AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		3

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0001	15 MAR 2000		

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. DACA63-00-R-0005

9B. DATED *(SEE ITEM 11)* 9 FEBRUARY 2000

☐ 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 1 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 DRMO COMPLEX FORT SAM HOUSTON, TEXAS, is amended as follows:

See Continuation Sheet.

NOTE: The date for Receipt of Offers remains "24 March 2000 at 4 pm, 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 BIDDING SCHEDULE

1. Replace the Bidding Schedule, pages 00010-3 through 00010-6, with the accompanying new Bidding Schedule, bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-00-R-0005."

CHANGES TO WAGE RATES

2. Wage Rates.- Replace wage rate pages 00710-1 through 00710-17 with the attached pages 00710-1 through 00710-18, each page bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-00-R-0005."

CHANGES TO THE SPECIFICATIONS

3. Replacement Sections - Replace the following sections with the accompanying new sections of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-00-R-0005:"

00120	PROPOSAL SUBMISSION REQUIREMENTS
01000	DESIGN AND CONSTRUCTION SCHEDULE
01002	GENERAL DESIGN CRITERIA
01003	DESIGN CRITERIA – SITE AND COVERED STORAGE FACILITY, BUILDING 4230
01006	DESIGN CRITERIA – SCALE HOUSE
01008	DESIGN CRITERIA - WAREHOUSE BUILDING 4195
01016	DESIGN DOCUMENT REQUIREMENTS

4. Attachment B –When the specs are viewed on screen, Attachment B is shown to have 5 attachments. These are bookmarked as follows:

"LEAD – BASE PAINT SURVEY REPORT (BUILDING 4195)"
"LEVEL II ASBESTOS SURVEY (BUILDING 4195)"
"APPENDIX B,A,C"
"APPENDIX A,B,C,D"
"APPENDIX D (BUILDING 4195 – SUPPLEMENT REPORT DOCUMENTS)"

Replace these 5 attachments that are attached to the end of Attachment B, with the accompanying new Attachment C, bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-00-R-0005."

5. Write-in change – Delete the "Attachment" cover sheet entitled "Typical Comprehensive Interior Design Package".

CHANGES TO THE DRAWINGS

6. Replacement Drawings.- Replace the drawings listed below with the attached new drawings(s) of the same number, bearing the notation "AM #0001":

AXA17_1.cal Seq 13 A17 ARCHITECTURAL DETAILS
AXA19_1.cal Seq 14 A19 ARCHITECTURAL DETAILS

7. As-built Drawings.- The following drawings are added for information only:

asblt.dgn (asblt.cal)
asbltnew.dgn (asbltnew.cal)

8. Narrative Changes to Drawings. - Revise drawings in accordance with the narrative description listed below:

C202 Revise the following note to read:
"Design-Build Contractor shall perform, as necessary, topographic survey of existing conditions between Buildings 4195 & 4196."

H102 Change Note description from "Asbestos Abatement Notes" to "Lead Based Paint Notes"

M02
Appendix 1 Add note : "Sheet for information only"

E01
Appendix 1 Add note : "Sheet for information only"

END OF AMENDMENT

ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-00-R-0005

DRMO Complex (Title)
Fort Sam Houston, Texas Location)

Solicitation No. DACA63-00-R-0005

BIDDING SCHEDULE
(To be attached to SF 1442)

Item No.	Description	Estimated Quantity	Unit	Unit Cost	Estimated Amount
BASE BID: All work required by the plans and specifications for the design and construction of the DRMO Complex excluding all Options.					
0001	All work required for the design of the DRMO Complex, complete including all Options; and cost of all Interior Demolition and the construction of All buildings including all utilities to the 1524mm (five foot) line excluding all work listed separately	Job	Sum	***	$_____
0002	All exterior work including demolition, earthwork, paving, sidewalks, curb and gutter, turfing and all other work not listed separately	Job	Sum	***	$_____
0003	All work required to replace the roof of Warehouse Facility 4195 [Am#1]	Job	Sum	***	$_____
0004	Hazardous Waste Abatement during the Renovation of the Warehouse Facility Building 4195 [Am#1]				
0004a	Asbestos Insulation	27	M	$_____	$_____
0004b	Asbestos Floor Tile/Mastic	16	M2	$_____	$_____
0004c	Asbestos Transite Exhaust Pipe	6	M	$_____	$_____
0004d	Lead Based Paint (Green) on Roll Up Door Component or total replacement of doors [Am#1]	16	EA	$_____	$_____
0004e	Lead Based Paint (Blue) on Brick Interior Walls [Am#1]	33	M2	$_____	$_____
0005	Final Record Drawings	Job	Sum	****	$15,000.00

TOTAL BASE BID $_____

BIDDING SCHEDULE (CONT)

0006 OPTION NO. 1: All work required by the plans and specifications for the construction to extend the Open Storage Area into the area where the existing Impound Lot, POV Storage Lot and SWAT Vehicle Lot are located, including all demolition, earthwork, fencing and all work required for this option.

