture** ~~Relocation and furniture~~.

The renovations and miscellaneous sites are to placed into phases and grouped as follows:

Phase I - Buildings 9418, 9419, 9421, 9422, 9426, 9427, 10016, 10018, 10020, 10021, and 10022.

Phase II – Buildings 4614, 4615, 4616, 4617, 9410, 10003, 10033 16010, 87009, and 90038.

Phase III – Buildings 9420, 10001, 10004, 10005, 10006, 10007, 10008, 10009, 10010, 10011.

Phase IV – Buildings 9413, 9423, 9424, 9425, 10002, 10040, 10045, 12002, 12003, 12004, 12008, 12010, 12010, 12019, and 12020.

Phase V – **(AM #0006) Site 1, Site 2, Site 4, Site 5** ~~Site 1, Site 2, Site 4, Site 4-R1, Site 4-R2, Site 4-R3, Site 4-R4, Site 5, Site 5-R1 and Site 5-R2~~.

Phase VI – **(AM #0006) Site 3, Site 6, Site 10.** ~~Site 3, Site 3-R1, Site 3-R2, Site 6, Site 10, Site 10-R1 and Site 10-R2.~~

Phase VII – Site 8 and Site 9.

Phase VIII – Site 11, Site 12, Site 13, Site 14 and Site 15.

Phase IX – Site 16, Site 17, Site 18, Site 19.

(AM #0006) Phase X – Site 20, Site 21, Site 22, Site 23, Site 24, Site 25, Site 26, Site 27, Site 28, Site 29, Site 30, Site 31.

(AM #0006) Phase XI – Site 32

1.2.1.1 Logic of Sequence, Required Completion & Liquidated Damages

Commence, prosecute, and complete the work under this contract in accordance with the following schedule and Section 00800 SPECIAL CONTRACT REQUIREMENT clauses COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK and LIQUIDATED DAMAGES:

This project is to be constructed as shown in the following Flow Diagram with the building renovations and the sites grouped into nine (I-IX) phases with the described logic of sequence and with the required completion dates after the notice to proceed (NTP) is issued for the basic contract. The contract schedule as described further in this specification section shall also include the phases, logic of sequence and the required completion times as described below.

Flow Diagram:

```
          ------------------------------------------------------------
          Phase I
Basic Contract NTP
                            → 9418          → 9419
                            → 9422          → 9421
                            → 9427          → 9426
                            → 10016         → 10018
                            → 10022         → 10021          → 10020
          ------------------------------------------------------------
          Phase II
Basic Contract NTP          → 4614
                            → 4615
                            → 4616
                            → 4617
                            → 9410
                            → 10003
                            → 10033
                            → 16010
                            → 87009
                            → 90038
          ------------------------------------------------------------
          Phase III
Basic Contract NTP          → 120 Calendar Days          → 9420
                                                         → 10001
                                                         → 10004
                                                         → 10005
                                                         → 10006
                                                         → 10007
                                                         → 10008
                                                         → 10009
                                                         → 10010
                                                         → 10011

          ------------------------------------------------------------
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Phase IV

Basic Contract NTP → 300 Calendar Days → 9413
→ 9423
→ 9424
→ 9425
→ 10002
→ 10040
→ 10045
→ 12002
→ 12003
→ 12004
→ 12008
→ 12010
→ 12019
→ 12020

Phase V

(AM #0006) Basic Contract NTP → Site 1 → Site 5
→ Site 2 → Site 4

~~Basic Contract NTP → Site 1 → Site 5~~
~~→ Site 5-R1~~
~~→ Site 5-R2~~
~~→ Site 2 → Site 4~~
~~→ Site 4-R1~~
~~→ Site 4-R2~~
~~→ Site 4-R3~~
~~→ Site 4-R4~~

Phase VI

(AM #0006) Basic Contract NTP → Site 3
→ Site 6
→ Site 10

~~Basic Contract NTP → Site 3~~
~~→ Site 3-R1~~
~~→ Site 3-R2~~
~~→ Site 6~~
~~→ Site 10~~
~~→ Site 10-R1~~
~~→ Site 10-R2~~

Phase VII

Basic Contract NTP → Site 8
→ Site 9

Phase VIII

Basic Contract NTP → Site 11
→ Site 12
→ Site 13
→ Site 14
→ Site 15

Phase IX

Basic Contract NTP → Site 16
→ Site 17
→ Site 18

→ Site 19

(AM #0006) Phase X
Basic Contract NTP **→ Site 20**
→ Site 21
→ Site 22
→ Site 23
→ Site 24
→ Site 25
→ Site 26
→ Site 27
→ Site 28
→ Site 29
→ Site 30
→ Site 31

(AM #0006) Phase XI
Basic Contract NTP **→ 194 Calendar Days** **→ Site 32**

1.2.1.1.1 Defined Logic of Sequence

A note that dictates how the work shall proceed further defines each of the following sequences.

Phase I:

NTP → Building 9418 → Building 9419
Note: Renovation of Building 9419 is not to start until two weeks after completion and acceptance of Building 9418.

NTP → Building 9422 → Building 9421
Note: Renovation of Building 9421 is not to start until two weeks after completion and acceptance of Building 9422.

NTP → Building 9427 → Building 9426
Note: Renovation of Building 9426 is not to start until two weeks after completion and acceptance of Building 9426.

NTP → Building 10016 → Building 10018
Note: Renovation of Building 10018 is not to start until two weeks after completion and acceptance of Building 10016.

NTP → Building 10022 → Building 10021 → Building 10020
Note: Renovation of Building 10020 is not to start until two weeks after completion and acceptance of Building 10021. Renovation of Building 10021 is not to start until two weeks after completion and acceptance of Building 10022.

Phase II:

NTP → Building 4614
NTP → Building 4615
NTP → Building 4616
NTP → Building 4617
NTP → Building 9410
NTP → Building 10003
NTP → Building 10033
NTP → Building 16010
NTP → Building 87009
NTP → Building 90038

Note: No special notes for all buildings in Phase II.

Phase III:

NTP → 120 Calendar Days → Building 9420
NTP → 120 Calendar Days → Building 10001
NTP → 120 Calendar Days → Building 10004
NTP → 120 Calendar Days → Building 10005
NTP → 120 Calendar Days → Building 10006
NTP → 120 Calendar Days → Building 10007
NTP → 120 Calendar Days → Building 10008
NTP → 120 Calendar Days → Building 10009
NTP → 120 Calendar Days → Building 10010
NTP → 120 Calendar Days → Building 10011

Note: Renovation of all the buildings in Phase III are not to start until one-hundred-twenty (120) calendar days after basic contract Notice to Proceed.

Phase IV:

NTP → 300 Calendar Days → Building 9413
NTP → 300 Calendar Days → Building 9423
NTP → 300 Calendar Days → Building 9424
NTP → 300 Calendar Days → Building 9425
NTP → 300 Calendar Days → Building 10002
NTP → 300 Calendar Days → Building 10040
NTP → 300 Calendar Days → Building 10045
NTP → 300 Calendar Days → Building 12002
NTP → 300 Calendar Days → Building 12003
NTP → 300 Calendar Days → Building 12004
NTP → 300 Calendar Days → Building 12008
NTP → 300 Calendar Days → Building 12010
NTP → 300 Calendar Days → Building 12019
NTP → 300 Calendar Days → Building 12020

Note: Renovation of all the buildings in Phase IV are not to start until three hundred (300) calendar days after basic contract Notice to Proceed.

Phase V:

(AM #0006) NTP → Site 1 → Site 5
Note: Construction work on Site 5 is not to start until 2 weeks after completion and acceptance of Site 1.

NTP → Site 2 → Site 4
Note: Construction work on Site 4 is not to start until 2 weeks after completion and acceptance of Site 2.

~~NTP → Site 1 → Site 5~~
~~Note: Construction work on Site 5 is not to start until 2 weeks after completion and acceptance of Site 1.~~

~~NTP → Site 1 → Site 5-R1~~
~~Note: Construction work on Site 5R-1 is not to start until 2 weeks after completion and acceptance of Site 1.~~

~~NTP → Site 1 → Site 5-R2~~
~~Note: Construction work on Site 5R-2 is not to start until 2 weeks after completion and acceptance of Site 1.~~

~~NTP → Site 2 → Site 4~~
~~Note: Construction work on Site 4 is not to start until 2 weeks~~

~~after completion and acceptance of Site 2.~~

~~NTP → Site 2 → Site 4-R1~~
~~Note: Construction work on Site 4-R1 is not to start until 2 weeks after completion and acceptance of Site 1.~~

~~NTP → Site 2 → Site 4-R2~~
~~Note: Construction work on Site 4-R2 is not to start until 2 weeks after completion and acceptance of Site 2.~~

~~NTP → Site 2 → Site 4-R3~~
~~Note: Construction work on Site 4-R3 is not to start until 2 weeks after completion and acceptance of Site 2.~~

~~NTP → Site 2 → Site 4-R4~~
~~Note: Construction work on Site 4-R4 is not to start until 2 weeks after completion and acceptance of Site 2.~~

Phase VI:
(AM #0006) NTP → Site 3
NTP → Site 6
NTP → Site 10

Note: No special notes for all sites in Phase VI.

~~NTP → Site 3~~
~~NTP → Site 3-R1~~
~~NTP → Site 3-R2~~
~~NTP → Site 6~~
~~NTP → Site 10~~
~~NTP → Site 10-R1~~
~~NTP → Site 10-R2~~

~~Note: No special notes for all sites in Phase VI.~~

Phase VII:
NTP → Site 8
NTP → Site 9

Note: No special notes for all sites in Phase VII.

Phase VIII:
NTP → Site 11
NTP → Site 12
NTP → Site 13
NTP → Site 14
NTP → Site 15

Note: No special notes for all sites in Phase VIII.

Phase IX:

NTP → Site 16
NTP → Site 17
NTP → Site 18
NTP → Site 19

Note: No special notes for all sites in Phase IX.

(AM #0006) Phase X:

NTP → Site 20
NTP → Site 21
NTP → Site 22
NTP → Site 23
NTP → Site 24
NTP → Site 25
NTP → Site 26
NTP → Site 27
NTP → Site 28
NTP → Site 29
NTP → Site 30
NTP → Site 31

Note: No special notes for all sites in Phase IX.

(AM #0006) Phase XI:

NTP → 194 Calendar Days → Site 32

Note: Demolition cannot begin until 2 weeks after construction and acceptance of Site 20 (Bn HQ, 4200 Block).

1.2.1.1.2 Defined Required Completion and Liquidated Damages

All work is to be done in sequence as defined in the above paragraphs and to be completed within the duration allocated within the contract schedule. The renovation of each of the buildings, the construction of the independent sites, and the re-locatable structures are each considered separate items of work within the contract and each have separate contract completion times from the basic contract Notice to Proceed (NTP). Each of these items of work have separate liquated damages associated with them and will be assessed as determined by the Contracting Officer for failure to deliver the items of work within the time frame allocated as described below:

Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
Building 4614 (Renovate for Admin)	Immediately after Basic Contract NTP	one-hundred-forty-one (141 days)	$5,000.00
Building 4615 (Renovate for Admin)	Immediately after Basic Contract NTP	one-hundred-forty-three (143 days)	$5,000.00
Building 4616 (Renovate for Admin)	Immediately after Basic Contract NTP	one-hundred-forty-six (146 days)	$5,000.00
Building 4617 (Renovate for Admin)	Immediately after Basic Contract NTP	one-hundred-forty-eight (148 days)	$5,000.00
Building 9410 (Renovate for Battalion Aid Sta.)	Immediately after Basic Contract NTP	one-hundred-nineteen (119 days)	$5,000.00

Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
Building 9413 (Renovate for 6 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-eight (408 days)	$5,000.00
Building 9418 (Renovate for 3 Company Ops)	Immediately after Basic Contract NTP	one-hundred-six (106 days)	$5,000.00
Building 9419 Renovate for 2 Company Ops & 1 Battalion HQ)	To start two weeks after completion and acceptance of Building 9418	two-hundred-thirty-one (231 days)	$5,000.00
Building 9420 (Renovate for 2 Company Ops & 1 Battalion HQ)	Work to start 120 days after Basic Contract NTP	two-hundred-thirty-eight (238 days)	$5,000.00
Building 9421 (Renovate for 1 Company Ops & 1 Battalion HQ)	To start two weeks after completion and acceptance of Building 9422	two-hundred-thirty-four (234 days)	$5,000.00
Building 9422 (Renovate for 3 Company Ops)	Immediately after Basic Contract NTP	one-hundred-eight (108 days)	$5,000.00
Building 9423 (Renovate for 3 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred (400 days)	$5,000.00
Building 9424 (Renovate for 4 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-one (401 days)	$5,000.00
Building 9425 (Renovate for 3 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred (400 days)	$5,000.00
Building 9426 (Renovate for ½ Company Ops)	To start two weeks after completion and acceptance of Building 9427	two-hundred-forty-five (245 days)	$5,000.00
Building 9427 (Renovate for ½ Company Ops)	Immediately after Basic Contract NTP	one-hundred-twenty-one (121 days)	$5,000.00
Building 10001 (Renovate for 2 Company Ops & ½ Battalion HQ)	Work to start 210 days after Basic Contract NTP	three-hundred-two (302 days)	$5,000.00

	Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
	Building 10002 (Renovate for 2 Company Ops & ½ Battalion HQ)	Work to start 300 days after Basic Contract NTP	four-hundred-thirty-five (435 days)	$5,000.00
	Building 10003 (Renovate for 2 Company Ops & ½ Battalion HQ)	Immediately after Basic Contract NTP	one-hundred-sixteen (116 days)	$5,000.00
	Building 10004 (Renovate for 2 Company Ops & ½ Battalion HQ)	Work to start 210 days after Basic Contract NTP	three-hundred-four (304 days)	$5,000.00
(AM #0006)	**Building 10005 (Renovate for 3 Company Ops)**	**Work to start 120 days after Basic Contract NTP**	**three-hundred-twenty-two (322 days)**	**$5,000.00**
	~~Building 10005 (Renovate for 3 Company Ops)~~	~~Work to start 210 days after Basic Contract NTP~~	~~three-hundred-twenty-two (322 days)~~	~~$5,000.00~~
(AM #0006)	**Building 10006 (Renovate for 2 Company Ops & ½ Battalion HQ)**	**Work to start 120 days after Basic Contract NTP**	**three-hundred-seven (307 days)**	**$5,000.00**
	~~Building 10006 (Renovate for 2 Company Ops & ½ Battalion HQ)~~	~~Work to start 210 days after Basic Contract NTP~~	~~three-hundred-seven (307 days)~~	~~$5,000.00~~
(AM #0006)	**Building 10007 (Renovate for 2 Company Ops & ½ Battalion HQ)**	**Work to start 120 days after Basic Contract NTP**	**three-hundred-nine (309 days)**	**$5,000.00**
	~~Building 10007 (Renovate for 2 Company Ops & ½ Battalion HQ)~~	~~Work to start 210 days after Basic Contract NTP~~	~~three-hundred-nine (309 days)~~	~~$5,000.00~~
(AM#0006)	**Building 10008 (Renovate for 3 Company Ops)**	**Work to start 120 days after Basic Contract NTP**	**three-hundred-thirteen (313 days)**	**$5,000.00**
	~~Building 10008 (Renovate for 3 Company Ops)~~	~~Work to start 210 days after Basic Contract NTP~~	~~three-hundred-thirteen (313 days)~~	~~$5,000.00~~

	Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
(AM #0006)	**Building 10009 (Renovate for 2 Company Ops & 1 Battalion HQ)**	**Work to start 120 days after Basic Contract NTP**	**three-hundred-sixteen (316 days)**	**$5,000.00**
	~~Building 10009 (Renovate for 2 Company Ops & 1 Battalion HQ)~~	~~Work to start 210 days after Basic Contract NTP~~	~~three-hundred-sixteen (316 days)~~	~~$5,000.00~~
(AM #0006)	**Building 10010 (Renovate for 2 Company Ops & ½ Battalion HQ)**	**Work to start 120 days after Basic Contract NTP**	**three-hundred-eighteen (318 days)**	**$5,000.00**
	~~Building 10010 (Renovate for 2 Company Ops & ½ Battalion HQ)~~	~~Work to start 210 days after Basic Contract NTP~~	~~three-hundred-eighteen (318 days)~~	~~$5,000.00~~
(AM #0006)	**Building 10011 (Renovate for 2 Company Ops & ½ Battalion HQ)**	**Work to start 120 days after Basic Contract NTP**	**three-hundred-twenty (320 days)**	**$5,000.00**
	~~Building 10011 (Renovate for 2 Company Ops & ½ Battalion HQ)~~	~~Work to start 210 days after Basic Contract NTP~~	~~three-hundred-twenty (320 days)~~	~~$5,000.00~~
	Building 10016 (Renovate for 2 Company Ops)	Immediately after Basic Contract NTP	one-hundred-thirteen (113 days)	$5,000.00
	Building 10018 (Renovate for 2 Company Ops & ½ Battalion HQ)	To start two weeks after completion and acceptance of Building 10016	two-hundred-forty-three (243 days)	$5,000.00
	Building 10020 (Renovate for 2 Company Ops & 1 Battalion HQ)	To start two weeks after completion and acceptance of Building 10021	three-hundred-eleven (311 days)	$5,000.00
	Building 10021 (Renovate for 2 Company Ops & 1 Battalion HQ)	To start two weeks after completion and acceptance of Building 10022	two-hundred-eleven (211 days)	$5,000.00
	Building 10022 (Renovate for 3 Company Ops)	Immediately after Basic Contract NTP	one-hundred-eleven (111 days)	$5,000.00

Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
Building 10033 (Renovate for Server Room)	Immediately after Basic Contract NTP	two-hundred-thirty-six (236 days)	$5,000.00
Building 10040 (Renovate for Admin)	Work to start 300 days after Basic Contract NTP	four-hundred-forty-five (445 days)	$5,000.00
Building 10045 (Renovate for 1 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-forty-seven (447 days)	$5,000.00
Building 12002 (Renovate for 5 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-ten (410 days)	$5,000.00
Building 12003 (Renovate for 3 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-thirty-seven (437 days)	$5,000.00
Building 12004 (Renovate for 3 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-thirty-nine (439 days)	$5,000.00
Building 12008 (Renovate for 3 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-forty-three (443 days)	$5,000.00
Building 12010 (Renovate for 5 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-twelve (412 days)	$5,000.00
Building 12019 (Renovate for 5 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-fourteen (414 days)	$5,000.00
Building 12020 (Renovate for 5 Company Ops)	Work to start 300 days after Basic Contract NTP	four-hundred-sixteen (416 days)	$5,000.00
Building 16010 (Renovate for Company Ops/HQ)	Immediately after Basic Contract NTP	one-hundred-thirty-six (136 days)	$5,000.00
Building 87009 (Renovate for 2 Battalion HQ)	Immediately after Basic Contract NTP	one-hundred-twenty-three (123 days)	$5,000.00
Building 90038 (Renovate for Admin)	Immediately after Basic Contract NTP	one-hundred-thirty-eight (138 days)	$5,000.00

	Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
(AM #0006)	**Site 1 (DOL Hardstand/ Cover/Admin)**	**Immediately after Basic Contract NTP**	**one-hundred-five (105 days)**	**$2,500.00**
	~~Site 1 (DOL Hardstand & Cover)~~	~~Immediately after Basic Contract NTP~~	~~one-hundred-five (105 days)~~	~~$2,500.00~~
	Site 2 (LZ Phantom Hardstand)	Immediately after Basic Contract NTP	ninety (90 days)	$2,500.00
(AM #0006)	**Site 3 (49000 Block)**	**Immediately after Basic Contract NTP**	**seventy-five (75 days)**	**$2,500.00**
	~~Site 3 (49000 Block Hardstand)~~	~~Immediately after Basic Contract NTP~~	~~seventy-five (75 days)~~	~~$2,500.00~~
	~~Site 3-R1 (Vehicle Maintenance)~~	~~Immediately after Basic Contract NTP~~	~~ninety (90 days)~~	~~$2,500.00~~
	~~Site 3-R2 (Vehicle Maintenance)~~	~~Immediately after Basic Contract NTP~~	~~one-hundred-five (105 days)~~	~~$2,500.00~~
(AM #0006)	**Site 4 (4920 Block)**	**To start two weeks after completion and acceptance of Site 2**	**one-hundred-fifty (150 days)**	**$2,500.00**
	~~Site 4 (4920 Block Hardstand)~~	~~To start two weeks after completion and acceptance of Site 2~~	~~one-hundred-fifty (150 days)~~	~~$2,500.00~~
	~~Site 4-R1 (Vehicle Maintenance)~~	~~To start two weeks after completion and acceptance of Site 2~~	~~one-hundred-fifty (150 days)~~	~~$2,500.00~~
	~~Site 4-R2 (Vehicle Maintenance)~~	~~To start two weeks after completion and acceptance of Site 2~~	~~one-hundred-fifty (150 days)~~	~~$2,500.00~~
	~~Site 4-R3 (Vehicle Maintenance)~~	~~To start two weeks after completion and acceptance of Site 2~~	~~one-hundred-fifty (150 days)~~	~~$2,500.00~~
	~~Site 4-R4 (Vehicle Maintenance)~~	~~To start two weeks after completion and acceptance of Site 2~~	~~one-hundred-fifty (150 days)~~	~~$2,500.00~~
(AM #0006)	**Site 5 (4926 Block)**	**To start two weeks after completion and acceptance of Site 1**	**one-hundred-sixty-five (165 days)**	**$2,500.00**

	Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
	~~Site 5 (4926 Block Hardstand)~~	~~To start two weeks after completion and acceptance of Site 1~~	~~one-hundred-sixty-five (165 days)~~	~~$2,500.00~~
	~~Site 5-R1 (Vehicle Maintenance)~~	~~To start two weeks after completion and acceptance of Site 1~~	~~one-hundred-sixty-five (165 days)~~	~~$2,500.00~~
	~~Site 5-R2 (Vehicle Maintenance)~~	~~To start two weeks after completion and acceptance of Site 1~~	~~one-hundred-sixty-five (165 days)~~	~~$2,500.00~~
	Site 6 (Motor Pool Road Hardstand)	Immediately after Basic Contract NTP	sixty (60 days)	$2,500.00
(AM #0006)	**Site 8 (16000 Block)**	**Immediately after Basic Contract NTP**	**one-hundred-sixty-five (165 days)**	**$2,500.00**
	~~Site 8 (16000 Block Classroom)~~	~~Immediately after Basic Contract NTP~~	~~one-hundred-sixty-five (165 days)~~	~~$2,500.00~~
(AM #0006)	**Site 9 (17000 Block)**	**Immediately after Basic Contract NTP**	**one-hundred-sixty-five (165 days)**	**$2,500.00**
	~~Site 9 (17000 Block Unit Storage)~~	~~Immediately after Basic Contract NTP~~	~~one-hundred-sixty-five (165 days)~~	~~$2,500.00~~
(AM #0006)	**Site 10 (1900 Block)**	**Immediately after Basic Contract NTP**	**one-hundred-ninety-five (195 days)**	**$2,500.00**
	~~Site 10 (1900 Block Hardstand)~~	~~Immediately after Basic Contract NTP~~	~~one-hundred-ninety-five (195 days)~~	~~$2,500.00~~
	~~Site 10-R1 (Vehicle Maintenance)~~	~~Immediately after Basic Contract NTP~~	~~one-hundred-ninety-five (195 days)~~	~~$2,500.00~~
	~~Site 10-R2 (Vehicle Maintenance)~~	~~Immediately after Basic Contract NTP~~	~~one-hundred-ninety-five (195 days)~~	~~$2,500.00~~
	Site 11 (41st Street TVM)	Immediately after Basic Contract NTP	one-hundred-fifty (150 days)	$2,500.00
	Site 12 (37th Street TVM)	Immediately after Basic Contract NTP	one-hundred-sixty-five (165 days)	$2,500.00
	Site 13 (27th Street TVM)	Immediately after Basic Contract NTP	one-hundred-eighty (180 days)	$2,500.00

Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
Site 14 (25th Street TVM)	Immediately after Basic Contract NTP	one-hundred-ninety-five (195 days)	$2,500.00
Site 15 16th Street TVM)	Immediately after Basic Contract NTP	two-hundred-ten (210 days)	$2,500.00
Site 16 (Murphy Loop Parking South)	Immediately after Basic Contract NTP	thirty (30 days)	$2,500.00
Site 17 (Murphy Loop Parking North)	Immediately after Basic Contract NTP	forty-five (45 days)	$2,500.00
Site 18 (7000 Block Overlay South)	Immediately after Basic Contract NTP	two-hundred-ten (210 days)	$2,500.00
Site 19 (7000 Block Overlay North)	Immediately after Basic Contract NTP	two-hundred-forty (240 days)	$2,500.00
(AM #0006) Site 20 (Bn HQ, 4200 Block)	**Immediately after Basic Contract NTP**	**one-hundred-eighty (180 days)**	**$2,500.00**
Site 21 (3500 Block West)	**Immediately after Basic Contract NTP**	**two-hundred-ten (210 days)**	**$2,500.00**
Site 22 (3500 Block East)	**Immediately after Basic Contract NTP**	**two-hundred-ten (210)**	**$2,500.00**
Site 23 (800 Block)	**Immediately after Basic Contract NTP**	**one-hundred-ninety-five (195)**	**$2,500.00**
Site 24 (200/300 Block)	**Immediately after Basic Contract NTP**	**one-hundred-fifteen (115)**	**$2,500.00**
Site 25 (9500 Block West)	**Immediately after Basic Contract NTP**	**two-hundred-twenty-five (225)**	**$2,500.00**
Site 26 (9500 Block Central)	**Immediately after Basic Contract NTP**	**two-hundred-twenty-five (225)**	**$2,500.00**
Site 27 (9500 Block East)	**Immediately after Basic Contract NTP**	**two-hundred-twenty-five (225)**	**$2,500.00**

Item Of Work	Commencement Of Work	Completion Of Work In Calendar Days From Basic Contract NTP	Liquidated Damages Per Calendar Day
Site 28 (Murphy Rd & Bldg 728)	**Immediately after Basic Contract NTP**	**two-hundred-twenty (220)**	**$2,500.00**
Site 29 (Murphy Rd & Bldg 6978)	**Immediately after Basic Contract NTP**	**two-hundred-twenty (220)**	**$2,500.00**