Job Sum *** $_____

0007 OPTION NO. 2: All work required by the plans and specifications for the construction of the Unisex Restroom within the Scale House (Bldg 4232) including all required utilities.

Job Sum *** $_____

0008 OPTION NO. 3: All work required by the plans and specifications to furnish and install the Modular Office Furniture.

Job Sum *** $_____

0009 OPTION NO. 4: All work required by the plans and specifications to either procure and install a new racking system in Building 4195 OR disassemble the existing warehouse racking system located in Bldg S3000 at Kelly AFB, transport to Bldg 4195 at Fort Sam Houston and reassemble as a complete racking system. The contractor should select one of the methods for bidding purposes.

Job Sum *** $_____

TOTAL BASE BID PLUS ALL OPTIONS $_____

PROJECT COMPLETION TIME:

00010 Completion Time for all work (NOT to exceed the maximum time stated in Section 01000 DESIGN AND CONSTRUCTION SCHEDULE)

WORK ITEM 4 PROJECT COMPLETION TIME: _____ Calendar days from NTP

WORK ITEM 5 PROJECT COMPLETION TIME: _____ Calendar days from NTP

BIDDING SCHEDULE (CONT)

NOTES:

1. ARITHMETIC DISCREPANCIES: (1989 JUL)

(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 purposes 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, extensions, and totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids. (EFARS 14.406-2)

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, canceled 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 Services.

6. For the purpose of this solicitation, the word "item" shall be considered to mean "schedule" as used in Provision 52,214-0019, CONTRACT AWARD--SEALED BIDDING--CONSTRUCTION, in Section 00100 INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS, excluding additives, deductives or options

BIDDING SCHEDULE (CONT)

NOTES: (CONT)

7. The Army will procure this facility through a design and cost competition in accordance with the provisions set forth in this Request for Proposal (RFP). When the contract is awarded, it will be a “Firm Fixed Price Contract”.
[Am#1] The Government does not anticipate awarding this contract prior to October 2000.

8. The Congress in authorizing and funding this contract has established a certain cost limitation for the project. The current authorization for the complete design and construction of this project is $ 9,982,000. Proposals that exceed this funding limit after exercising any options may be rejected. Submission of desirable alternative features exceeding minimum requirements may be considered as long as award can be made within the established funds.

9. Any proposal that is materially unbalanced as to prices for the Base Bid Schedule may be rejected. An unbalanced proposal is one which is based on prices significantly less than the cost for some work and prices which are significantly overstated for other work and can also exist where only overpricing and underpricing exists.

10 [AM#1] 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 **120** 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.

11. ABBEVIATIONS

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

a. mm (millimeters)

b. M (meters)

c. M2 (Square meters)

PART 2 PRODUCTS (NOT APLLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF BIDDING SCHEDULE

APPLICATION OF WAGE DECISIONS

Solicitation No.: **DACA63-00-R-0005**
Project: Design-Build DRMO Complex
Location: Fort Sam Houston
Bexar County, Texas

1. **Service Contract Act (SCA) Wage Determination Number 94-2521, Rev No. 18**, will be applicable to those activities performed under the Design portion of the contract with regard to the use of professional/service employees, i.e., Clerical/Secretarial, ADP's, Engineering Technicians, and any associated Technicians thereof to the professional trades.

   NOTE: Payroll records are not required to be submitted to the Army Corps of Engineers for work performed under the Service Contract Act (SCA) but must be made available for review and inspection if requested. The U.S. Department of Labor will be responsible for ensuring contractual compliance with the requirements of the SCA. SCA payroll records are required to be kept by the Prime Contractor for a minimum of three years from the date of contract completion.

2. **Davis-Bacon Act Wage DecisionTX000003, Building Construction Projects,** will be applicable to the construction, alteration, painting, or repair of buildings, installations within buildings, appurtenances to buildings, foundations for buildings, excavation and fill for buildings, and utilities within five feet of buildings for those construction activities performed in Bexar County, Texas.

3. **Davis-Bacon Act Wage Decision, TX000043, Heavy/Highway Construction Projects**, is applicable to all construction activities occurring more than five feet from buildings (i.e., Site Utilities, Roads and Parking Areas, Landscaping and Turfing) and any other construction requirements not shown in paragraph 2 above for those construction activities performed in Bexar County, Texas.