Site 30 (HAAF Apron Extension)	**Immediately after Basic Contract NTP**	**two-hundred-twenty (220)**	**$2,500.00**
Site 31 (4600 Block)	**Immediately after Basic Contract NTP**	**two-hundred-twenty (220)**	**$2,500.00**
Site 32 (Demo 4400 Block) of Site 20	**To start two weeks after completion and acceptance**	**four-hundred (400)**	**$2,500.00**

1.2.2 Phasing of the renovation of buildings and construction of sites.

The schedule shall be developed to show the phasing of the renovation of each building and the construction at each site. Work hours for the renovation of the buildings are 0800 hrs to 2000 hrs Monday through Friday and 0900 hrs to 1800 hrs Saturday. No work shall be done, or workers in and around the buildings, other than the hours stated above. Standard 40-hour work week shall apply to all other work areas. Additional time may be authorized, if needed, with a 48-hour advance notice to the Government.

1.3 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 Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittal

Network Diagram; G, RE

The diagram shall show a continuous activity flow from left to right. The diagrams shall be 36x48, minimum size unless explicitly modified by the Contracting Officer. The diagrams shall be legible, shall have activities 'grouped' or 'banded' by Project area, building or feature, and shall contain the following information:

a. Activity number
b. Activity description

c. Duration in workdays
e. Total float in workdays
f. Logic ties
h. Clearly marked critical path (s)
i. 'Banded' or 'grouping' identification on each sheet
j. Composed and/or milestone dates
k. Scale of sufficiently large scale to render a legible diagram

Dates shall be shown on the diagram for start of the project, any milestones required by the contract, and contract completion. The critical path shall be clearly identified. Submittal, review, procurement, fabrication, delivery, installation, start-up, and testing of special or long lead-time materials and equipment shall be included in the NAS diagram. Government and other agency activities shall be shown. These include but are not limited to: notice to proceed, approvals, inspections, and utility tie in for phasing requirements.

Reports; G, RE.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS, a Project Schedule as described below shall be prepared. The scheduling of construction shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Designers, 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 progress payments.

3.2 BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule, scheduling personnel, or approved periodic schedule updates will result in an inability of the Contracting Officer to evaluate Contractor’s progress for the purposes of payment. In this event, progress payments will not be made until corrective action is taken and the schedule is approved by the Contracting Officer. The contractor’s pay estimates shall be based upon the amount of work completed as agreed upon between Government and Contractor personnel during the Periodic Progress Meetings further specified below.

3.3 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.

3.3.1 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)

3.3.2 Level of Detail Required

The Project Schedule shall be at a level of detail appropriate for the size and complexity of the project. 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:

3.3.2.1 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 the durations all non-procurement activities’ are greater than 20 days).

3.3.2.2 Project Activities, General

Project activities consist of all construction activities, including design-related activities, mobilization, demobilization, placement of warranty tags, O&M manuals, jobsite clean-up, and required testing and training. Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. These procurement tasks include, but are not limited to: submittals, approvals, procurement, fabrication, delivery, installation, start-up, testing, and training.

3.3.2.3 Critical Activities

The following activities shall be listed as separate line activities on the Contractor’s project schedule:

a. Submission of mechanical/electrical layout drawings.

b. Submission and approval of 0 & M manuals.

c. Submission and approval of as-built drawings.

d. Submission of 1354 data and installed equipment lists.

e. Submission and approval of testing and air balance (TAB)

f. Submission of TAB specialist design review report.

g. Submission and approval of testing and balancing of HVAC plus commissioning plans and data.

h. Air and water balance dates.

I. HVAC commissioning dates.

j. Controls testing plan.

k. Controls testing.

1. Performance Verification testing.

m. Other systems testing, if required.

n. Prefinal inspection.

o. Correction of punchlist from prefinal inspection.

p. Final inspection.

3.3.2.4 Government Activities

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

3.3.2.5 Responsibility

All activities shall be identified in the project schedule by the party responsible for performing 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.

3.3.2.6 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.

3.3.2.7 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. Activities shall not belong to more than one modification or claim item. The modification or claim number of each activity shall be identified by the Mod or Claim Number. Whenever possible, changes shall be added to the schedule by adding new activities. Existing activities shall not normally be changed to reflect modifications.

3.3.2.8 Bid Item

All activities shall be identified in the project schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one bid item. The bid item for each appropriate activity shall be identified by the Bid Item Code.

3.3.2.9 Phase of Work

All activities shall be identified in the project schedule by the phases of work in which the activity occurs. Activities shall not contain work in more than one phase of work. The project phase of each activity shall be identified by the unique Phase of Work Code.

3.3.2.10 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.

3.3.2.11 Feature of Work (Work Breakdown Structure(WBS))

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 or WBS Code.

3.3.2.12 Resources

All appropriate activities shall be assigned resources (labor, materials, equipment) that are expected to be used during the execution of the activity.

3.3.2.13 Costs

All work activities shall be cost-loaded with the amount budgeted. The sum of all activities in the schedule shall equal the total contract amount.

3.3.2.14 Design and Permit Activities

The Contractor shall integrate design and permitting activities, including necessary conferences, follow-up actions, and design package submission dates, into the schedule. These activities shall be coded to designate design and permitting.

3.3.2.15 Data Dictionary

The Contractor shall submit a coding scheme that shall be used throughout the project for all activity codes contained in the schedule. The coding scheme submitted shall list the values for each activity code category and translate those values into project specific designations. For example, a Responsibility Code Value, “ELE”, may be identified as “Electrical Subcontractor.” Activity code values shall represent the same information throughout the duration of the contract.

3.3.3 Scheduled Project Completion

3.3.3.1 Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. The Contractor shall include as the first activity in the project schedule an activity called “Start Project”. The “Start Project” activity shall have an AES@ constraint date equal to the date that the NTP was acknowledged, and a zero day duration. It is possible for submittal activities to be started before NTP. If started, such activities will not alter the Contract start date or completion time for the Contract.

3.3.3.2 Constraint of Last Activity

Completion of the last activity in the schedule shall be constrained by the currently approved 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.

3.3.3.3 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.

3.3.4 Interim Completion Dates

Contractually specified interim phasing completion dates shall be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date. Activities with separate completion dates shall also be constrained to show negative float if the completion date is not met.

3.3.4.1 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 on which the NTP was acknowledged, and a zero day duration.

3.3.4.2 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 phase of the project, and a zero day duration.

3.3.4.3 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.

3.3.5 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. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Program features which calculate one of these parameters from the other shall be disabled.

3.3.6 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. If approval is not given, a revised schedule that reflects corrections to the original logic to show the current sequence of activities shall be submitted prior to payment being made for those items of work.

3.3.7 Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

3.4 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. A data disk and a printed, legible network diagram are required for each submission. Submissions shall contain the same level of detail as is being used by the contractor for project management.

3.4.1 Preliminary Project Schedule Submission

The Preliminary Project Schedule shall be submitted within 21 days of NTP defining the Contractor’s planned operations, including a detailed 100% design schedule and a summary of the balance of the project. The Government shall have 30 days for review. Upon review and acceptance of the Contracting Officer, this schedule shall be used for analysis and payment purposes until submittal of the Initial Schedule (see paragraph entitled “Initial Project Schedule Submission”). Upon submittal and approval, the updated initial schedule shall be used for payment purposes. The schedule shall include significant activities with milestone dates including:

Contract Notice to Proceed
Phases as specified in contract
Preliminary and Initial Schedule Submittal dates
Design Submittal Dates
Government Review Periods
Review Conference Dates
Resubmittal of Final Design/Construction Documents
Government Review of Final Design/Construction documents Construction Closeout Activities
(e.g., operation and maintenance manuals, record drawings testing of equipment and systems, prefinal inspection procedures, and correction of deficiencies, and final cleanup)
Commissioning of HVAC Systems
Substantial Completion

No payment will be made until this schedule is accepted.

3.4.2 Initial Project Schedule Submission

The Initial Project Schedule shall be submitted for approval within 14 calendar days after NTP. The schedule shall provide a logical sequence of activities which represent work activities through the entire project and shall be at an appropriate level of detail as defined in paragraph PROJECT SCHEDULE. The Government has 14 days for approval.

3.4.2.1 Operations and Maintenance Manuals

Include activities on the Schedule for turn-over to the Government of the required number of copies of approved O&M manuals for all specification sections and for Operation and Maintenance training classes. The completion date for submittal of 0 & M Manuals 120 calendar days prior to the final acceptance inspection date. The amount to be withheld until completion and approval of these activities will be the amount indicated on the Bidding Schedule for "Operation and Maintenance Manuals."

3.4.2.2 Warranty Work

Include an activity subsequent to Project Transfer on the Schedule for Warranty Work. This activity shall be for a period of 365 days.

3.4.3 Periodic Schedule Updates

The Contractor shall submit periodic updates as required by the Contracting Officer. Updated data discussed in the periodic progress meetings will be the basis for the schedule updates. These submissions shall enable the Contracting Officer to assess Contractor’s progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative, is necessary for verifying the Contractor’s progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

3.4.4 Not Used

3.5 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:

3.5.1 Data Disks

Three data disks containing the project schedule shall be provided. The automated scheduling software utilized by the Contractor shall be capable of direct data input into the scheduling system currently in use by the Government. The Government (e.g. the Fort Worth District) currently uses Primavera for Windows, Version 3.1, subject to current update. The Contractor will be responsible for the accuracy of this data and successful data transfer to the Government. In the event of faulty disk(s), the Contractor will be responsible for replacement.

3.5.1.1 File Medium

Required data shall be submitted on CD-ROM disk or 3.5 high-density diskette, formatted under Windows 95, 98, NT, or 2000, unless otherwise approved by the Contracting Officer.

3.5.1.2 Disk Label

A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the scheduling program used, format of data transfer P3, PRX, STX, or MPX), file name, 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, and the MS-DOS version used to format the disk.

3.5.1.3 File Name

Each file submitted shall have a name related to either the schedule data date, project name, or contract number. The Contractor shall develop a naming convention that will ensure that the names of the files submitted are unique. The Contractor shall submit the file naming convention to the Contracting Officer for approval.

3.5.2 Narrative Report

A Narrative Report shall be provided with the preliminary, initial, and each update of the project schedule. This report shall be provided as the basis of the Contractor’s progress payment request. The Narrative Report shall include: a description of activities along the 2 most critical paths, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken to maintain and/or regain schedule. This report shall be provided for use with the updated schedule in evaluating current progress and as an indicator of upcoming progress. This report shall also accompany pay requests for payment evaluation, or required to be taken. The narrative report is expected to relay to the Government, the Contractor’s thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis.

3.5.3 Approved Changes Verification

Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the periodic schedule updates. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4 Schedule Reports

The software program used for scheduling shall be capable of producing the reports as listed. 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.

3.5.4.1 Activity Report

A list of all activities sorted according to activity number and then sorted according to Early Start Date. For completed activities, the Actual Start Date shall be used as the secondary sort.

3.5.4.2 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.

3.5.4.3 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.

3.5.4.4 Earnings Report

A compilation of the Contractor’s Total Earnings on the project from the NTP until the most recent Monthly Progress Meeting.

3.5.5 Network Diagram

The network diagram shall be required on the preliminary and initial schedule submission and on periodic 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. Activity numbers, descriptions, durations, milestones and constraint dates shall be shown, and the critical path shall easily apparent. The network diagram must be legible in its electronic form, or another means of production shall be required subject to Contracting Officer approval. Legibility shall be determined upon submission of the Preliminary Schedule. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1 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.

3.5.5.2 Project Milestone Dates

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

3.5.5.3 Critical Path

The critical path shall be clearly shown.

3.5.5.4 Banding

Activities shall be coded so that banding is possible to assist in understanding the activity sequence. Typically, this flow will group activities by phase, category of work, work area, and/or responsibility.

3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.5.5.6 Open Ends

Open Ended Activities other than the first and last activities, “Start Project” and “End Project”, shall only be used with approval of the Contracting Officer.

3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss progress or payment shall be at regular intervals mutually agreed to at the pre-construction conference. During these meetings the Contractor shall describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule

required to reflect the current status of the project. During meetings the Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

3.6.1 Meeting Attendance

The Contractor’s Project Manager, Quality Control Manager or staff, and Scheduler shall attend the periodic progress meeting along with similar representation by the Government.

3.6.2 Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than 7 working days after the monthly progress meeting.

3.6.3 Progress Meeting Contents

Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost-to-Date shall be subject to the approval of the Contracting Officer. As a minimum, the Contractor shall address the following items on an activity by activity basis during each progress meeting.

3.6.3.1 Start and Finish Dates

The Actual Start and Actual Finish dates for each activity currently in progress or completed

3.6.3.2 Duration

The estimated Remaining Duration for each activity in progress. Calculations shall be based on Remaining Duration in applicable work periods for each activity.

3.6.3.3 Earnings

The earnings for each activity started. Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains quality defects. A portion of the overall project amount may be retained based on lack of satisfactory progress.

3.6.3.4 Logic Changes

All logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

3.6.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor’s control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule which does not represent the actual or planned prosecution and progress of the work.

3.7 REQUESTS FOR TIME EXTENSIONS

Any request for a time extension from the Contractor, whether as a result of added or changed work due to a modification, a differing site condition, or unusually severe weather, shall be accompanied by justification, project schedule data and supporting evidence as the Contracting Officer may deem necessary for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. 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. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

a. A list of affected activities.

b. A brief explanation of the causes of the change.

c. An analysis of the overall impact of the change proposed.

d. 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.

3.7.1 Not Used

3.7.2 Not Used

3.7.3 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. The Contractor shall provide this disk within 4 days of the Contracting Officer’s request.

3.8 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 7 calendar days 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. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, the Contractor shall advise the Contracting Officer within 7 calendar days of receipt of the revisions, Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer’s revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 7 calendar days of receipt of the Contracting Officer’s proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officers proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9 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. Use of Zero Free Float and Zero Total Float constraints shall not be allowed.

-- End of Section --

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APPENDIX K

~~RELOCATABLE~~ FACILITIES FUNCTIONAL REQUIREMENTS

APPENDIX K

~~RELOCATABLE~~ FACILITIES (AM#6)
FUNCTIONAL REQUIREMENTS

INDEX

K1 ADMINISTRATION FACILITIES
K2 ARMS ROOM
K3 BARRACKS **MODULE (AM#6)**
K4 BATTALION HEADQUARTERS
K5 **NOT APPLICABLE** ~~BRIGADE HEADQUARTERS~~ **(AM #0005)**
K6 CLASSROOM
K7 COMPANY OPERATIONS **MODULE (AM#6)**
K8 COMPANY OPERATIONS SUPPLY ~~BUILDING~~ **MODULE (AM#6)**
K9 COVERED STORAGE
K10 DAYROOM
K11 LAUNDRY
K12 STORAGE BUILDING
K13 TACTICAL VEHICLE MAINTENANCE (TVM)
K14 UNIT STORAGE BUILDING
K15 VEHICLE MAINTENANCE
K16 VAN DOCK (AM #0005)
K17 VAN DOCK COMMO BUILDING (AM #0005)
K18 COMMUNICATION DISTRIBUTION NODE BUILDING (AM #0005)
K19 MAIL KIOSK (AM #0005)
K20 GUARD HOUSE (AM #0005)
K21 MASTER FURNITURE LIST (AM#6)

K1 ADMINISTRATION FACILITIES

(AM #0005) This is a relocatable facility. See drawings for functional layout and requirements in addition to those listed here.

1. **ARCHITECTURAL ADMINISTRATIVE FACILITIES**

(AM#6) See **sheet A105 for functional layout.**

(AM#6) ~~Provide X ea 1536 SF single story relocatable facilities with open office area and toilets. Provide ramp and stoop at entry, and stairs and stoops from exit to grade level.~~

Admin Offices **(AM#6)** ~~3 @ 100 SF ea~~
Open Office **(AM#6)** ~~1000 SF.~~ 10 EA workstations plus file cabinets, printer, fax and photocopier.
Restrooms & Staff Shower **(AM#6)** ~~2 @ 100 SF ea.~~ Provide ADA compliant restrooms for males and females. Male restrooms shall include 1 lavatory, 1 urinal, 1 toilet, and 1 private shower with dressing area. Female restrooms shall include 1 lavatory, 1 toilet, and 1 private shower with dressing area. The private shower is for active duty staff use and does not have to be handicapped accessible. Provide a premolded shower stall with shower curtain or door; Seamless resilient flooring with drains in the dressing areas, and the main toilet areas.
Janitor's Closet **(AM#6)** ~~1 @ 15 SF.~~ Constructed from noncombustible materials, and positive latching on door. Provide resilient flooring with floor drain.
Water Heater Closet **(AM#6)** ~~1 @ 10 SF ea.~~ Constructed from noncombustible materials, and positive latching on door opening to interior of living unit. Provide resilient flooring with floor drain.

The Admin facility shall be pre-fabricated, furnished, relocatable structures that meet these functional requirements. Provide a pitched, shingled roof with gutters and downspouts. Provide an EIFS finish on the exterior that receives final finish work on site after the sections are joined. Creative solutions that minimize delivery time are encouraged. Facility costs include, but are not limited to the structure, furniture, equipment, appliances, transport, placement and anchorage, ramps/stairs/porches/skirting and utility hookup. Infrastructure and site development costs are separate.

Minimum turning radius shall be 15 feet for POV parking areas. Minimum turning radius for organizational and service vehicles shall be 25 feet except where fire truck access and semi-truck and trailer access is required (minimum turning radius of 55 feet). Minimum access drive width shall be 25 feet.

Ramps and sidewalks shall be provided for handicapped access to each Admin Facility. The number of parking spaces and site access for the physically disabled shall be two spaces per facility.

GENERAL: These requirements are the minimum. Areas indicated are net square feet, and may be exceeded. See Architectural design requirements for information regarding individual facility cost limits, room size variations and allowable solutions.

See SECTION 01010 for additional requirements.

2. STRUCTURAL – SEE SECTION 01010

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS

There are no specific plumbing requirements for this facility other than the General Plumbing Design Requirements.

4. SPECIFIC HEATING, VENTILATING, AND AIR CONDITIONING REQUIREMENTS

Building is to be heated and cooled.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS

Automatic sprinkler system is not required for Administration Facility.

Fire Hydrants. Refer to Civil Design for design requirements.

Fire Extinguishers. Provide 5 lb. ABC type fire extinguishers in accordance with NFPA 10. Refer to Architectural Design for design requirements.

Fire Alarm and Detection System. Fire Alarm and Detection System is required. Refer to Electrical Design for design requirements.

6. INTERIOR ELECTRICAL DESIGN

a. Complete and operational electrical systems including power, communication, cable television (CATV), lighting, fire detection and mass notification systems shall be provided.

~~28.3.7~~ b. Feeder neutrals shall be oversized and panelboards shall be equipped with 200% neutral busses. Dry-type transformers shall include a K-4 rating if non-linear loads make up more than 50% of the total load.

~~28.3.8~~ c. Provide Transient Voltage Surge Suppression (TVSS).

d. Provide general-purpose receptacles for interior and exterior. Ground Fault Circuit Interrupter (GFCI) shall be provided per NEC.

~~28.4.11~~ e. Provide dedicated computer receptacles. Computer receptacles shall consist of a quadruplex receptacle or two duplex receptacles mounted in a single 2-gang box. A receptacle shall be provided for every 80 SF of administration space excluding private offices. A minimum of two computer receptacles shall be provided in private offices for flexibility in furniture placement. Each conference room and classroom shall be provided no fewer than four computer receptacles.

f. Provide a minimum of two floor mounted 19 inch LAN racks in communication room.

g. A communication duplex outlet (data & voice) shall be provided adjacent to each computer receptacle, facsimile receptacle and common use printer receptacle. A communication simplex outlet (voice), wall mounted 52 inches AFF, shall be provided in each electrical room, mechanical room and communications room/closet.

~~28.4.12~~ h. In open administrative areas a minimum of four dedicated receptacles shall be provided for copiers, facsimile machines, and common use network printers and shall be labeled “dedicated”.

~~28.4.10~~ i. CATV outlets with type F connectors shall be provided. A 120 volt, 20-ampere duplex receptacle shall be provided adjacent to each CATV outlet. This receptacle shall be in addition to the general-purpose receptacles required.

j. Electrical outlet devices, communication outlets, CATV outlets, and all faceplates shall be white. All outlets shall be mounted 18-inch AFF unless otherwise indicated. The location of outlets shall be coordinated with the furniture plans, and meet the requirements as otherwise stated herein.

~~28.7.1~~ k. Provide cable tray and 1-inch minimum electrical metallic tubing (EMT) conduit system for communication and CATV systems.

l. Provide occupancy sensors for interior lighting system as required elsewhere in RFP.

m. Provide photocell for exterior luminaries.

K3 BARRACKS **MODULE (AM#6)**
AMENDMENT NO. 0005

(AM #0005) This is a relocatable (AM#6) ~~facility~~ structure. See drawings for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL – SEE SECTION 01010

2. STRUCTURAL – SEE SECTION 01010

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS

There are no specific plumbing requirements for this facility other than the General Plumbing Design Requirements.

4. SPECIFIC HEATING, VENTILATING, AND AIR CONDITIONING REQUIREMENTS

Facility will be heated and cooled.

Conditioned air shall be supplied directly to the common area. At a minimum, there shall be one thermostat per three-man module.The Barracks shall utilize a split system air conditioner with the air handler inside and the condenser outside.

Barracks Living Units shall be ventilated at 30 cfm per sleeping room.

Provide a vent hood over the cook top.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS

Automatic sprinkler protection is required for Barracks. Refer to Fire Protection Design for design requirements.

Fire Hydrants. Refer to Civil Design for design requirements.

Fire Extinguishers and Cabinets. Fire Extinguishers are required. Refer to Architectural Design for design requirements.

Fire Alarm and Detection System. Fire Alarm and Detection system is required. Smoke detection is required in bedrooms. Refer to Electrical Design for design requirements.

6. ELECTRICAL DESIGN

Commercial grade luminaires with a residential appearance shall be provided in the barracks modules. Luminaires shall be provided in all barracks module rooms including walk-in closets. Low brightness wall-mounted luminaires with white lens shall be provided over vanity mirrors.

Average maintained illumination levels shall be 10 foot-candles in barrack’s sleeping rooms.

There shall be a minimum of two ceiling mounted lighting fixtures switched independently.

All lighting fixtures in sleeping rooms, including toilets, shall be switched utilizing wall switches.

Electrical receptacles shall be provided in accordance with the National Electrical Code (NEC) requirements for dwelling units. Additional receptacles shall be provided as indicated herein. Receptacle circuits in sleeping rooms shall be protected with arc-fault circuit-interrupters as required by the NEC.

A minimum of one general-purpose 120 volt, 20-ampere duplex receptacle shall be provided on each wall in each room unless otherwise indicated. In rooms where walls exceed 10 feet horizontally, an additional duplex outlet shall be provided for each additional 10 feet of wall or fraction thereof. Receptacle spacing shall not exceed 10 feet. General-purpose receptacles are in addition to special purpose and dedicated outlets for special equipment.

One additional general-purpose 120 volt, 20-ampere quadruplex receptacle shall be provided on the wall next to the CATV jack.

One general-purpose 120 volt, 20-ampere, Ground Fault duplex receptacle shall be provided on the wall next to each lavatory.

Communications

There shall be a minimum of one CATV jack in each sleeping room.

There shall be a minimum of 1 telephone jack for each sleeping area.

Fire Alarm

A minihorn and smoke detector shall be provided in all barracks sleeping rooms.

In the event of an alarm condition from any initiating device, except smoke detectors in barracks sleeping rooms, all air handling units shall shut down, all notification appliances shall alert, and a signal shall be transmitted to the fire station. In the event of an alarm condition in a barrack’s sleeping room smoke detector, the minihorn that is located in the same room as the detector in alarm shall sound and a trouble signal indicating room number shall be sent to the fire alarm panel and a trouble signal shall be transmitted to the fire station.

If any smoke detector or minihorn is removed from its circuit, a trouble signal shall be generated at the fire alarm control panel and a trouble signal transmitted to the fire station.

Mass Notification

There shall be a minimum of one speaker and strobe in each sleeping room.

K4 BATTALION HEADQUARTERS
AMENDMENTS NO. 0005 and 0006

(AM #0005) This is a relocatable (AM#6) ~~facility~~ structure. See drawings for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL

Minimum turning radius shall be 15 feet for POV parking areas. Minimum turning radius for organizational and service vehicles shall be 25 feet except where fire truck access and semi-truck and trailer access is required (minimum turning radius of 55 feet). Minimum access drive width shall be 25 feet.

Ramps and sidewalks shall be provided for handicapped access to each **(AM#6)** ~~Admin Facility~~ **BN HQ Module**. The number of parking spaces and site access for the physically disabled shall be two spaces per facility.

See SECTION 01010 for additional requirements.

2. STRUCTURAL – SEE SECTION 01010

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS

There are no specific plumbing requirements for this facility other than the General Plumbing Design Requirements.

4. SPECIFIC HEATING, VENTILATING, AND AIR CONDITIONING REQUIREMENTS

Facility is to be heated and cooled.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS

Automatic sprinkler system is not required for Battalion Headquarters Facility.

Fire Hydrants. Refer to Civil Design for design requirements.

Fire Extinguishers. Provide 5 lb. ABC type fire extinguishers in accordance with NFPA 10. Refer to Architectural Design for design requirements.

Fire Alarm and Detection System. Fire Alarm and Detection System is required. Refer to Electrical Design for design requirements.

6. INTERIOR ELECTRICAL DESIGN

a. Complete and operational electrical systems including power, communication, cable television (CATV), lighting, fire detection and mass notification systems shall be provided.

b. Feeder neutrals shall be oversized and panelboards shall be equipped with 200% neutral busses. Dry-type transformers shall include

a K-4 rating if non-linear loads make up more than 50% of the total load.

c. Provide Transient Voltage Surge Suppression (TVSS).

d. Provide general-purpose receptacles for interior and exterior. Ground Fault Circuit Interrupter (GFCI) shall be provided per NEC.

e. Provide dedicated computer receptacles. Computer receptacles shall consist of a quadruplex receptacle or two duplex receptacles mounted in a single 2-gang box. A receptacle shall be provided for every 80 SF of administration space excluding private offices. A minimum of two computer receptacles shall be provided in private offices for flexibility in furniture placement. Each conference room and classroom shall be provided no fewer than four computer receptacles.

f. Provide a minimum of two floor mounted 19 inch LAN racks in communication room.

g. A communication duplex outlet (data & voice) shall be provided adjacent to each computer receptacle, facsimile receptacle and common use printer receptacle. A communication simplex outlet (voice), wall mounted 52 inches AFF, shall be provided in each electrical room, mechanical room and communications room/closet.

h. In open administrative areas a minimum of four dedicated receptacles shall be provided for copiers, facsimile machines, and common use network printers and shall be labeled “dedicated”.

i. CATV outlets with type F connectors shall be provided. A 120 volt, 20-ampere duplex receptacle shall be provided adjacent to each CATV outlet. This receptacle shall be in addition to the general-purpose receptacles required.

j. Electrical outlet devices, communication outlets, CATV outlets, and all faceplates shall be white. All outlets shall be mounted 18-inch AFF unless otherwise indicated. The location of outlets shall be coordinated with the furniture plans, and meet the requirements as otherwise stated herein.

k. Provide cable tray and 1-inch minimum electrical metallic tubing (EMT) conduit system for communication and CATV systems.

l. Provide occupancy sensors for interior lighting system as required elsewhere in RFP.

m. Provide photocell for exterior luminaries.

K7 COMPANY OPERATIONS **(AM#6) MODULE**
AMENDMENT**S** NO. 0005 **and 0006**

(AM #0005) This is a relocatable (AM#6) ~~facility~~ structure. See drawings for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL

Minimum turning radius shall be 15 feet for POV parking areas. Minimum turning radius for organizational and service vehicles shall be 25 feet except where fire truck access and semi-truck and trailer access is required (minimum turning radius of 55 feet). Minimum access drive width shall be 25 feet.

Ramps and sidewalks shall be provided for handicapped access to each Admin Facility. The number of parking spaces and site access for the physically disabled shall be two spaces per facility.

See SECTION 01010 for additional requirements.

2. STRUCTURAL – SEE SECTION 01010

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS – COMPANY OPERATIONS RELOCATABLE

There are no specific plumbing requirements for this facility other than the General Plumbing Design Requirements.

4. SPECIFIC HEATING, VENTILATING, AND AIR CONDITIONING REQUIREMENTS – COMPANY OPERATIONS RELOCATABLE

Facility is to be heated and cooled.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS – Company Ops.

Automatic sprinkler system is not required for Company Ops. Facility.

Fire Hydrants. Refer to Civil Design for design requirements.

Fire Extinguishers. Provide 5 lb. ABC type fire extinguishers in accordance with NFPA 10. Refer to Architectural Design for design requirements.

Fire Alarm and Detection System. Fire Alarm and Detection System is required. Refer to Electrical Design for design requirements.

6. COMPANY OPS - INTERIOR ELECTRICAL DESIGN

Complete and operational electrical systems including power, communication, cable television (CATV), IDS system, interior and

exterior lighting, fire detection and mass notification systems shall be provided.

~~28.3.7~~ a. Feeder neutrals shall be oversized and panelboards shall be equipped with 200% neutral busses. Dry-type transformers shall include a K-4 rating if non-linear loads make up more than 50% of the total load.

~~28.3.8~~ b. Transient Voltage Surge Suppression (TVSS).

~~28.4.11~~ c. Provide dedicated computer receptacles. Computer receptacles shall consist of a quadruplex receptacle or two duplex receptacles mounted in a single 2-gang box. A Receptacle shall be provided for every 80 SF of administration space excluding private offices. A minimum of two computer receptacles shall be provided in private offices for flexibility in furniture placement. Each conference room and classroom shall be provided no fewer than four computer receptacles.

d. A communication duplex outlet (data & voice) shall be provided alongside each computer receptacle, facsimile receptacle and common use printer receptacle. A communication simplex outlet (voice) shall be provided, wall mounted 52 inches AFF in each electrical room, mechanical room and communications room/closet.

~~28.4.12~~ e. In open administrative areas a minimum of four dedicated receptacles shall be provided for copiers, facsimile machines, and common use network printers and shall be labeled “dedicated”.

~~28.4.10~~ f. CATV outlets, type F connection, shall be provided. A 120 volt, 20-ampere duplex receptacle shall be provided adjacent to each CATV outlet. This receptacle shall be in addition to the general-purpose receptacles required.

g. General duplex receptacles devices, communication outlets, CATV outlets, and faceplates shall be white. All outlets shall be mounted 18-inch AFF unless otherwise indicated. The location of outlets shall be coordinated with the furniture plans, also assure a computer receptacle is provided adjacent to each communication outlet.

~~28.7.1~~ h. Provide cable tray and 3/4-inch minimum electrical metallic tubing (EMT) conduit system for communication and CATV systems.

i. Provide occupancy sensors for interior lighting system.

j. Provide photocell for exterior luminaries.

k. A 1-inch raceway shall be provided between Company Ops’ communication room and arms rooms.

K8 COMPANY OPERATIONS SUPPLY ~~BUILDING~~ **MODULE (AM#6)**
AMENDMENT**S** NO. 0005 **and 0006**

(AM #0005) This is a relocatable (AM#6) ~~facility~~ structure. See drawings for functional layout and requirements in addition to those listed here. See SECTION 01010 for additional requirements.

1. ARCHITECTURAL

Minimum access drive width shall be 25 feet. Minimum turning radius shall be 15 feet except where fire truck access is required. The minimum turning radius for a fire truck shall be 55 feet.

2. STRUCTURAL – SEE SECTION 01010

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS – COMPANY OPERATIONS SUPPLY RELOCATABLE

There are no specific plumbing requirements for this facility other than the General Plumbing Design Requirements.

4. SPECIFIC HEATING, VENTILATING, AND AIR CONDITIONING REQUIREMENTS – COMPANY OPERATIONS SUPPLY RELOCATABLE

Facility is to be heated and cooled.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS – Company Ops. Supply Facility

Automatic sprinkler protection shall be provided for Company Ops. Supply Facility as follows:

Supply/Storage Facility. Provide sprinkler protection per the requirements of UFC 3-600-01. Per UFC 3-600-01, 6-10.1 storage facilities must have complete automatic sprinkler protection. Sprinkler protection must be based on Class IV commodities as defined by NFPA 13. See Fire Protection Design for design requirements.

Fire Hydrants. Refer to Civil Design for design requirements.

Fire Extinguishers and Cabinets. Fire Extinguishers are required. Refer to Architectural Design for design requirements.

Fire Alarm and Detection System. Fire Alarm and Detection System is required. Refer to Electrical Design for design requirements.

6. COMPANY OPS SUPPLY - INTERIOR ELECTRICAL DESIGN

Complete and operational electrical systems including power, communication, cable television (CATV), lighting, fire detection and mass notification systems shall be provided.

a. Feeder neutrals shall be oversized and panelboards shall be equipped with 200% neutral busses. Dry-type transformers shall include a K-4 rating if non-linear loads make up more than 50% of the total load.

b. Transient Voltage Surge Suppression (TVSS).

c. Provide dedicated computer receptacles. Computer receptacles shall consist of a quadruplex receptacle or two duplex receptacles mounted in a single 2-gang box. A Receptacle shall be provided for every 80 SF of administration space excluding private offices. A minimum of two computer receptacles shall be provided in private offices for flexibility in furniture placement. Each conference room and classroom shall be provided no fewer than four computer receptacles.

d. A communication duplex outlet (data & voice) shall be provided alongside each computer receptacle, facsimile receptacle and common use printer receptacle. A communication simplex outlet (voice) shall be provided, wall mounted 52 inches AFF in each electrical room, mechanical room and communications room/closet.

e. In open administrative areas a minimum of four dedicated receptacles shall be provided for copiers, facsimile machines, and common use network printers and shall be labeled “dedicated”.

f. CATV outlets, type F connection, shall be provided. A 120 volt, 20-ampere duplex receptacle shall be provided adjacent to each CATV outlet. This receptacle shall be in addition to the general-purpose receptacles required.

g. General duplex receptacles devices, communication outlets, CATV outlets, and faceplates shall be white. All outlets shall be mounted 18-inch AFF unless otherwise indicated. The location of outlets shall be coordinated with the furniture plans, also assure a computer receptacle is provided adjacent to each communication outlet.

h. Provide cable tray and 3/4-inch minimum electrical metallic tubing (EMT) conduit system for communication and CATV systems.

i. Provide occupancy sensors for interior lighting system.

j. Provide photocell for exterior luminaries.

k. A 1-inch raceway shall be provided between Company Ops’ communication room and arms rooms.

K10 DAYROOM
AMENDMENT NO. 0006

(AM #0005) This is a relocatable facility. See drawings for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL – SEE SECTION 01010.

2. STRUCTURAL – SEE SECTION 01010.

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS – DAYROOM RELOCATABLE

There are no specific plumbing requirements for this facility other than the General Plumbing Design Requirements.

4. SPECIFIC HEATING, VENTILATING, AND AIR CONDITIONING REQUIREMENTS – DAYROOM RELOCATABLE

Facility is to be heated and cooled.