NOTE:

(1) PAYROLL RECORDS ARE REQUIRED, UNDER THE DAVIS-BACON ACT, TO BE SUBMITTED TO THE U.S. ARMY CORPS OF ENGINEERS FOR ALL CONSTRUCTION PERFORMED.

(2) THE WAGE DECISION NUMBER APPLICABLE TO THE WORK PERFORMED IS TO BE SHOWN ON ALL THE CERTIFIED PAYROLL RECORDS SUBMITTED.

WAGE DETERMINATION NO: 94-2521 REV (18) AREA: TX,SAN ANTONIO

WAGE DETERMINATION NO: 94-2521 REV (18) AREA: TX,SAN ANTONIO
FOR OFFICIAL USE ONLY BY FEDERAL AGENCIES PARTICIPATING IN MOU WITH DOL

REGISTER OF WAGE DETERMINATION UNDER THE SERVICE CONTRACT ACT	U.S. DEPARTMENT OF LABOR EMPLOYMENT STANDARDS ADMINISTRATION
By direction of the Secretary of Labor	WAGE AND HOUR DIVISION Washington, D.C. 20210
	Wage Determination No.: 94-2521
	Revision No.: 18
Division of Wage Determinations	Date of Last Revision: 06/01/1999

State): Texas

Areas: Texas COUNTIES OF Atascosa, Bandera, **Bexar**, Comal, De Witt, Dimmit, Edwards, Frio, Gillespie, Gonzales, Guadalupe, Karnes, Kendall, Kerr Kinney, La Salle, McMullen, Maverick, Medina, Real, Uvalde, Val Verde, Wilson, Zavala

**** Fringe Benefits Required For All Occupations Included In This Wage Determination Follow The Occupational Listing ****

OCCUPATION CODE AND TITLE	MINIMUM HOURLY WAGE
Administrative Support and Clerical Occupations:	
01011 Accounting Clerk I	$ 7.25
01012 Accounting Clerk II	$ 8.50
01013 Accounting Clerk III	$ 9.80
01014 Accounting Clerk IV	$ 12.17
01030 Court Reporter	$ 10.98
01050 Dispatcher, Motor Vehicle	$ 10.98
01060 Document Preparation Clerk	$ 9.12
01070 Messenger (Courier)	$ 6.75
01090 Duplicating Machine Operator	$ 9.12
01110 Film/Tape Librarian	$ 9.75
01115 General Clerk I	$ 6.75
01116 General Clerk II	$ 7.68
01117 General Clerk III	$ 9.44
01118 General Clerk IV	$ 13.62
01120 Housing Referral Assistant	$ 12.35
01131 Key Entry Operator I	$ 7.03
01132 Key Entry Operator II	$ 8.28
01191 Order Clerk I	$ 8.00
01192 Order Clerk II	$ 9.39
01261 Personnel Assistant (Employment) I	$ 7.88
01262 Personnel Assistant (Employment) II	$ 9.85
01263 Personnel Assistant (Employment) III	$ 11.94
01264 Personnel Assistant (Employment) IV	$ 13.97
01270 Production Control Clerk	$ 12.35
01290 Rental Clerk	$ 9.75
01300 Scheduler, Maintenance	$ 9.75
01311 Secretary I	$ 9.75
01312 Secretary II	$ 10.98
01313 Secretary III	$ 12.35

01314	Secretary IV	$ 15.11
01315	Secretary V	$ 16.74
01320	Service Order Dispatcher	$ 9.75
01341	Stenographer I	$ 8.96
01342	Stenographer II	$ 9.98
01400	Supply Technician	$ 15.11
01420	Survey Worker (Interviewer)	$ 10.98
01460	Switchboard Operator-Receptionist	$ 7.40
01510	Test Examiner	$ 10.98
01520	Test Proctor	$ 10.98
01531	Travel Clerk I	$ 8.03
01532	Travel Clerk II	$ 8.51
01533	Travel Clerk III	$ 8.95
01611	Word Processor I	$ 8.96
01612	Word Processor II	$ 10.37
01613	Word Processor III	$ 11.62

Automatic Data Processing Occupations:

03010	Computer Data Librarian	$ 8.94
03041	Computer Operator I	$ 7.95
03042	Computer Operator II	$ 9.32
03043	Computer Operator III	$ 13.96
03044	Computer Operator IV	$ 15.48
03045	Computer Operator V	$ 17.16
03071	Computer Programmer I 1/	$ 13.08
03072	Computer Programmer II 1/	$ 16.87
03073	Computer Programmer III 1/	$ 18.75
03074	Computer Programmer IV 1/	$ 21.68
03101	Computer Systems Analyst I 1/	$ 18.10
03102	Computer Systems Analyst II 1/	$ 24.00
03103	Computer Systems Analyst III 1/	$ 27.62
03160	Peripheral Equipment Operator	$ 8.94

Automotive Service Occupations:

05005	Automobile Body Repairer, Fiberglass	$ 13.89
05010	Automotive Glass Installer	$ 12.47
05040	Automotive Worker	$ 12.47
05070	Electrician, Automotive	$ 13.20
05100	Mobile Equipment Servicer	$ 11.12
05130	Motor Equipment Metal Mechanic	$ 13.89
05160	Motor Equipment Metal Worker	$ 12.47
05190	Motor Vehicle Mechanic	$ 13.89
05220	Motor Vehicle Mechanic Helper	$ 10.54
05250	Motor Vehicle Upholstery Worker	$ 11.79
05280	Motor Vehicle Wrecker	$ 12.47
05310	Painter, Automotive	$ 13.20
05340	Radiator Repair Specialist	$ 12.47
05370	Tire Repairer	$ 11.12
05400	Transmission Repair Specialist	$ 13.89

Food Preparation and Service Occupations:

07010	Baker	$ 9.09
07041	Cook I	$ 7.66
07042	Cook II	$ 9.09

07070	Dishwasher	$ 5.62
07100	Food Service Worker (Cafeteria Worker)	$ 5.62
07130	Meat Cutter	$ 9.09
07250	Waiter/Waitress	$ 5.95

Furniture Maintenance and Repair Occupations:

09010	Electrostatic Spray Painter	$ 13.20
09040	Furniture Handler	$ 9.38
09070	Furniture Refinisher	$ 13.20
09100	Furniture Refinisher Helper	$ 10.54
09110	Furniture Repairer, Minor	$ 11.79
09130	Upholsterer	$ 13.20

General Service and Support Occupations:

11030	Cleaner, Vehicles	$ 5.62
11060	Elevator Operator	$ 5.62
11090	Gardener	$ 7.08
11121	Housekeeping Aide I	$ 5.28
11122	Housekeeping Aide II	$ 5.62
11150	Janitor	$ 5.62
11210	Laborer, Grounds Maintenance	$ 5.95
11240	Maid or Houseman	$ 5.28
11270	Pest Controller	$ 7.52
11300	Refuse Collector	$ 5.62
11330	Tractor Operator	$ 6.73
11360	Window Cleaner	$ 5.95

Health Occupations:

12020	Dental Assistant	$ 10.09
12040	Emergency Medical Technician/Paramedic Ambulance Driver	$ 10.28
12071	Licensed Practical Nurse I	$ 8.03
12072	Licensed Practical Nurse II	$ 9.02
12073	Licensed Practical Nurse III	$ 10.09
12100	Medical Assistant	$ 9.06
12130	Medical Laboratory Technician	$ 9.06
12160	Medical Record Clerk	$ 9.06
12190	Medical Record Technician	$ 13.75
12221	Nursing Assistant I	$ 6.55
12222	Nursing Assistant II	$ 7.36
12223	Nursing Assistant III	$ 8.03
12224	Nursing Assistant IV	$ 9.02
12250	Pharmacy Technician	$ 11.70
12280	Phlebotomist	$ 9.06
12311	Registered Nurse I	$ 12.96
12312	Registered Nurse II	$ 15.85
12313	Registered Nurse II, Specialist	$ 17.40
12314	Registered Nurse III	$ 18.49
12315	Registered Nurse III, Anesthetist	$ 18.49
12316	Registered Nurse IV	$ 22.16

Information and Arts Occupations:

13002	Audiovisual Librarian	$ 15.51
13011	Exhibits Specialist I	$ 13.83

13012	Exhibits Specialist II	$ 14.97
13013	Exhibits Specialist III	$ 17.03
13041	Illustrator I	$ 13.83
13042	Illustrator II	$ 14.97
13043	Illustrator III	$ 17.03
13047	Librarian	$ 15.25
13050	Library Technician	$ 11.06
13071	Photographer I	$ 11.30
13072	Photographer II	$ 13.83
13073	Photographer III	$ 14.97
13074	Photographer IV	$ 17.03
13075	Photographer V	$ 20.67

Laundry, Drycleaning, Pressing and Related Occups:

15010	Assembler	$ 5.84
15030	Counter Attendant	$ 5.84
15040	Dry Cleaner	$ 7.32
15070	Finisher, Flatwork, Machine	$ 5.84
15090	Presser, Hand	$ 5.84
15100	Presser, Machine, Drycleaning	$ 5.84
15130	Presser, Machine, Shirts	$ 5.84
15160	Presser, Machine, Wearing Apparel, Laundry	$ 5.84
15190	Sewing Machine Operator	$ 7.76
15220	Tailor	$ 8.20
15250	Washer, Machine	$ 6.34

Machine Tool Operation and Repair Occupations:

19010	Machine-Tool Operator (Toolroom)	$ 13.20
19040	Tool and Die Maker	$ 15.79

Materials Handling and Packing Occupations:

21010	Fuel Distribution System Operator	$ 11.12
21020	Material Coordinator	$ 9.98
21030	Material Expediter	$ 9.98
21040	Material Handling Laborer	$ 7.46
21050	Order Filler	$ 8.38
21071	Forklift Operator	$ 8.59
21080	Production Line Worker (Food Processing)	$ 9.42
21100	Shipping/Receiving Clerk	$ 8.16
21130	Shipping Packer	$ 8.16
21140	Store Worker I	$ 7.67
21150	Stock Clerk (Shelf Stocker; Store Worker II)	$ 8.16
21210	Tools and Parts Attendant	$ 9.42
21400	Warehouse Specialist	$ 9.42

Mechanics and Maintenance and Repair Occupations:

23010	Aircraft Mechanic	$ 14.50
23040	Aircraft Mechanic Helper	$ 11.19
23050	Aircraft Quality Control Inspector	$ 14.98
23060	Aircraft Servicer	$ 12.43
23070	Aircraft Worker	$ 12.99
23100	Appliance Mechanic	$ 13.20
23120	Bicycle Repairer	$ 11.12
23125	Cable Splicer	$ 13.89

23130	Carpenter, Maintenance	$ 13.20
23140	Carpet Layer	$ 12.47
23160	Electrician, Maintenance	$ 14.22
23181	Electronics Technician, Maintenance I	$ 15.69
23182	Electronics Technician, Maintenance II	$ 20.36
23183	Electronics Technician, Maintenance III	$ 21.36
23260	Fabric Worker	$ 11.79
23290	Fire Alarm System Mechanic	$ 13.89
23310	Fire Extinguisher Repairer	$ 11.12
23340	Fuel Distribution System Mechanic	$ 13.89
23370	General Maintenance Worker	$ 12.88
23400	Heating, Refrigeration and Air-Conditioning Mechanic	$ 13.89
23430	Heavy Equipment Mechanic	$ 13.89
23440	Heavy Equipment Operator	$ 13.89
23460	Instrument Mechanic	$ 13.89
23470	Laborer	$ 5.62
23500	Locksmith	$ 13.20
23530	Machinery Maintenance Mechanic	$ 13.89
23550	Machinist, Maintenance	$ 13.89
23580	Maintenance Trades Helper	$ 10.54
23640	Millwright	$ 13.89
23700	Office Appliance Repairer	$ 13.20
23740	Painter, Aircraft	$ 13.20
23760	Painter, Maintenance	$ 13.20
23790	Pipefitter, Maintenance	$ 13.89
23800	Plumber, Maintenance	$ 13.20
23820	Pneudraulic Systems Mechanic	$ 13.89
23850	Rigger	$ 13.89
23870	Scale Mechanic	$ 12.47
23890	Sheet-Metal Worker, Maintenance	$ 13.89
23910	Small Engine Mechanic	$ 12.47
23930	Telecommunications Mechanic I	$ 13.89
23931	Telecommunications Mechanic II	$ 14.63
23950	Telephone Lineman	$ 13.89
23960	Welder, Combination, Maintenance	$ 13.89
23965	Well Driller	$ 13.89
23970	Woodcraft Worker	$ 13.89
23980	Woodworker	$ 11.12

Personal Needs Occupations:

24570	Child Care Attendant	$ 8.30
24580	Child Care Center Clerk	$ 10.60
24600	Chore Aide	$ 5.48
24630	Homemaker	$ 11.50

Plant and System Operation Occupations:

25010	Boiler Tender	$ 13.89
25040	Sewage Plant Operator	$ 13.20
25070	Stationary Engineer	$ 13.89
25190	Ventilation Equipment Tender	$ 10.54
25210	Water Treatment Plant Operator	$ 13.20

Protective Service Occupations:

27004	Alarm Monitor	$ 8.65

27006	Corrections Officer	$ 12.28
27010	Court Security Officer	$ 12.28
27040	Detention Officer	$ 12.28
27070	Firefighter	$ 14.30
27101	Guard I	$ 5.36
27102	Guard II	$ 7.74
27130	Police Officer	$ 14.83