Provide a vent hood over the **(AM#6)** ~~cook top~~ counter.

(AM#6) Provide built-in microwave.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS – Dayroom

Automatic sprinkler system is not required for Dayroom Facility.

Fire Hydrants. Refer to Civil Design for design requirements.

Fire Extinguishers. Provide 5 lb. ABC type fire extinguishers in accordance with NFPA 10. See Architectural Design for design requirements.

Fire Alarm and Detection System. Fire Alarm and Detection System is required. Refer to Electrical Design for design requirements.

Wet Chemical Extinguishing System. Provide a wet chemical extinguishing system in kitchen exhaust hood per the requirements of NFPA 17A.

6. DAYROOMS - INTERIOR ELECTRICAL DESIGN

Complete and operational electrical systems including power, communication, cable television (CATV), interior and exterior lighting, fire detection and mass notification systems shall be provided.

a. Feeder neutrals shall be oversized and panelboards shall be equipped with 200% neutral busses. Dry-type transformers shall include a K-4 rating if non-linear loads make up more than 50% of the total load.

b. Provide general-purpose receptacles for interior and exterior; Ground Fault Circuit Interrupter (GFCI) shall be provided per NEC.

c. Provide dedicated computer receptacles. Computer receptacles shall consist of a quadruplex receptacle or two duplex receptacles mounted in a single 2-gang box. A Receptacle shall be provided for every 80 SF of administration space excluding private offices. A minimum of two computer receptacles shall be provided in private offices for flexibility in furniture placement. Each conference room and classroom shall be provided no fewer than four computer receptacles.

d. Provide minimum of 2 floor mounted 19 inch equipment racks in communication room.

e. Provide communication simplex outlets (voice). One outlet shall be provided in each electrical room, mechanical room and communications room/closet, wall mounted 52 inches AFF.

f. In open administrative areas a minimum of four dedicated receptacles shall be provided for copiers, facsimile machines, and common use network printers and shall be labeled “dedicated”.

~~28.4.10~~ g. CATV outlets, type F connection, shall be provided. A 120 volt, 20-ampere duplex receptacle shall be provided adjacent to each CATV outlet. This receptacle shall be in addition to the general-purpose receptacles required.

h. General duplex receptacles devices, communication outlets, CATV outlets, and faceplates shall be white. All outlets shall be mounted 18-inch AFF unless otherwise indicated. The location of outlets shall be coordinated with the furniture plans, also assure a computer receptacle is provided adjacent to each communication outlet.

~~28.7.1~~ i. Provide 3/4-inch minimum electrical metallic tubing (EMT) conduit system for communication and CATV systems.

j. Provide occupancy sensors for interior lighting system.

k. Provide photocell for exterior luminaries.

K13 TACTICAL VEHICLE MAINTENANCE (TVM)
AMENDMENT NO. 0005 **and 0006**

(AM #0005) This is a relocatable facility. See drawings for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL

The Vehicle Maintenance facilities will be built from pre-manufactured components, furnished, and relocatable to meet these functional requirements. These facilities will be clear span sprung structures built from standard components. Creative solutions that minimize delivery time are encouraged. Facility costs include, but are not limited to the structures, components, furniture, equipment, appliances, transport, placement, anchorage, and utility hookup. Infrastructure and site development costs are separate.

Minimum turning radius onto hardstand from the tank trail shall be 30 feet. Minimum tank trail extension width shall be 30 feet. Minimum access drive width from the tank trail onto the hardstand shall be 28 feet. Minimum POV access drive width shall be 25 feet. Minimum POV turning radius shall be 25 feet from 15th Street to the POV access drive.

See SECTION 01010 for additional requirements.

2. STRUCTURAL – SEE SECTION 01010.

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS - TVM

There are no specific plumbing requirements for this building other than the General Plumbing Design Requirements.

4. SPECIFIC HEATING, VENTILATING, AND AIR CONDITIONING REQUIREMENTS - TVM

TVM is not heated, cooled, or ventilated.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS – TVM

Automatic sprinkler system is not required for TVMs.

Fire Hydrants. Refer to Civil Design for design requirements.

Fire Extinguishers. Provide 10 lb. ABC type fire extinguishers in accordance with NFPA 10. Refer to Architectural Design for design requirements.

Fire Alarm and Detection System is not required for TVMs.

For additional information, see the attached SPECIFICATION SECTIONS 14630 OVERHEAD ELECTRIC CRANES and 15400E PLUMBING, COMPRESSED AIR SYSTEM located at the end of this section.

6. TACTICAL VEHICLE MAINTENANCE INTERIOR ELECTRICAL DESIGN

Secondary service voltage shall be 277/480 volt, 3-phase, 4-wire for all of the TVM facilities. Dry-type transformers shall be provided to obtain 120/240 volt service for general purpose receptacles and small motors. 480 volt service to motors shall be used to the maximum extent possible in accordance with UFC 3-520-01, Interior Electrical Systems.

The drawings provide the necessary interior electrical information on what is to be installed into the facility.

K13 TACTICAL VEHICLE MAINTENANCE (TVM)

SECTION 14630

OVERHEAD ELECTRIC CRANES
05/93

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 GEAR MANUFACTURERS ASSOCIATION (AGMA)

AGMA 390.03a	(1980; Errata 1983) Gear Handbook Gear Classification, Materials and Measuring Methods for Bevel, Hypoid, Fine Pitch Wormgearing and Racks Only as Unassembled Gears
AGMA 2000-A	(1988; Errata Jan 1989) Gear Classification and Inspection Handbook
AGMA 2001-B	(1995) Fundamental Rating Factors and Calculation Methods for Involute Spur and Helical Gear Teeth
AGMA 6010-E	(1988; Errata Nov 91) Standard for Spur, Helical, Herringbone and Bevel Enclosed Drives
AGMA 6019-E	(1989) Gearmotors Using Spur, Helical, Herringbone, Straight Bevel, or Spiral Bevel Gears

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC ASD MAN, Vol I	(1993) Manual of Steel Construction

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 159	(1983; R 1993) Automotive Gray Iron Castings
ASTM A 325	(1994) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 668	(1995) Steel Forgings, Carbon and Alloy, for General Industrial Use

ASTM B 438	(1995a) Sintered Bronze Bearings (Oil-Impregnated)
ASTM B 439	(1995) Iron-Base Sintered Bearings (Oil-Impregnated)
ASTM B 612	(1991) Iron Bronze Sintered Bearings (Oil-Impregnated)
ASTM B 633	(1985; R 1994) Electrodeposited Coatings of Zinc on Iron and Steel
ASTM E 125	(1963; R 1993) Magnetic Particle Indications on Ferrous Castings

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B30.2	(1990; B30.2a; B30.2b; B30.2c; B30.2d) Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)
ASME B30.16	(1993; B30.16a; B30.16b; B30.16c) Overhead Hoist (Underhung)
ASME B30.17	(1992; Errata; Sep 1993; B30.17a; B30.17b; B30.17c) Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)
ASME HST-4M	(1991) Performance Standard for Overhead Electric Wire Rope Hoists
ASME NOG-1	(1995) Rules for Construction of Overhead and Gantry Cranes

AMERICAN WELDING SOCIETY (AWS)

AWS D14.1	(1985) Welding of Industrial and Mill Cranes and Other Material Handling Equipment

MATERIAL HANDLING INSTITUTE (MHI)

MHI CMAA 70	(1994) Electric Overhead Traveling Cranes
MHI CMAA 74	(1994) Top Running & Under Running Single Girder Electric Overhead Traveling Cranes Utilizing Under Running Trolley Hoist

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS 2	(1993) Industrial Control and Systems, Controllers, Contactors, and Overload Relays Rated Not More Than 2,000 Volts AC or 750 Volts DC
NEMA ICS 6	(1993) Industrial Control and Systems, Enclosures
NEMA MG 1	(1993; Rev 1; Rev 2) Motors and Generators

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(1996) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 50	(1995; Rev Oct 1996) Enclosures for Electrical Equipment
UL 489	(1996) Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
UL 943	(1993; Rev thru Sep 1996) Ground-Fault Circuit-Interrupters
UL 1449	(1985; Errata Apr 1986) Transient Voltage Surge Suppressors

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Overhead Crane System; GA.

A complete list of equipment and materials, including manufacturer's descriptive data and technical literature, performance charts and curves, catalog cuts, and installation instructions.

Spare Parts; FIO.

Spare parts data for each different item of material and equipment specified, after approval of the detail drawings and not later than 1 month prior to the date of beneficial occupancy. The data shall include a complete list of parts and supplies, with current unit prices and source of

supply.

SD-04 Drawings

Overhead Crane System; GA.

Detail drawings containing complete wiring and schematic diagrams. Diagrams shall indicate each numbered wire, where wire initiates, where wire terminates, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Drawings shall show layout and anchorage of equipment and appurtenances, and equipment relationship to other parts of the work including clearances for maintenance and operation.

SD-06 Instructions

Framed Instructions; GA.

Diagrams, instructions and safety requirements.

SD-09 Reports

Acceptance Testing; FIO.

Test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, upon completion and testing of the installed system. The report shall include the information as required by paragraph ACCEPTANCE TESTING.

SD-18 Records

Hooks; FIO.

Hook material and any heat treatment performed, stamped on the hook shank or documented in certification papers furnished with the hooks. Crane test data recorded on appropriate test record forms suitable for retention for the life of the crane.

SD-19 Operation and Maintenance Manuals

Overhead Crane System; GA.

Six copies of operation and six copies of maintenance manuals for the equipment furnished. One complete set prior to performance testing and the remainder upon acceptance. Operation manuals shall detail the step-by-step procedures required for system startup, operation and shutdown. Operation manuals shall include the manufacturer's name, model number, parts list, and brief description of all equipment and basic operating features. Maintenance manuals shall list routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides.

Maintenance manuals shall include piping and equipment layout and simplified wiring and control diagrams of the system as installed. Operation and maintenance manuals shall be approved prior to the field training course.

1.3 QUALIFICATION

Electric overhead cranes shall be designed and manufactured by a company with a minimum of 10 years of specialized experience in designing and manufacturing the type of overhead crane required to meet requirements of the Contract Documents.

1.4 TESTING AND INSPECTIONS

1.4.1 Pre-Delivery Inspections

Contractor shall be responsible for performance of quality control inspections, testing and documentation of steel castings, hook assembly and nuclear safety as follows.

1.4.2 Inspection of Steel Castings

Load-carrying steel castings shall be visually inspected and tested using the magnetic-particle inspection method. Allowable degree of discontinuities shall be referenced to ASTM E 125, and shall be related to service loads and stresses, critical configuration, location and type. Methods of repairing the discontinuities shall be subject to review by the Contracting Officer.

1.4.3 Inspection of Hook Assembly

Hook and nut shall be inspected by a magnetic-particle type inspection or X-rayed prior to delivery. Documentation of hook inspection shall be furnished to Contracting Officer at the field operational testing. As part of the acceptance standard, linear indications will not be allowed. Welding repairs of hook will not be permitted. A hook showing linear indications, damage or deformation will not be accepted, and shall be replaced.

1.5 DESIGN CRITERIA

Cranes shall operate in the given spaces and shall match the runway dimensions indicated. Hook coverage, hook vertical travel, clear hook height, lifting capacity, and load test weight shall be not be less than that indicated.

1.5.1 General

The hoisting equipment shall include the following:

Number of cranes, 1 each; located in each Tracked Vehicle Maintenance

Structure, with a 7.5 ton rated capacity, electric overhead traveling crane, top running type.

1.5.2 Classification

Top running crane shall be designed and constructed to MHI CMAA 74 moderate industrial service requirements for operation in non-hazardous environment with hoist in accordance with ASME HST-4M.

1.5.3 Rated Capacity and Speeds

Rated capacity of crane shall be 7.5 tons. Lower load block or assembly of hook, swivel bearing sheaves, pins and frame suspended by the hoisting ropes shall not be considered part of the rated capacity. Rated speeds in feet per minute for the hoist, bridge and trolley at the rated load shall be as follows:

Rated Speeds

Description	Minimum	Maximum
Main Hoist	5	15
Trolley	25	50
Bridge	33	100

1.6 DELIVERY AND STORAGE

Equipment delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variations, dirt and dust, and other contaminants.

1.7 FIELD MEASUREMENTS

Before performing any work, Contractor shall become familiar with all details of the work, verify all dimensions in the field, and submit a letter describing the results of this verification including discrepancies to the Contracting Officer and crane manufacture.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 General

Materials and equipment shall be standard products of manufacturers regularly engaged in the fabrication of complete and totally functional cranes including necessary ancillary equipment.

2.1.2 Nameplates

Nameplates shall be secured to each major component of equipment with the

manufacturer's name, address, type or style, model or catalog number, and serial number. Two bridge identification plates shall be provided, one for each side of bridge. Identified plates shall be noncorrosive metal with letters which are easily read from the floor, showing a separate number such as BC-1, BC-2, for each bridge crane.

2.1.3 Use of Asbestos Products

Materials and products required for designing and manufacturing cranes shall not contain asbestos.

2.1.4 Capacity Plates

Two capacity plates indicating the crane capacity in tons are required, one secured to each side of bridge. Each capacity plate shall be fabricated of a steel backing plate and exterior quality/fade-resistant stick-on labels with letters large enough to be easily read from the floor. Capacity plates shall be placed in a location visible to pendant operator's position after the crane has been installed.

2.1.5 Safety Warnings

Readable warning labels shall be affixed to each lift block or control pendant in a readable position in accordance with ASME B30.16, ASME B30.2 and ASME B30.17. The word "WARNING" or other legend shall be designed to bring the label to the attention of the operator. Warning labels shall be durable type and display the following information concerning safe-operating procedures: Cautionary language against lifting more than the rated load; operating the hoist when the hook is not centered under the hoist; operating hoist with twisted, kinked or damaged rope; operating damaged or malfunctioning hoist; operating a rope hoist with a rope that is not properly seated in its hoist drum groove; lifting people; lifting loads over people; and removing or obscuring the warning label.

2.1.5.1 Directional Arrows

To avoid operation of crane in the wrong direction, the words "FORWARD" and "REVERSE" and accompanying directional arrows shall be affixed in a location on the trolley and bridge which are visible and readable to the operator from pendant station. The words "FORWARD" and "REVERSE" shall agree with the markings on control pendant. Directional arrows shall not be indicated on control pendant.

2.2 STRUCTURAL MATERIALS

2.2.1 Bolts, Nuts and Washers

High-strength bolted connections shall utilize SAE Grade 5 bolts with corresponding lockwashers, nuts, etc., conforming to requirements of AISC-S329 bolts. Bolts, nuts and washers shall conform to ASTM A 325 bolts. Galvanized bolts are not acceptable.

2.2.2 Bridge Girders or Girders

Bridge girders shall be wide flange beams, standard I-Beams, reinforced beams or sections fabricated from rolled plates and shapes.

2.2.3 Bridge End Trucks

End trucks shall be the rotating or fixed axle type fabricated of structural tubes or from structural steel to provide a rigid box section structure. Jacking pads shall be provided for removal of wheel assemblies.

2.2.4 Stops and Bumpers

Crane runways and bridge girders shall be fitted with structural steel end stops. Bridge end trucks and trolley frames shall be fitted with shock-absorbing, spring or hydraulic type bumpers capable of decelerating and stopping the bridge and/or trolley within the limits stated by OSHA and MHI CMAA. Trolley end stops shall be of sufficient strength to withstand the impact of a fully loaded trolley moving at 50 percent of maximum rated travel speed.

2.2.5 Runway Rails

The runway rail size shall be as recommended by crane manufacturer.

2.2.6 Additional Provisions for Outside Service

Welded structural members on outdoor cranes shall be seal welded. Crane bridges shall be provided with parking brakes which will sufficiently hold the crane against a wind pressure of 5 psf for in-service conditions. Crane bridges shall be provided with manually-operated pin locks at each rail, designed to securely anchor the crane against a wind pressure of 30 psf for out-of-service conditions.

2.3 MECHANICAL EQUIPMENT

2.3.1 Drives

2.3.1.1 Bridge Drives

Bridge drives shall be A-4 drive arrangement as specified in MHI CMAA 70 or MHI CMAA 74. Bridge drive shall consist of a single electric motor mechanically connected through gear reduction and drive shafts to the drive wheels or separate drive motors at each end of bridge. Acceleration and deceleration shall meet the requirements specified in this section. Gears shall conform to applicable AGMA standards. Gear reducers shall be oil tight and fully enclosed with pressure or splash type lubrication. Bridge-travel limit-switches are optional.

2.3.1.2 Trolley Drives

Trolley shall be complete with a drive arrangement with a minimum of two wheels driven by an integral electric motor. Drive mechanism shall run in totally enclosed oil bath. Limit switches are optional for drive mechanism. Acceleration and deceleration controls shall meet requirements specified in this section.

2.3.2 Load Blocks

2.3.2.1 Main and Auxiliary Hoist Load Blocks

Load blocks shall be of welded steel construction. Load blocks shall be provided with hot-rolled or forged steel fixed crosshead separate from the sheave pin with swivel mounting for forged steel hook. Each lubrication fitting for sheave pins shall be an independent type recessed within the sheave pin or adequately guarded to prevent damage. The pitch diameter of the sheaves shall be not less than 16 times the rope diameter. Sheaves shall be supported by roller type bearings on steel sheave pins. Provisions for external lubrication shall be provided to allow pressure relief and purging of old grease. Sheave blocks shall be constructed to provide maximum personnel safety and to prevent the hoist rope from leaving the sheaves under normal operating condition.

2.3.2.2 Hook Assembly

Hooks shall be single barbed and shall be made of forged steel complying with ASTM A 668. Hook dimensions shall be manufacturer's standard. Hooks shall be fitted with safety latches designed to preclude inadvertent displacement of slings from the hook saddle. Painting or welding shall not be performed on the hook. Hook nut shall be secured with a removable type set screw or other similar fastener, but shall not be welded. Hooks shall be designed and commercially rated with safety factors in accordance with MHI CMAA. The hook shall be free to rotate through 360 degrees when supporting the rated load.

2.3.3 Hoisting Ropes

Hoisting ropes shall be regular lay, preformed, uncoated, improved plow steel, 6 by 37 construction, with independent wire rope core. Ropes shall be suited to meet the service requirements. Rope socketing or U-bolt clip connections shall be made in accordance with clip or rope manufacturer's recommendation, and shall be equal to or greater than the rope strength. Hoisting ropes shall be the rated capacity load plus the load block weight divided by the number of rope parts, and shall not exceed 20 percent of the certified breaking strength of rope. Hoisting ropes shall be secured to hoist drum so that no less than two wraps of rope remain at each anchorage of hoist drum at the extreme low position (limit switch stop).

2.3.4 Sheaves

Sheaves shall be of cast, forged, rolled, or welded structural steel.

Sheave grooves shall be accurately machined, smoothly finished and free of surface defects.

2.3.5 Hoist Drums

Hoist drums shall be of welded rolled structural steel, cast steel, or seamless steel pipe. Diameter of drum shall be not less than 24 times the diameter of hoist cable. Drums shall be machined and provided with right-hand and left-hand grooves to take the full run of cable for the required lift without overlapping, plus a minimum of two full wraps of cable when load is on floor. At least one groove shall remain unused when hook is at the highest position. Drum grooves shall be cut from solid stock and have sufficient depth for size of cable required. Drum flanges shall be guarded so that the cable cannot wedge between drum flange and hoist frame.

2.3.6 Gearing

Gearing shall be of the enclosed gear reducers type. Gears and pinions shall be spur, helical, or herringbone type only, and shall be forged, cast or rolled steel; open-type gearing is not acceptable. Gears and pinions shall have adequate strength and durability for the crane service class and shall be manufactured to AGMA 2001-B Quality Class 6 or better precision per AGMA 390.03a and AGMA 2000-A.

2.3.6.1 Gear Reducers

Gear reducers shall be standard items of manufacturers regularly engaged in the design and manufacture of gear reducers for Class D and G cranes or shall be integral components of standard hoists or hoist/trolley units of manufacturers regularly engaged in the design and manufacture of hoists or hoist/trolley units for Class A, B or C cranes. Gear reducers shall be designed, manufactured and rated in accordance with AGMA 6010-E, AGMA 6019-E (for trolley drives only), as applicable. Except for final reduction, the gear reduction units shall be fully enclosed in oil-tight housing. Gearing shall be designed to AGMA standards and shall operate in an oil bath. Operation shall be smooth and quiet.

2.3.7 Brakes

Brakes shall be of the shoe or disc type with thermal capacity suitable for class and service specified in this section. Shoe and disc brakes shall be spring-set and electrically-released by a continuously rated direct acting magnet. Brakes shall be self-aligning and provide for easy adjustment for torque setting and lining wear. Brake lining material shall be asbestos free. Brake wheels shall be cast iron conforming to ASTM A 159 or shall be the manufacturer's standard high-strength ductile cast-iron, provided that the material exhibits wear characteristics in the form of powdered wear particles and is resistant to heat-checking. Disc brakes shall be totally enclosed and have multiple discs with stationary releasing magnets. Brake torque shall be easily adjustable over a 2:1 torque range.

2.3.7.1 Hoist Holding Brakes

Each hoist shall be equipped with at least one holding brake. Holding brake shall be disc or shoe design, applied to one of the following: motor shaft or gear reducer shaft or rope drum. Braking system shall be designed to have zero hook lowering motion when a raise motion is initiated. Primary brake shall be a spring-set, electrically-released, disc or shoe type brake. Brake shall have a minimum torque rating of 150 percent of motor torque. Brake shall be capable of holding the rated load with zero hook drift. Primary brake shall be automatically set when controls are released or when power is interrupted. Provisions shall be made to facilitate easy brake adjustment. Hoists shall be furnished with mechanical-control braking or a power-control braking system. Typical power means include dynamic lowering, eddy-current braking, counter-torque, regenerative braking, variable frequency, and adjustable or variable voltage.

2.3.7.2 Hoist Control Brake

Each hoist shall be equipped with an integral mechanical load brake of the "Weston" type or multiple-disc type. Multiple disc-type brake shall be provided with external adjustment for wear.

2.3.7.3 Trolley Brake

Trolley braking system shall be provided with spring-applied and electrically-released shoe brakes or disc brakes. Braking system shall be automatically set when controls are released or power is interrupted. Provisions shall be made to facilitate easy brake adjustment. Brakes shall have a torque rating of at least 50 percent of trolley drive motor rated torque.

2.3.7.4 Bridge Brakes

Bridge braking system shall be provided with a spring-applied and electrically-released single shoe or disc brake for each bridge drive motor. Braking system shall be automatically set when controls are released or power is interrupted. Provisions shall be made to facilitate easy brake adjustment. Brakes shall have a torque rating of at least 50 percent of bridge drive motor rated torque.

2.3.8 Wheels

Wheels shall be manufactured of rolled or forged steel. Bridge wheels shall be double-flanged. Trolley wheels shall have straight treads. Bridge wheels shall have straight treads. Wheels shall be equipped with self-aligning double-row spherical roller-bearings of capacity as recommended by bearing manufacturer for design load of trolley or bridge.

2.3.9 Bearings

Bearings shall be antifriction type, except bearings which are subject only to small rocker motion. Equalizer sheaves shall be equipped with sintered oil-impregnated type bushings in accordance with ASTM B 438, ASTM B 439, or ASTM B 612.

2.3.10 Lubrication System

Splash-type oil lubrication system shall be provided for hoist, trolley and bridge gear cases; an oil pump shall be used on vertical-mounted gear cases exceeding two reductions. Oil pumps shall be the reversible type capable of maintaining the same oil flow direction and volume while being driven in either direction. Electric motor-driven pumps may be used when input shaft speed is too low at any operating condition to ensure adequate oil flow. In such applications, pump shall be energized whenever drive mechanism brakes are released.

2.4 ELECTRICAL COMPONENTS

2.4.1 Control Systems

2.4.1.1 Hoist Control System

Main hoist motion control system shall be two speed, with ac magnetic control of ac squirrel cage motor two speed, with ac magnetic control of ac wound rotor motor. Control shall provide for reversing, and for a mechanical load brake.

2.4.1.2 Travel Control System

Bridge and trolley motion control system shall be two speed with ac magnetic control of squirrel cage motors.

2.4.2 Power Sources

2.4.2.1 System Supply Voltage

Cranes shall be designed to be operated from a 480 volt, three-phase, 60 Hz, alternating current system power source. Energy isolating devices for such machine or equipment shall be designed to accept a lockout device in accordance with NFPA 70.

2.4.2.2 Transformers

Transformers shall be dry type suitable for the application.

2.4.3 Motors

2.4.3.1 General Requirements

Motors shall be designed specifically for crane and hoist duty. Drain

holes shall be provided at low points near each end. Inspection and service covers shall be provided with gaskets. Hardware shall be corrosion-resistant. Motors shall conform to the requirements of NEMA MG 1. One thermal sensitive device embedded in hoist motor windings shall be provided. Device and associated circuitry shall serve as an alarm activating an amber signal or pilot light visible to control stations when motor temperatures become excessive. Set point shall be set below the Class B insulation temperature limit. Thermal-sensitive device and associated circuits shall be self-restoring (automatic reset).

2.4.3.2 Main Hoist Motor

Hoist motor shall be two-speed; two-winding NEMA design D squirrel cage ac type.

2.4.3.3 Bridge and Trolley Drive Motors

Bridge and trolley drive motors shall be two-speed; two-winding NEMA design B squirrel cage ac type rated.

2.4.3.4 Motor Enclosures

Motor enclosures shall be totally enclosed, air-even frame (TEAD).

2.4.3.5 Hoist Motor Insulation and Time Rating

Hoist motors shall be provided with insulation which has a Class B/30 minute minimum motor time rating based on an 80 degree C motor temperature rise above 40 degrees C ambient, with frame size selection based on continuous ratings.

2.4.3.6 Bridge and Trolley Motor Insulation and Time Rating

Bridge and trolley drive motors shall be provided with an insulation which has a Class B/90 minute minimum motor time rating based on 85 degrees C motor temperature rise above 40 degree C ambient with frame size selection based on continuous rating.

2.4.4 Control System

A separate controller shall be provided for each motor; a duplex type for 2-motor bridge drives. Overload protection shall be in conformance with requirements of NEMA ICS 2 NFPA 70. When contactors are used for starting, stopping and reversing, contactors shall be mechanically and electrically interlocked.

2.4.4.1 Control Panels

Control panels shall be fabricated of solid sheet steel designed and constructed to conform to requirements of NEMA ICS 6 Type 3R. Control panel doors shall be hinged, equipped with gaskets and fitted with key-lock handle

design, complete with a single key to open all locks.

2.4.4.2 Main Hoist Control

Hoist motor control system shall provide two speeds in each direction with an electrically-operated, full-magnetic, across-the-line reversing type starter. Electrical and mechanical interlocks shall be used to prevent the operation of high speeds and low speeds.

2.4.4.3 Bridge and Trolley Control

Bridge and trolley main control systems shall provide two speeds in each direction with an electrically-operated, full-magnetic, across-the-line reversing type starter. Centrifugal switches shall be used in control circuit to prevent the plugging of trolley or bridge drive motors; each switch shall be arranged to set the associated drive's brake while attempts are made to plug. The bridge and trolley main control system shall be provided with reduced voltage starting for all speed points.

2.4.4.4 Drift Point

Trolley and bridge main control systems shall have a drift point between OFF and first speed control point in each direction or shall have a separate pushbutton.

2.4.5 Pendant Control Station

2.4.5.1 General

Pendant control station enclosure shall be NEMA Type 3R. Physical size of pendant shall be held to a minimum. A separate cable of corrosion-resistant chain consisting of minimum 1/4 inch wire shall be provided. Pendant station shall be attached to an auxiliary girder and shall hang vertically with bottom of pendant at 40 inches above floor. Weight of pendant shall not be supported by control cable.

2.4.5.2 Operating Pushbuttons

Operating pushbuttons shall be heavy-duty, dust-and-oil-tight type with distinctly-felt operating positions which meet requirements of NEMA ICS 2. Pendant control buttons shall be momentary pushbuttons. Pushbuttons (except the POWER-OFF button) shall be the recessed type to avoid accidental operation. Diameter of buttons shall be a size which will make operation possible with a thumb while holding the pendant with same hand. Nameplates shall be provided adjacent to each pushbutton. Barriers shall be provided on pendant between various pushbutton functions, except on elements mounted in junction box. In a multi-speed application, dual-position pushbuttons shall have a definite click-detent position for each speed. Pushbuttons shall be designed and manufactured not to hang up in control case. Pendant shall include a separate set of pushbuttons for each motion and for POWER-ON POWER-OFF. Pushbuttons shall be as follows:

POWER - OFF.
POWER - ON.
Hoist - Up.
Hoist - Down.
Bridge - East.
Bridge - West.
Trolley - North.
Trolley - South.

2.4.5.3 Light Indicators

Pilot lights shall meet heavy-duty requirements of NEMA ICS 2. One amber pilot light to indicate excessive hoist motor temperature shall be provided on pendant station. A blue pilot light shall be provided to indicate that the main contactor is energized, and a white pilot light to indicate that power is available on the load side of crane disconnect switch. A bright red mushroom head shall be provided with the POWER-OFF pushbutton.

2.4.6 Protection

2.4.6.1 Main Line Disconnect

A main line disconnect consisting of a combination circuit breaker (50,000 AIC) and non-reversing starter, starter without overloads (mainline contactor) in NEMA Type 3R enclosure shall be provided. Mainline disconnect shall be controlled by a control circuit so that all crane motions will be stopped upon mainline undervoltage, overload, control circuit fuse failure, or operation of POWER OFF pushbutton. Mainline disconnect shall be equipped with energy isolating devices designed to accept lockout devices.

2.4.6.2 Isolation Transformer

The isolation transformer shall be an SCR drive type specifically designed for cranes, with a continuous rating which will exceed that required of the sum of rated full-load full-speed KVA of hoist plus 50 percent of rated full-load full-speed KVA of trolley and bridge motors plus the rated KVA of controls. Total KVA is then multiplied by 1.05 (efficiency factor). The isolation transformer shall be connected to load side of mainline disconnect of the transformer.

2.4.6.3 Surge Protection

Surge suppressors shall meet the requirements of UL 1449. Three metal oxide varistors shall be provided on the line side of each SCR drive isolation transformer to provide transient over-voltage protection.

2.4.6.4 Circuit Breakers

Circuit breakers shall meet the requirements of UL 489.

2.4.6.5 Overloads

Alternating current circuit overload relays shall be of the ambient compensated, automatic reset, inverse time type located in all phases individual motor circuits. Overload relays shall be arranged to de-energize the associated motor on an overload condition.

2.4.7 Limit-Switches

Geared limit-switches shall be heavy-duty quick-break double-pole double-throw type conforming to NEMA ICS 2. The geared limit-switch interruption of a motion in one direction shall not prevent the opposite motion. Geared limit-switches shall reset automatically. Limit-switch housings shall be NEMA Type 4. Limit-switches shall interrupt power to the primary control systems.

2.4.7.1 Hoist Upper Limit-Switches

Two limit-switches shall be provided for each hoist. A rotating-type adjustable geared-control circuit interrupt limit-switch shall provide hoist-up limiting. A secondary hoist-upper-limit shall be provided with a weight-operated power circuit limit-switch to prevent the hoist from raising beyond the safe limit. The secondary limit-switch shall operate to interrupt power to all hoist motor conductors, set the hoist holding brakes and directly open all "raise" power circuits.

2.4.7.2 Hoist Lower Limit-Switches

Hoists shall be provided with a rotating-type adjustable geared-control circuit interrupt limit-switch for hoist-down travel limiting. The hook downward vertical travel of the hook shall be field-adjustable to approximately 6 inches above working surface.

2.4.7.3 Bridge and Trolley Travel Limit-Switches

Runway (track-type) limit-switches shall be provided for crane bridge and trolley motions to stop the bridge and trolley motions, respectively. Limit-switch actuators shall be installed on building and trolley frame to actuate the limit-switches and stop the crane bridge or trolley prior to contacting the trolley frame bumpers. Trip mechanism for trolley motion shall be located on crane runway to trip the switch before the bumper contacts the stop. Trip mechanism for bridge motion shall be located on crane runway to trip switch before bumper contacts the stop. When the switch is tripped, the switch shall permit opposite travel in the direction of stop and then automatically reset.

2.4.7.4 Rail Clamp Limit-Switches

When rail clamps are set, each rail clamp shall be furnished with a

limit-switch designed to interrupt the primary control circuits to bridge drive. A red pilot light shall be provided at control station to indicate the rail clamps are set.

2.4.8 Wiring

Wires shall be numbered or tagged at connection points. Splices shall be made in boxes or panels on terminals boards or standoff insulators. Motor loop, branch circuit and brake conductor selection shall be based on NFPA 70 for 90 degree C conductor rating on indoor cranes, and for 75 degree C conductor rating on outdoor cranes. Wire insulation shall be Type XHHW. Conductors in the vicinity of resistors and conductors connected to resistors shall be Type 5RML.

2.4.9 Electrification

2.4.9.1 Main Power Electrification

Main power electrification system shall provide power to crane starter/disconnect circuit breaker.

2.4.9.2 Crane Runway Conductors

Crane runway conductor system shall be the covered conductor bar system type designed and manufactured to meet UL requirements. Protective covers shall be the rigid or flexible self-closing type designed to cover all live conductors and shall be shaped to prevent accidental contact with conductors. Collectors shall be heavy-duty sliding shoe type compatible with the electrification system. Two tandem designed collector heads shall be provided for each conductor rail to provide redundancy.

2.4.9.3 Bridge Span Conductors

Bridge span conductor system shall be the rigid conductor/collector type. Cable loops shall not drop below the hook high position.

2.4.10 Special Requirements

2.4.10.1 Warning Horn

A solid-state electronic warning horn shall be provided on the crane. Any bridge or trolley motion shall be accompanied by a continuous series of alternating tones.

PART 3 EXECUTION

3.1 ERECTION

The entire crane erection shall be performed in accordance with manufacturer's instructions under the full-time supervision of the manufacturer's representative. Contractor shall provide a written

certificate from crane manufacturer indicating the crane is erected in accordance with manufacturer's recommendations before testing the completed installation.

3.1.1 Shop Assembly

Major crane components shall be shop assembled as completely as possible. Disassembled parts shall be match marked and electrical connections tagged after complete no-load shop testing. Parts and equipment at site shall be protected from weather, damage, abuse and loss of identification. Erection procedures shall ensure that the crane is erected without initial stresses, forced or improvised fits, misalignments, nicks of high-strength structural steel components, stress-raising welds and rough burrs. Damaged painted surfaces shall be cleaned and repainted after crane is erected.

3.1.2 Mechanical Alignment

Motors, couplings, brakes, gear boxes and drive components shall be aligned when reinstalled in accordance with manufacturer's instructions.

3.1.3 Electrical Alignment

Control system shall be aligned in accordance with manufacturer's instructions. A copy of the final alignment data shall be stored in control panel door and shall include but not be limited to timer settings, resistor tap settings, potentiometer settings, test-point voltages, supply voltages, motor voltages, motor currents and test conditions such as ambient temperature, motor load, date performed and person performing the alignment.

3.1.4 Welding

Welders, welding operations and welding procedures shall be qualified or prequalified in accordance with AWS D14.1. Welding shall be performed indoors and the surface of parts to be welded shall be free from rust, scale, paint, grease or other foreign matter. Minimum preheat and interpass temperatures shall conform to the requirements of AWS D14.1. Welding shall be performed in accordance with written procedures which specify the Contractor's standard dimensional tolerances for deviation from camber and sweep. Such tolerances shall not exceed those specified in accordance with AWS D14.1. Allowable stress ranges shall be in accordance with MHI CMAA 70. Welding of girders and beams shall conform with AWS D14.1.

3.1.5 Field Painting

Painting required for surfaces not otherwise specified, and finish painting of items only primed at the facility, shall be as specified in Section 09900 PAINTING, GENERAL. Bridge crane including bridge, trolley, hoist and all attached items shall be painted in accordance with the manufacturer's standard practice. The complete crane shall be of one

color. Bridge rail, supports and bracing shall be painted in accordance with Section 09900 PAINTING, GENERAL. Items such as surfaces in contact with the rail wheels, wheel tread, hooks, wire rope, surfaces on the electrical collector bars in contact with the collector shoes and nameplates shall not be painted

3.2 ACCEPTANCE TESTING

3.2.1 General

Contractor shall provide all personnel necessary to conduct the required testing which shall include but not be limited to crane operators, riggers, rigging gear and test weights. Testing shall be performed in the presence of Contracting Officer or his designated representative. Contractor shall notify Contracting Officer 10 days prior to testing operations. Contractor shall operate all equipment and make all necessary corrections and adjustments prior to the testing operations witnessed by Contracting Officer. A representative of the Contractor responsible for procuring and installing hoist equipment shall be present to direct the field testing. Test loads shall be compact and permit a minimum of 50 percent of vertical lift. Test loads shall be minus 0 percent to plus 5 percent of the required weight, and shall be verified prior to testing. Test weights required are 15,000 pounds (rated load), 18,750 pounds (125% of rated load) and 1500 pounds (10%of rated load). Operational testing shall not be performed until after building interior has been painted. Five copies of all test reports shall be furnished to Contracting Officer.

3.2.1.1 Test Sequence

Crane shall be tested in accordance with applicable paragraphs of this procedure in the sequence provided.

3.2.1.2 Test Data

Operating and startup current measurements shall be recorded for coils, hoist, trolley, and bridge motors using the appropriate instrumentation. Speed measurements shall be recorded as required by facility evaluation tests (normally at 100 percent load). Recorded values shall be compared with design specifications or manufacturer's recommended values and the abnormal differences shall be justified in the remarks or appropriate adjustments performed. The high temperatures or abnormal operation of any equipment or machinery shall be noted, investigated and corrected. Hoist, trolley and bridge speeds shall be recorded during each test cycle.

3.2.1.3 Equipment Monitoring

Improper operation or poor condition of safety devices, electrical components, mechanical equipment and structural assemblies shall be monitored during the load test. Defects observed to be critical during the testing period shall be reported immediately to the Contracting Officer and the testing operations shall be suspended until the defects are corrected.