Stevedoring/Longshoremen Occupational Services:

28010	Blocker and Bracer	$ 11.15
28020	Hatch Tender	$ 11.15
28030	Line Handler	$ 11.15
28040	Stevedore I	$ 10.54
28050	Stevedore II	$ 11.80

Technical Occupations:

29010	Air Traffic Control Specialist, Center 2/	$ 24.04
29011	Air Traffic Control Specialist, Station 2/	$ 16.58
29012	Air Traffic Control Specialist, Terminal 2/	$ 18.26
29023	Archeological Technician I	$ 10.81
29024	Archeological Technician II	$ 12.10
29025	Archeological Technician III	$ 14.97
29030	Cartographic Technician	$ 14.97
29035	Computer Based Training (CBT) Specialist/Instructor	$ 17.61
29040	Civil Engineering Technician	$ 14.97
29061	Drafter I	$ 10.04
29062	Drafter II	$ 11.30
29063	Drafter III	$ 15.03
29064	Drafter IV	$ 17.22
29081	Engineering Technician I	$ 9.35
29082	Engineering Technician II	$ 11.67
29083	Engineering Technician III	$ 13.09
29084	Engineering Technician IV	$ 14.41
29085	Engineering Technician V	$ 16.94
29086	Engineering Technician VI	$ 19.24
29090	Environmental Technician	$ 14.97
29100	Flight Simulator/Instructor (Pilot)	$ 24.00
29150	Graphic Artist	$ 17.61
29160	Instructor	$ 14.90
29210	Laboratory Technician	$ 11.96
29240	Mathematical Technician	$ 14.97
29361	Paralegal/Legal Assistant I	$ 11.42
29362	Paralegal/Legal Assistant II	$ 15.11
29363	Paralegal/Legal Assistant III	$ 18.47
29364	Paralegal/Legal Assistant IV	$ 22.34
29390	Photooptics Technician	$ 14.97
29480	Technical Writer	$ 19.67
29491	Unexploded Ordnance Technician I	$ 15.28
29492	Unexploded Ordnance Technician II	$ 18.49
29493	Unexploded Ordnance Technician III	$ 22.16
29494	Unexploded Safety Escort	$ 15.28
29495	Unexploded Sweep Personnel	$ 15.28
29620	Weather Observer, Senior 3/	$ 15.02
29621	Weather Observer, Combined Upper Air & Surface Programs 3/	$ 13.52

29622	Weather Observer, Upper Air 3/	$ 13.52
Transportation/Mobile Equipment Operation Occups:		
31030	Bus Driver	$ 9.41
31260	Parking and Lot Attendant	$ 7.00
31290	Shuttle Bus Driver	$ 8.85
31300	Taxi Driver	$ 8.37
31361	Truckdriver, Light Truck	$ 8.85
31362	Truckdriver, Medium Truck	$ 9.41
31363	Truckdriver, Heavy Truck	$ 11.12
31364	Truckdriver, Tractor-Trailer	$ 11.12
Miscellaneous Occupations:		
99020	Animal Caretaker	$ 6.35
99030	Cashier	$ 6.94
99041	Carnival Equipment Operator	$ 6.73
99042	Carnival Equipment Repairer	$ 7.08
99043	Carnival Worker	$ 5.62
99050	Desk Clerk	$ 8.50
99095	Embalmer	$ 15.28
99300	Lifeguard	$ 7.43
99310	Mortician	$ 15.28
99350	Park Attendant (Aide)	$ 9.51
99400	Photofinishing Worker (Photo Lab Tech., Darkroom Tech)	$ 7.43
99500	Recreation Specialist	$ 11.79
99510	Recycling Worker	$ 6.69
99610	Sales Clerk	$ 7.43
99620	School Crossing Guard (Crosswalk Attendant)	$ 5.62
99630	Sports Official	$ 7.43
99658	Survey Party Chief (Chief of Party)	$ 12.60
99659	Surveying Technician (Instr. Person/Surveyor Asst./Instr.)	$ 10.33
99660	Surveying Aide	$ 8.65
99690	Swimming Pool Operator	$ 7.97
99720	Vending Machine Attendant	$ 6.69
99730	Vending Machine Repairer	$ 7.97
99740	Vending Machine Repairer Helper	$ 6.69

**** Fringe Benefits Required For All Occupations Included In This Wage Determination ****

HEALTH & WELFARE: $1.63 an hour or $65.20 a week or $282.53 a month.