During each load test and immediately following each load test, the following inspections shall be made:

a. Inspect for evidence of bending, warping, permanent deformation, cracking or malfunction of structural components.

b. Inspect for evidence of slippage in wire rope sockets and fittings.

c. Check for overheating in brake operation; check for proper stopping. All safety devices including emergency stop switches and POWER-OFF pushbuttons shall be tested and inspected separately to verify proper operation of the brakes. When provided, safety accessories including warning horn shall be inspected.

d. Check for abnormal noise or vibration and overheating in machinery drive components.

e. Check wire rope sheaves and drum spooling for proper reeving and operation, freedom of movement, abnormal noise or vibration.

f. Check electrical drive components for proper operation, freedom from chatter, noise, overheating, and lockout/tagout devices for energy isolation.

g. Inspect gears for abnormal wear patterns, damage, or inadequate lubrication.

h. Verify that locations of crane capacity plates are visible from pendant operator's position.

3.2.1.4 Hooks

Hooks shall be measured for hook throat spread before and after load test. A throat dimension base measurement shall be established by installing two tram points and measuring the distance between the tram points to within 0.4 mm. (1/64 inch.) This base dimension shall be recorded. Distance between tram points shall be measured before and after load test. An increase in throat opening by more than 1 percent from base measurement shall be cause for rejection.

3.2.2 No-Load Testing

3.2.2.1 Hoist Operating and Limit Switch Test

Load hook shall be raised and lowered through the full range of normal travel at rated speed and other crane speeds. Load hook shall be stopped below the geared limit-switch upper setting. In slow speed only, proper operation of upper and lower limit-switches for primary motions shall be verified. The test shall be repeated a sufficient number of times (minimum of 3) to demonstrate proper operation. Brake action shall be tested in each direction. Proper time-delay shall be verified between the actuation of

dual brakes.

3.2.2.2 Trolley Travel

Trolley shall be operated the full distance of bridge rails exercising all primary drive speed controls in each direction. Brake operation shall be verified in each direction. In slow speed, trolley bumpers shall contact trolley stops located on the bridge girders. In slow speed the proper operation (interrupt power, automatic reset) of the trolley limit-switches at both limits of trolley motion shall be tested.

3.2.2.3 Bridge Travel

Bridge shall be operated in each direction the full distance of runway exercising all primary drive speed controls. Brake operation shall be verified in each direction. In slow speed the proper operation (interrupt power, automatic reset) of the bridge limit-switches at both limits of bridge motion shall be tested. In slow speed the crane bridge bumpers shall contact the runway rail stops.

3.2.2.4 Hoist Loss of Power No-Load Test

Using the primary drive, hooks shall be raised to a height of approximately 12 feet or less. While slowly lowering the hook the main power source shall be disconnected, verifying that the hook will not lower and that both brakes will set.

3.2.2.5 Travel Loss of Power No-Load Test

With the hook raised to clear obstructions and trolley traveling in slow speed, the main power source shall be disconnected, verifying that the trolley will stop and the brake will set. Test shall be repeated for bridge slow speed primary drive controls.

3.2.3 Load Test

3.2.3.1 Hoist

Unless otherwise indicated, the following tests shall be performed using a test load of 125 percent (plus 5 percent, minus 0 percent) of rated load.

a. Hoist Static Load Test: Holding brakes and hoisting components shall be tested by raising the test load approximately 300 mm (1 foot) and manually releasing one of the holding brakes. Load shall be held for 10 minutes. First holding brake shall be reapplied and second holding brake released. Load shall be held for 10 minutes. Any lowering that may occur indicates a malfunction of brakes or lowering components.

b. Dynamic Load Test: Test load shall be raised and lowered through the full range operating in each speed. Machinery shall be completely stopped at least once in each direction to ensure proper brake operation.

c. Hoist Mechanical Load Brake: With test load raised approximately 1.5 m (5 feet) and with the hoist controller in the neutral position, holding brake shall be released. Mechanical load brake shall be capable of holding the test load. With holding brake in released position, test load shall be lowered (first point) and the controller shall be returned to OFF position as the test load lowers. Mechanical load brake shall prevent the test load from accelerating.

d. Hoist Loss of Power Test: After raising test load to approximately 2.5 m, (8 feet,) slowly lowering the test load, the main power source and control pushbutton shall be released verifying that the test load will not lower and that both brakes will set.

e. Trolley Dynamic Load Test: While operating the trolley the full distance of bridge rails in each direction with test load on the hook (one cycle), proper functioning of all primary drive speed control points and proper brake action shall be tested.

f. Bridge Dynamic Load Test: With test load on hook, bridge shall be operated for the full length of runway in both directions with trolley at each extreme end of bridge. Proper functioning of all primary drive speed control points and brake action shall be verified.

3.2.3.2 Trolley and Bridge Loss of Power Test

A test load of 100 to 105 percent of rated load shall be raised clear of any obstructions on operating floor. Starting at a safe distance from walls or other obstructions, a slow speed shall be selected using the trolley and bridge primary drive. While maintaining a safe distance to obstructions, the main power source shall be disconnected and brakes shall be verified to have set and that the equipment stops within the distance recommended by manufacturer.

3.2.4 Overload Tests

After the operational tests, bridge crane system and all functions of bridge crane shall be tested at 125 percent of rated load.

3.2.5 Acceleration and Deceleration Tests

The acceleration and deceleration of bridge and trolley shall be tested with approximately 10 percent of rated load at lowest possible location of hook. Bridge and trolley shall be operated to run up to high speed and then stopped without jarring or swinging the load.

3.2.6 Grounding Test

Hoist shall be tested to determine that the hoist, including hook and pendant, are grounded to building during all phases of hoist operation. The grounding of bridge and trolley shall be tested with approximately 10

percent of rated load on hook. Grounding shall be tested between hoist hook and the structure's grounding system.

3.2.7 Adjustments and Repairs

Adjustments and repairs shall be performed by Contractor under the direction of the Contracting Officer at no additional cost to the Government, until satisfactory conditions are maintained, and contract compliance is affected. After adjustments are made to assure correct functioning of the components, pertinent testing shall be repeated.

3.3 SCHEMATIC DIAGRAMS

Schematic diagrams for equipment shall be stored where indicated on drawings.

3.4 MANUFACTURER'S FIELD SERVICE REPRESENTATIVE

Contractor shall furnish a qualified experienced manufacturer's field service representative to supervise the crane installation, assist in the performance of the on site testing, and instruct personnel in the operational and maintenance features of the equipment.

3.5 FIELD TRAINING

Contractor shall conduct a training course for the operating staff. Training period shall consist of a total of 8 hours of normal working time and shall start after the system is functionally completed but prior to final acceptance. Course instructions shall cover pertinent points involved in operating, starting, stopping, and servicing the equipment, including all major elements of operation and maintenance manual. Course instructions shall demonstrate all routine maintenance operations such as lubrication and general inspection. Contracting Officer shall be given at least 2 weeks advance notice of field training.

3.6 ACCEPTANCE

Final acceptance of crane system will not be given until Contractor has successfully completed all testing operations, corrected all material and equipment defects, made all proper operation adjustments, and removed paint or overspray on wire rope, hook and electrical collector bars.

-- End of Section --

K13 TACTICAL VEHICLE MAINTENANCE (TVM)

SECTION 15400E

PLUMBING, COMPRESSED AIR SYSTEM
12/90

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 36	(1991) Structural Steel
ASTM A 47	(1990) Ferritic Malleable Iron Castings
ASTM A 53	(1990b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
ASTM A 183	(1983; R 1990) Carbon Steel Track Bolts and Nuts
ASTM A 536	(1984) Ductile Iron Castings
ASTM A 733	(1989) Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples
ASTM B 32	(1991) Solder Metal
ASTM B 42	(1992) Seamless Copper Pipe, Standard Sizes
ASTM B 43	(1991) Seamless Red Brass Pipe, Standard Sizes
ASTM B 88	(1992) Seamless Copper Water Tube
ASTM D 2000	(1990) Rubber Products in Automotive Applications
ASTM D 3139	(1989) Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM D 3212	(1989) Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME-16	(1989; Addenda: 1989, 1990, 1991) Boiler and Pressure Vessel Code; Section VIII, Pressure Vessels Division 1 - Basic

	Coverage
ASME B16.3	(1985) Malleable Iron Threaded Fittings, Classes 150 and 300
ASME B16.18	(1984) Cast Copper Alloy Solder Joint Pressure Fittings
ASME B16.22	(1989) Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
ASME B19.3	(1991) Safety Standard for Compressors for Process Industries

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C606	(1987) Grooved and Shouldered Joints

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-58	(1988) Pipe Hangers and Supports - Materials, Design and Manufacture
MSS SP-69	(1991) Pipe Hangers and Supports - Selection and Application
MSS SP-73	(1991) Brazing Joints for Copper and Copper Alloy Pressure Fittings
MSS SP-83	(1987) Steel Pipe Unions Socket-Welding and Threaded

MILITARY SPECIFICATIONS (MS)

MS MIL-T-27730	(Rev A) Tape, Antiseize, Polytetrafluoroethylene, With Dispenser

NATIONAL ASSOCIATION OF PLUMBING-HEATING-COOLING CONTRACTORS (NAPHCC)

NAPHCC-01	(1990; Supple 1991) National Standard Plumbing Code

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250	(1991) Enclosures for Electrical Equipment (1000 Volts Maximum)

1.2 GENERAL REQUIREMENTS

1.2.1 Standard Products

Materials and equipment shall be the standard products of a manufacturer

regularly engaged in the manufacture of the products. Items of equipment shall essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening.

1.2.2 Verification of Dimensions

The Contractor shall become familiar with details of the work, verify dimensions in the field, and advise the Contracting Officer of any discrepancy before performing any work.

1.2.3 Code

All plumbing work shall be in accordance with NAPHCC-01, unless otherwise stated.

1.2.4 Cathodic Protection and Pipe Joint Bonding

Cathodic protection and pipe joint bonding systems shall be SACRIFICIAL ANODE.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL DESCRIPTIONS:

SD-06 Instructions

Plumbing System; FIO.

Diagrams, instructions, and other sheets proposed for posting.

SD-09 Reports

Tests, Flushing and Sterilization; FIO].

Test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, completion and testing of the installed system. Each test report shall indicate the final position of controls.

SD-13 Certificates

Materials and Equipment; FIO.

Where materials or equipment are specified to comply with requirements of AGA, or ASME, proof of such compliance. The label or listing of the specified agency will be acceptable evidence. In lieu of the label or listing, a written certificate may be submitted from an approval, nationally recognized testing organization equipped to perform such services, stating that the items have been tested and conform to the requirements and testing methods of the specified agency. Where equipment if specified to conform to requirements of the ASME Boiler and Pressure Vessel Cods, the design, fabrication and

installation shall conform to the code.

Bolts; FIO.

Written certification that the bolts furnished comply with the requirements of this specification, provided by the bolt manufacturer. The certification shall include illustrations of product-required marking, the date of manufacture, and the number of each type of bolt to be furnished based on this certification.

SD-19 Operation and Maintenance Manuals; FIO.

Plumbing System; FIO.

Six copies of the operation manual outlining the step-by-step procedures required for system startup, operation and shutdown. The manual shall include the manufacturer's name, model number, service manual, parts lists, and brief description of all equipment and their basic operating features. Six copies of the maintenance manual listing routine maintenance procedures, possible breakdowns and repairs. The manual shall include piping and equipment layout and simplified wiring and control diagrams of the system as installed.

1.4 ELECTRICAL WORK

Electric motor-driven equipment specified herein shall be provided complete with motors. Motors and motor controllers shall conform to the applicable requirements of Section 16415 ELECTRICAL WORK, INTERIOR. Electrical characteristics shall be as indicated.

PART 2 PRODUCTS

2.1 MATERIALS

Materials for various services shall be in accordance with TABLES I. Pipe fittings shall be compatible with the applicable pipe materials. Joints and gaskets materials shall conform to the following:

a. Coupling for Steel Pipe: AWWA C606.

b. Couplings for Grooved Pipe: Ductile Iron ASTM A 536 (Grade 65-45-12)Malleable Iron ASTM A 47, Grade 32510.

c. Metal Solder: ASTM B 32, 95-5, tin-antimony.

d. Silver Brazing Joints for Wrought and Cast Solder-Joint Fittings: MSS SP-73.

e. PTFE Tape, for use with Threaded Metal or Plastic Pipe: MS MIL-T-27730.

f. Rubber Gaskets for Grooved Pipe: ASTM D 2000, designation M2CA615A15B44F17Z, maximum temperature 110 degrees C (230 degrees F).230 degrees F.

g. Flexible Elastomeric Seals: ASTM D 3139 or ASTM D 3212.

h. Bolts and Nuts for Grooved Pipe Couplings: Heat-treated carbon steel, ASTM A 183.

2.2 PIPE HANGERS, INSERTS, AND SUPPORTS

Pipe hangers, inserts, and supports shall conform to MSS SP-58 and MSS SP-69.

2.3 COMPRESSED AIR SYSTEM

2.3.1 Air Compressors

Air compressors shall conform to ASME B19.3. Air compressor unit shall be a factory-packaged assembly, including three phase, 460 volt motor controls, switches, wiring, accessories, and motor controllers, in a UL-listed NEMA 250, Type 4 enclosure. Tank-mounted air compressors shall be manufactured to comply with UL listing requirements. Air compressors shall have manufacturer's name and address, together with trade name, and catalog number on a nameplate securely attached to the equipment. Each compressor shall start unloaded and shall start and stop automatically at upper and lower pressure limits of the system. Guards shall shield exposed moving parts. Each compressor motor shall be provided with an across-the-line-type magnetic controller, complete with low-voltage release. In addition, a three-position "HAND-OFF-AUTOMATIC" selector switch shall be provided for each motor. An intake air filter and silencer shall be provided with each compressor. Aftercooler and moisture separator shall be installed between compressors and air receiver to remove moisture and oil condensates before the air enters the receiver. Aftercoolers shall be either air- or water-cooled, as indicated. The air shall pass through a sufficient number of tubes to effect cooling. Tubes shall be sized to give maximum heat transfer. Water to unit shall be controlled by a solenoid or pneumatic valve which opens when the compressors start and closes when the compressors shut down. Cooling capacity of the aftercooler shall be sized for the total capacity of the compressors. Means shall be provided for draining condensed moisture from the receiver by an automatic float type trap. Capacities of air compressors and receivers shall be as indicated.

2.3.2 Nonoil-Free Type Compressors

Compressors shall be two-stage, V-belt drive, capable of operating continuously against their designed discharge pressure, and shall operate at a speed not in excess of 1800 rpm. Compressors shall have the capacity and discharge pressure indicated. Compressors shall be assembled complete on a common subbase. The compressor main bearings shall be either, roller or ball. The discharge passage of the high pressure air shall be piped to the air receiver with a copper pipe or tubing. A pressure gauge calibrated to 1.03 MPa (150 psi) 150 psi and equipped with a gauge cock and pulsation dampener shall be furnished for installation adjacent to pressure switches.

2.3.3 Air Receivers

Receivers shall be designed for 1.38 MPa (200 psi) 200 psi working pressure. Receivers shall be factory air tested to 1-1/2 times the working pressure. Receivers shall be equipped with valves and accessories, including pressure gauges and automatic and manual drains. The outside of air receivers may be galvanized or supplied with commercial enamel finish. Receivers shall be designed and constructed in accordance with ASME-16and shall have the design working pressures specified herein. A display of the

ASME seal on the receiver or a certified test report from an approved independent testing laboratory indicating conformance to the ASME Code shall be provided.

2.3.4 Intake Air Supply Filter

Dry type air filter shall be provided having a collection efficiency of 99 percent of particles larger than 10 microns. Filter body and media shall withstand a maximum 862 kPa (125 psi), 125 psi, capacity as indicated.

2.3.5 Pressure Regulators

The air system shall be provided with the necessary regulator valves to maintain the desired pressure for the installed equipment. Regulators shall be designed for a maximum inlet pressure of 862 kPa (125 psi)125 psi and a maximum temperature of 93 degrees C (200 degrees F).200 degrees F. Regulators shall be single-seated, pilot-operated with valve plug, bronze body and trim, and threaded connections. The regulator valve shall include a pressure gauge and shall be provided with an adjustment screw for adjusting the pressure differential from 0 kPa to 862 kPa (0 to 125 psig). 0 to 125 psig. Regulator shall be sized as indicated.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

3.1.1 Compressed Air Piping (Nonoil-Free)

Compressed air piping shall be installed as specified for water piping and suitable for 862 kPa (125 psig) 125 psig working pressure. Compressed air piping shall have supply lines and discharge terminals legibly and permanently marked at both ends with the name of the system and the direction of flow.

3.1.1.1 Equipment Connection

The piping shall be extended to equipment. The supply line to each item of equipment except those which are supplied with integral stops, shall be equipped with a shut-off valve to enable isolation of the item for repair and maintenance without interfering with operation of other equipment.

3.1.1.2 Cutting and Repairing

The work shall be carefully laid out in advance, and unnecessary cutting of construction shall be avoided. Damage to building, piping, wiring or equipment as a result of cutting shall be repaired by mechanics skilled in the trade involved.

3.1.1.3 Protection to Fixtures, Materials, and Equipment

Pipe opening shall be closed with caps or plugs during installation. Fixtures and equipment shall be tightly covered and protected against dirt, water, chemicals, and mechanical injury. Upon completion of the work, the fixtures, materials, and equipment shall be thoroughly cleaned, adjusted, and operated.

3.1.2 Joints

Installation of pipe and fittings shall be made in accordance with the manufacturer's recommendations.

3.1.3 Pipe Sleeves and Flashing

Pipe sleeves shall be furnished and set in their proper and permanent location.

3.1.4 Sleeve Requirements

Pipes passing through concrete or masonry walls or concrete floors or roofs shall be provided with pipe sleeves fitted into place at the time of construction.

3.1.5 Supports

3.1.5.1 General

Pipe guides and anchors shall be installed to keep pipes in accurate alignment, to direct the expansion movement, and to prevent buckling, swaying, and undue strain. All piping subjected to vertical movement when operating temperatures exceed ambient temperatures, shall be supported by variable spring hangers and supports or by constant support hangers. In the support of multiple pipe runs on a common base member, a clip or clamp shall be used where each pipe crosses the base support member. Spacing of the base support members shall not exceed the hanger and support spacing required for an individual pipe in the multiple pipe run.

3.1.5.2 Pipe Supports and Structural Bracing, Seismic Requirements

All piping and attached valves shall be supported and braced to resist seismic loads.

3.1.5.3 Pipe Hangers, Inserts, and Supports

Pipe hangers, inserts and supports installation shall conform to MSS SP-58 and MSS SP-69, except as modified herein.

a. Types 5, 12, and 26 shall not be used.

b. Type 3 shall not be used on insulated pipe.