VACATION: Two weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 5 years; 4 weeks after 15 years. Length of service includes the whole span of continuous service with the present contractor or successor, wherever employed, and with the predecessor contractor in the performance of similar work at the same Federal facility. (Reg. 4.173)

HOLIDAYS: Minimum of ten paid holidays per year: New Year's Day, Martin Luther King Jr.'s Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day. (A contractor may substitute for any of the named holidays another day off with pay in accordance with a plan

communicated to the employees involved.) (See 29 CFR 4.174)

1/

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

2/

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

3/

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

** UNIFORM ALLOWANCE **

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

The contractor or subcontractor is required to furnish all employees with an adequate number of uniforms without cost or to reimburse employees for the actual cost of the uniforms. In addition, where uniform cleaning and maintenance is made the responsibility of the employee, all contractors and subcontractors subject to this wage determination shall (in the absence of a bona fide collective bargaining agreement providing for a different amount, or the furnishing of contrary affirmative proof as to the actual cost), reimburse all employees for such cleaning and maintenance at a rate of $4.25 per week (or $.85 cents per day). However, in those instances where the uniforms furnished are made of "wash and wear" materials, may be routinely washed and dried with other personal garments, and do not require any special treatment such as dry cleaning, daily washing, or commercial laundering in order to meet the cleanliness or appearance standards set by the terms of the Government contract, by the contractor, by law, or by the nature of the work, there is no requirement that employees be reimbursed for uniform maintenance costs.

** NOTES APPLYING TO THIS WAGE DETERMINATION **

Source of Occupational Titles and Descriptions:

The duties of employees under job titles listed are those described in the "Service Contract Act Directory of Occupations," Fourth Edition, January 1993, as amended by the Second Supplement, dated

August 1995, unless otherwise indicated. This publication may be obtained from the Superintendent of Documents, at 202-783-3238, or by writing to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Copies of specific job descriptions may also be obtained from the appropriate contracting officer.

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

Conformance Process:

The contracting officer shall require that any class of service employee which is not listed herein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination), be classified by the contractor so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed classes of employees shall be paid the monetary wages and furnished the fringe benefits as are determined. Such conforming process shall be initiated by the contractor prior to the performance of contract work by such unlisted class(es) of employees. The conformed classification, wage rate, and/or fringe benefits shall be retroactive to the commencement date of the contract. {See Section 4.6 (C)(vi)}

When multiple wage determinations are included in a contract, a separate SF 1444 should be prepared for each wage determination to which a class(es) is to be conformed.

The process for preparing a conformance request is as follows:

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

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

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

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

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

6) The contractor informs the affected employees.

Information required by the Regulations must be submitted on SF 1444 or bond paper.

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

GENERAL DECISION TX000003 02/11/00 TX3
General Decision Number TX000003

Superseded General Decision No. TX990003

State: **TEXAS**

Construction Type:
BUILDING

County(ies):
BEXAR

BUILDING CONSTRUCTION PROJECTS (does not include single family homes and apartments up to and including 4 stories). (Use current heavy & highway general wage determination for Paving & Utilities Incidental to Building Construction).

Modification Number	**Publication Date**
0	**02/11/2000**

COUNTY(ies):
BEXAR

ASBE0087A 07/01/1999

	Rates	Fringes
ASBESTOS/INSULATORS WORKERS (Includes application of all insulating materials, protective coverings, coatings, and finishings to all types of mechanical systems.)	18.28	5.24

BRTX0001D 11/01/1999

	Rates	Fringes
BRICKLAYERS	16.05	3.05

ELEC0060A 06/01/1999

	Rates	Fringes
ELECTRICIANS (Including pulling and installing cable through conduit for low voltage)	18.00	2.20+8%
CABLE SPLICERS	18.25	2.20+8%

ELEV0081A 07/11/1999

	Rates	Fringes
ELEVATOR CONSTRUCTORS:		
MECHANIC	20.585	6.935+A

FOOTNOTE; A = UNDER 5 YEARS EMPLOYMENT, 6% BHR; OVER 5 YEARS EMPLOYMENT, 8% BHR. PAID HOLIDAYS : New Year's Day, Memorial Day,

Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day and Christmas Day.