c. Type 18 inserts shall be secured to concrete forms before concrete is placed. Continuous inserts which allow more adjustment may be used if they otherwise meet the requirements for type 18 inserts.

d. Type 19 and 23 C-clamps shall be torqued per MSS SP-69 and have both locknuts and retaining devices, furnished by the manufacturer. Field-fabricated C-clamp bodies or retaining devices are not acceptable.

e. Type 20 attachments used on angles and channels shall be furnished with an added malleable-iron heel plate or adapter.

f. Type 24 may be used only on trapeze hanger systems or on fabricated frames.

g. Type 39 saddles shall be used on all insulated pipe 100 mm (4 inches) 4 inches and larger when the temperature of the medium is 15 degrees C (60 degrees F) 60 degrees F or higher. Type 39 saddles shall be welded to the pipe.

h. Type 40 shields shall:

(1) be used on all insulated pipe less than 100 mm (4 inches).4 inches.

(2) be used on all insulated pipe 100 mm (4 inches) 4 inches and larger when the temperature of the medium is 15 degrees C (60 degrees F) 60 degrees F or less.

(3) have a high density insert for pipe 50 mm (2 inches)2 inches and larger. High density inserts shall have a density of 128 kg per cubic meter (8 pcf) 8 pcf or greater.

i. Horizontal pipe supports shall be spaced as specified in MSS SP-69 and a support shall be installed not over one foot from the pipe fitting joint at each change in direction of the piping. Pipe supports shall be spaced not over 1.5 m 5 feet apart at valves. Use 49 degrees C (120 degrees F) 120 degrees F for PVC pipe and 82 degrees C (180 degrees F) 180 degrees F for CPVC as operating temperatures in determining hanger spacing for PVC or CPVC pipe.

j. Vertical pipe shall be supported at each floor, except at slab-on-grade, and at intervals of not more than 4.5 m, 15 feet, not more than 2.4 m 8 feet from end of risers, and at vent terminations.

k. Type 35 guides using steel, reinforced polytetrafluoroethylene (PTFE) or graphite slides shall be provided to allow longitudinal pipe movement. Slide materials shall be suitable for the system operating temperatures, atmospheric conditions, and bearing loads encountered. Lateral restraints shall be provided as needed. Where steel slides do not require provisions for lateral restraint the following may be used.

(1) on pipe 100 mm (4 inches) 4 inches and larger when the temperature of the medium is 15 degrees C (60 degrees F) 60 degrees F or higher, a Type 39 saddle, welded to the pipe, may freely rest on a steel plate.

(2) on pipe less than 100 mm (4 inches) 4 inches a Type 40 shield, attached to the pipe or insulation, may freely rest on a steel plate.

(3) on pipe 100 mm (4 inches) 4 inches and larger carrying medium less that 15 degrees C (60 degrees F) 60 degrees F a Type 40 shield, attached to the pipe or insulation, may freely rest on a steel plate.

l. Pipe hangers on horizontal insulated pipe shall be the size of the outside diameter of the insulation. The insulation shall be continuous through the hanger on all pipe sizes and applications.

m. Where there are high system temperatures and welding to piping is not desirable, then the type 35 guide shall include a pipe cradle, welded to the guide structure and strapped securely to the pipe. The pipe shall be separated from the slide material by at least 100 mm, 4 inches,or by an amount adequate for the insulation, whichever is greater.

3.2 VIBRATION-ABSORBING FEATURES

Compressors shall be isolated from the building structure by approved vibration-absorbing features, unless otherwise shown. Each foundation shall include an adequate number of standard isolation units. Each unit shall consist of machine and floor or foundation fastening, together with intermediate isolation material, and shall be a standard product with printed load rating. Piping connected to mechanical equipment shall be provided with flexible connectors.

3.2.1 Tank- or Skid-Mounted Compressors

Floor attachment shall be as recommended by compressor manufacturer.

3.2.2 Foundation-Mounted Compressors

Foundation attachment shall be as recommended by the compressor manufacturer. Foundation shall be as recommended by the compressor manufacturer, except the foundation shall weigh not less than 3 times the weight of the moving parts. The compressor manufacturer's general arrangement and foundation plans, together with dimensions and specifications, shall be submitted for approval by the Contracting Officer.

3.3 PAINTING

Painting of pipes, hangers, supports, and other iron work is specified in Section 09900 PAINTING, GENERAL.

3.4 TESTS, FLUSHING, AND STERILIZATION

3.4.1 Compressed Air Piping (Nonoil-Free)

Piping systems shall be filled with oil-free dry air or gaseous nitrogen to 1.03 MPa (150 psig) 150 psig and hold this pressure for 2 hours with no drop in pressure.

3.4.2 Defective Work

If inspection or test shows defects, such defective work or material shall be replaced or repaired as necessary and inspection and tests shall be repeated. Repairs to piping shall be made with new materials. No caulking of screwed joints or holes will be acceptable.

TABLE I

PIPE AND FITTING MATERIALS FOR COMPRESSED AIR SYSTEMS

Item No.	Pipe and Fitting Materials
1	Malleable-iron threaded fittings, galvanized, ASME B16.3 for use with Item 3
2	Grooved pipe couplings, ASTM A 36 and ASTM A 47
3	Steel pipe: a. Seamless, galvanized, ASTM A 53, Type S, Grade B b. Seamless, black, ASTM A 53, Type S, Grade B
4	Seamless red brass pipe, ASTM B 43
5	Seamless copper pipe, ASTM B 42
6	Seamless copper water tube, ASTM B 88 - Type? K or L
7	Wrought copper and bronze solder-joint pressure fittings, ASME B16.22 for use with Item 6
8	Cast copper alloy solder-joint pressure fittings, ASME B16.18 for use with Item 6
9	Carbon steel pipe unions, socket-welding and threaded, MSS SP-83
10	Nipples, pipe threaded ASTM A 733

-- End of Section --

K14 UNIT STORAGE BUILDING
AMENDMENT NO. 0005 and 0006

(AM #0005) This is a relocatable facility. See drawing (AM#6) sheet A103 for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL UNIT STORAGE FACILITY

(AM#6) ~~Provide X ea 1536 SF single story relocatable facilities. Provide exterior double doors with direct vehicle access for loading and unloading. Resilient flooring. Provide separate smaller storage areas with padlockable wire mesh partitions off main area as follows:~~

~~**Unit Storage** (800 SF)~~
~~**NBC Storage** (200 SF)~~
~~**Commo Storage** (200 SF)~~
~~**Issue Office** (200 SF) Gypsum board walls with lockable dutch door.~~
~~**Janitor's Closet** 1 @ 15 SF. Constructed from noncombustible materials, and positive latching on door. Provide resilient flooring with floor drain.~~
~~**Water Heater Closet** 1 @ 10 SF ea. Constructed from noncombustible materials, and positive latching on door opening to interior of living unit. Provide resilient flooring with floor drain.~~

~~The Unit Storage facility shall be pre-fabricated, furnished, relocatable structures that meet the these functional requirements in Appendix B. They consist of two 12' x 64' trailer modules connected as a doublewide. Provide a pitched, shingled roof with gutters and downspouts. Provide an EIFS finish on the exterior that receives final finish work on site after the sections are joined. Creative solutions that minimize delivery time are encouraged.~~ Facility costs include, but are not limited to the structure, furniture, equipment, appliances, transport, placement and anchorage, ramps/stairs/porches~~/skirting~~ and utility hookup. Infrastructure and site development costs are separate.

Minimum access drive width shall be 25 feet. Minimum turning radius shall be 15 feet except where fire truck access is required. The minimum turning radius for a fire truck shall be 55 feet.

GENERAL: These requirements are the minimum. Areas indicated are net square feet, and may be exceeded. See Architectural design requirements for information regarding individual facility cost limits, room size variations and allowable solutions.

2. STRUCTURAL – SEE SECTION 01010.

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS - UNIT STORAGE RELOCATABLE

There are no specific plumbing requirements for this facility other than the General Plumbing Design Requirements.

4. SPECIFIC HEATING AND VENTILATING REQUIREMENTS - UNIT STORAGE RELOCATABLE

Provide heating with low intensity gas infrared heaters.

Air condition any offices.

Heat building to 40 degrees F. for freeze protection. Include capacity allowance for fresh air quantities in accordance with ASHRAE 62-2001 Ventilation Standards.

Provide exhaust fans. Indoor summer design temperature shall be 10 degrees F above the outdoor design temperature.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS – Unit Storage Facility

Automatic sprinkler protection shall be provided for Unit Storage Facility as follows:

Unit Storage Facility. Provide sprinkler protection per the requirements of UFC 3-600-01. Per UFC 3-600-01, 6-10.1 storage facilities must have complete automatic sprinkler protection. Sprinkler protection must be based on Class IV commodities as defined by NFPA 13. Refer to Fire Protection Design for additional requirements.

Fire Hydrants. Refer to Civil Design for design requirements.

Fire Extinguishers and Cabinets. Fire Extinguishers are required. Refer to Architectural Design for design requirements.

Fire Alarm and Detection System. Fire Alarm and Detection System is required. Refer to Electrical Design for design requirements.

6. UNIT STORAGE INTERIOR ELECTRICAL DESIGN

A minimum of one general-purpose 120 volt, 20-ampere duplex receptacle outlet shall be provided on each wall. It is preferred to have receptacles centered on wall and accessible without having to go into a storage cage when cages are provided.

Interior lighting system shall be low bay pulse-start metal halide or linear T5 or T8 fluorescent luminaires designed specifically for bay or warehouse applications.

The communication system shall consist of a minimum of two simplex jack outlets (voice only).

Photocell controlled wall mounted lighting shall be provided at the entrances to all unit storage buildings

A complete fire alarm system consisting of pull stations, detectors, flow and tamper switches, control panel and fire alarm transmitter shall be provided.

K16 VAN DOCK
AMENDMENT NO. 0005 **and 0006**

This is a permanent facility. See drawings for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL

See drawings for functional layout and requirements.

2. STRUCTURAL – SEE SECTION 01010.

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS

Provide freeze proof emergency eyewashes and showers near both ends of the dock and a freeze proof cold water sink in the middle of the dock.

4. SPECIFIC HEATING AND VENTILATING REQUIREMENTS

The Van Dock is not heated, cooled, or ventilated.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS

6. SPECIFIC ELECTRICAL DESIGN REQUIREMENTS

(AM #0006) All conduit shall be rigid steel.

Electrical distribution shall be 120/208 volt, three phase, four wire and shall be sized for a load of 500 KVA.

Provide Transient Voltage Surge Suppression (TVSS) at the service entrance

Panelboards shall be weatherproof and lockable and mounted on galvanized steel rack adjacent to stairs.

Provide one 20A, 120V, ground fault, receptacle, suitable for a wet location, in each bay. Provide one 20A, 120V, ground fault, receptacle, suitable for a wet location, in the middle of the dock for a future vending machine. This vending machine receptacle shall be on a dedicated circuit.

Provide one 100A, 120/208 volt, 3-phase, 4-wire, disconnect switch in a Nema 4 enclosure at each bay. Provide a 100A, 4-wire, dedicated circuit to each disconnect switch.

Provide one weatherproof duplex communication outlet at each bay. Run two 4-pair, Category 6, #24 AWG solid unshielded twisted pair copper cables in 1" conduit from each jack to a patch panel in the Van Dock Commo Building.

Provide compact fluorescent or T5 or T8 fluorescent weatherproof luminaires over the raised dock. Average maintained illumination level shall be 20 footcandles. Provide a weatherproof, three-way switch at each end of dock for lights.

K17 VAN DOCK COMMO BUILDING
AMENDMENT NO. 0005 **and 0006**

This is a permanent facility. See drawings for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL

See drawings for functional layout and requirements.

2. STRUCTURAL

See Section 01010 GENERAL PROJECT DESCRIPTION AND DESIGN REQUIREMENTS.

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS

No plumbing is to be provided at this building.

4. SPECIFIC HEATING AND VENTILATING REQUIREMENTS

Facility is to be heated and cooled.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS

6. INTERIOR ELECTRICAL DESIGN

(AM #0006) Provide Transient Voltage Surge Suppression (TVSS) at the service entrance

A minimum of one general-purpose 120 volt, 20-ampere quadraplex receptacle outlet shall be provided on each wall and one quadraplex receptacle in each LAN rack.

One weatherproof ground fault duplex receptacles shall be provided outside building entrance and at site mechanical equipment. Receptacle shall be suitable for damp locations and the housings shall be labeled to identify the allowable use.

The communication system shall include a Local Area Network with duplex communications outlets in the van dock and one simplex communications outlet in the building.

Provide surface mounted fluorescent lights. Average maintained illumination level shall be 50 foot-candles.

K17 VAN DOCK COMMO BUILDING
AMENDMENT NO. 0005 **and 0006**

This is a permanent facility. See drawings for functional layout and requirements in addition to those listed here.

1. ARCHITECTURAL

See drawings for functional layout and requirements.

2. STRUCTURAL

See Section 01010 GENERAL PROJECT DESCRIPTION AND DESIGN REQUIREMENTS.

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS

No plumbing is to be provided at this building.

4. SPECIFIC HEATING AND VENTILATING REQUIREMENTS

Facility is to be heated and cooled.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS

6. INTERIOR ELECTRICAL DESIGN

(AM #0006) Provide Transient Voltage Surge Suppression (TVSS) at the service entrance

A minimum of one general-purpose 120 volt, 20-ampere quadraplex receptacle outlet shall be provided on each wall and one quadraplex receptacle in each LAN rack.

One weatherproof ground fault duplex receptacles shall be provided outside building entrance and at site mechanical equipment. Receptacle shall be suitable for damp locations and the housings shall be labeled to identify the allowable use.

The communication system shall include a Local Area Network with duplex communications outlets in the van dock and one simplex communications outlet in the building.

Provide surface mounted fluorescent lights. Average maintained illumination level shall be 50 foot-candles.

K18 COMMUNICATION DISTRIBUTION NODE BUILDING
AMENDMENT NO. 0005 **and 0006**

This is a permanent facility. See drawings for functional layout and requirements. See also Section 01010 GENERAL PROJECT DESCRIPTION AND DESIGN REQUIREMENTS.

1. ARCHITECTURAL

See drawings for functional layout and requirements. See also Section 01010 GENERAL PROJECT DESCRIPTION AND DESIGN REQUIREMENTS.

2. STRUCTURAL

See Section 01010 GENERAL PROJECT DESCRIPTION AND DESIGN REQUIREMENTS.

3. SPECIFIC PLUMBING DESIGN REQUIREMENTS

No plumbing is provided for this building.

4. SPECIFIC HEATING AND VENTILATING REQUIREMENTS

The Communications Distribution Node Buildings are to have their own stand alone air conditioning units. Each building will be provided with two air conditioning units, with each unit being capable of handling 100% of the load. The units are to alternate operation.

5. SPECIFIC FIRE PROTECTION REQUIREMENTS

6. INTERIOR ELECTRICAL DESIGN

(AM #0006) Interior electrical distribution shall be 120/208 volt, three phase and shall be sized for a load of 75 KVA.

Provide a manual transfer switch connected to a weatherproof exterior receptacle for connecting a mobile generator for emergency power. The switch and receptacle shall be sized to handle switching the entire building load from utility power to generator power.

Provide Transient Voltage Surge Suppression (TVSS) at the service entrance

A minimum of one general-purpose 120 volt, 20-ampere duplex receptacle outlet shall be provided on each wall in each room and one quadraplex receptacle in each LAN rack.

Weatherproof ground fault duplex receptacles shall be provided outside each building entrance and at site mechanical equipment. Receptacles shall be suitable for damp locations and the housings shall be labeled to identify the allowable use.

Each building shall be provided with Avaya fiber high density distribution panels C.C. 700-007-214 LST1U-144/9 to terminate incoming fiber optic cabling. Number and size of panels shall be sufficient to terminate all incoming strands plus 20%. Individual splice trays shall be rack mounted below panels to accommodate each fiber optic service cable leaving the building as described in the site communications section herein. Buildings shall be provided with a 5 foot Newton distribution frame(s) with sufficient Reltec C-388 protector blocks to terminate all incoming copper cabling and for cross connecting. Frame shall also include space for all outgoing service cables as described in site communications section herein. Buildings shall be provided with an 18 inch wide cable tray around the entire inside perimeter of the building mounted 1 foot below ceiling. Cable tray rungs shall be spaced 1 foot apart. Buildings shall be provided with a minimum of five (5) LAN racks for Avaya panels mounting and for electronic equipment mounting to be provided and installed by others. Required size and number of conduits shall be provided to the 5 foot line for all outgoing cabling. See site communications section for required conduits for incoming cabling.

Provide surface mounted fluorescent lights. Average maintained illumination levels shall be 50 foot-candles.

K21 MASTER FURNITURE LIST
AMENDMENT NO. 0006

Furniture List: See specification section 12400, standard type A or C1 for quality

K1-Admin Module
Office typical (3 offices):
(1) Single Pedestal Desk (60″ x 24″)
(1) Return with Pedestal (60″ x 24″)
(1) Mid-Back Task Chair

Open office workstation typical (10 stations):
(2) Worksurface (60″ x 24″)
(1) Worksurface corner (36″ x 36″)
(1) Pedestal-BBF
(1) Pedestal-FF
(7) Panels (65″ high)
(1) Mid-Back Task Chair
(1) Storage, Accessories and Supports

K2-Arms Storage
N/A

K3-Barracks Module:
Bedroom Typical:
(1) Bed-single stackable
(1) Chest-6 drawer
(1) Desk
(1) Mid-Back Task Chair

K4-Battalion Headquarters

Module A
Commanding Officer:
(1) Double Pedestal Desk (84″ x 30″)
(1) Credenza with Lateral Files (84″ x 24″)
(1) Hutch with Hinged Doors
(1) High-Back tack Chair
(2) Guest Chairs
(1) TV Cabinet

Executive Officer, Command Sgt. Major, S-1 Officer typical:
(1) Single Pedestal Desk (72″ x 24″)
(1) Bridge (48″ x 24″)
(1) Credenza with Pedestal (72″ x 24″)
(1) Mid-Back Tack Chair
(2) Guest Chairs

Duty Officer:
(1) Single Pedestal Desk (60″ x 24″)
(1) Return with Pedestal (60″ x 24″)
(1) Storage - File
(1) Mid-Back Task Chair

Clerical typical (8 stations):

(2) Worksurface (60″ x 24″)
(1) Pedestal-BBF
(1) Pedestal-FF
(1) Storage, Accessories and Supports
(4) Panels (65″ high)
(1) Mid-Back Task Chair

Conference Room Typical:
(14) Conference Chair
(1) Conference Table
(1) Credenza

Message Center/Mail Sort:
(1) Single Pedestal Desk (60″ x 24″)
(1) Mid-Back Task Chair

Module B
Classroom Typical (2 classrooms):
(36) Sled Base/Stackable Chair

Module C
Office Typical (6 offices):
(1) Single Pedestal Desk (60″ x 24″)
(1) Return with Pedestal (60″ x 24″)
(1) Mid-Back Task Chair

Clerical Workstations Typical (12 stations):
(2) Worksurface (60″ x 24″)
(1) Pedestal-BBF
(1) Pedestal-FF
(1) Storage, Accessories and Supports
(4) Panels (65″ high)
(1) Mid-Back Task Chair

Document Vault:
(1) Vault

Module D
Office Typical (2 offices):
(1) Single Pedestal Desk (60″ x 24″)
(1) Return with Pedestal (60″ x 24″)
(1) Mid-Back Task Chair

Classroom Typical (1 classroom):
(36) Sled Base/Stackable Chair

K5-Brigade Headquarters
N/A

K6-Classroom
Classroom Typical (2 classrooms):
(72) Sled Base/Stackable Chair

K7-Company Operations
Commanding Officer:
(1) Double Pedestal Desk (84″ x 30″)
(1) Credenza with Lateral Files (84″ x 24″)

(1) Hutch with Hinged Doors
(1) High-Back tack Chair
(2) Guest Chairs
(1) TV Cabinet

Private office typical (7 offices):
(1) Single Pedestal Desk (72″ x 24″)
(1) Bridge (48″ x 24″)
(1) Credenza with Pedestal (72″ x 24″)
(1) Mid-Back Tack Chair
(2) Guest Chairs

Training Office typical:
(1) Single Pedestal Desk (60″ x 24″)
(1) Return with Pedestal (60″ x 24″)
(1) Storage-File
(1) Mid-Back Task Chair
(1) Guest Chair

Office typical (2 offices):
(1) Single Pedestal Desk (60″ x 24″)
(1) Return with Pedestal (60″ x 24″)
(1) Mid-Back Task Chair

Conference Room Typical:
(14) Conference Chair
(1) Conference Table
(1) Credenza

K8-Company Operations Supply Building:
Office typical:
(1) Single Pedestal Desk (60″ x 24″)
(1) Return with Pedestal (60″ x 24″)
(1) Storage-File
(1) Mid-Back Task Chair
(1) Guest Chair

K9-Covered Storage
N/A

K10-Dayroom
Per request:
1 refrigerator
1 microwave

K11-Laundry (See drawings**)**

K12-Storage Building
(1) Single Pedestal Desk (60″ x 24″)
(1) Mid-Back Task Chair

K13-TVM
N/A

K14-Unit Storage Building
Office typical:
(1) Single Pedestal Desk (60″ x 24″)

(1) Return with Pedestal (60″ x 24″)
(1) Storage-File
(1) Mid-Back Task Chair
(1) Guest Chair

K15-Vehicle Maintenance
(1) Single Pedestal Desk (60″ x 24″)
(1) Mid-Back Task Chair

K16-Van Dock
N/A

K17-Van Dock Commo Building
N/A

K18-Commo Node Building
N/A

K19-Mail Kiosk
N/A

K20-Guard House
(1) Desk (60″ x 24″)
(1) Mid-Back Task Chair
(1) Guest Chair