ENGI0450A 04/01/1994

	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
Cranes	12.95	3.30

IRON0066A 06/01/1999

	Rates	Fringes
IRONWORKERS (Excluding metal building erectors)		
Structural	14.80	4.35

MARB0002B 05/01/1995

	Rates	Fringes
TILE SETTERS	13.79	2.07

PLUM0142A 07/01/1999

	Rates	Fringes
PLUMBERS & PIPEFITTERS (Including HVAC WORK)	21.72	4.57

SFTX0669A 01/01/2000

	Rates	Fringes
SPRINKLER FITTERS	20.62	5.95

SHEE0067A 04/01/1999

	Rates	Fringes
SHEET METAL WORKERS (HVAC Duct Work Only)	20.31	5.65

SUTX1052A 11/01/1988

	Rates	Fringes
ACOUSTICAL CEILING INSTALLERS	12.26	
CARPENTERS (Excluding Acoustical Ceiling Installer & Drywall Hanger	10.64	
CEMENT MASONS	11.46	
DRYWALL HANGERS	11.88	

GLAZIERS	10.78	1.40
IRONWORKERS (Excluding Metal Building Assemblers):		
REINFORCING	10.19	3.57
LABORERS:		
Unskilled	7.06	
Mason Tenders	8.36	1.78
Mortar Mixers	8.99	
PLASTERER'S TENDERS	8.68	
LATHERS	15.25	
PAINTERS (Excluding Tapers/Finishers)	8.01	
PLASTERERS	15.25	
POWER EQUIPMENT OPERATORS		
Front End Loader	7.36	
ROOFERS:		
Roofers	8.14	
Kettlemen	8.85	
Waterproofers	6.88	
SHEET METAL WORKERS:		
Other Work	11.62	
TAPERS/FINISHERS	7.99	
TRUCK DRIVERS	7.10	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR?5.5(a

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a

position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

GENERAL DECISION TX000043 02/11/00 TX43

General Decision Number TX000043

Superseded General Decision No. TX990043

State: **TEXAS**

Construction Type:
HEAVY
HIGHWAY

County(ies):

BELL	CORYELL	TRAVIS
BEXAR	GUADALUPE	WILLIAMSON
BRAZOS	HAYS	
COMAL	MCLENNAN	

Heavy (excluding tunnels and dams) **and Highway Construction Projects** (does not include building structures in rest area projects). *NOT TO BE USED FOR WORK ON SEWAGE OR WATER TREATMENT PLANTS OR LIFT/PUMP STATIONS IN BELL, CORYELL, McLENNAN AND WILLIAMSON COUNTIES.

Modification Number	**Publication Date**
0	**02/11/2000**

COUNTY(ies):

BELL	CORYELL	TRAVIS
BEXAR	GUADALUPE	WILLIAMSON
BRAZOS	HAYS	
COMAL	MCLENNAN	

SUTX2042A 03/26/1998

	Rates	Fringes
AIR TOOL OPERATOR	8.08	
ASPHALT HEATER OPERATOR	11.00	
ASPHALT RAKER	8.00	
ASPHALT SHOVELER	7.97	
BATCHING PLANT WEIGHER	11.00	
CARPENTER	10.80	
CONCRETE FINISHER-PAVING	9.57	
CONCRETE FINISHER-STRUCTURES	8.83	
CONCRETE RUBBER	8.52	
ELECTRICIAN	16.25	
FLAGGER	6.86	
FORM BUILDER-STRUCTURES	8.77	
FORM LINER-PAVING & CURB	8.00	
FORM SETTER-PAVING & CURB	8.68	
FORM SETTER-STRUCTURES	8.73	
LABORER-COMMON	7.12	
LABORER-UTILITY	7.99	
MECHANIC	12.15	
OILER	11.40	
SERVICER	8.44	

PAINTER-STRUCTURES	10.00
PIPE LAYER	8.27
ASPHALT DISTRIBUTOR OPERATOR	9.70
ASPHALT PAVING MACHINE	9.26
BROOM OR SWEEPER OPERATOR	7.12
BULLDOZER	9.28
CONCRETE CURING MACHINE	7.79
CONCRETE FINISHING MACHINE	11.00
CONCRETE PAVING SAW	9.79
SLIPFORM MACHINE OPERATOR	11.15
CRANE, CLAMSHELL, BACKHOE, DERRICK, DRAGLINE, SHOVEL	10.12
FOUNDATION DRILL OPERATOR TRUCK MOUNTED	15.00
FRONT END LOADER	8.86
HOIST - DOUBLE DRUM & LESS	10.81
MIXER	7.12
MIXER - CONCRETE PAVING	11.00
MOTOR GRADER FINE GRADE	12.37
MOTOR GRADER	11.14
PAVEMENT MARKING MACHINE	8.31
PLANER OPERATOR	15.75
ROLLER, STEEL WHEEL PLANT-MIX PAVEMENTS	7.73
ROLLER, STEEL WHEEL OTHER FLATWHEEL OR TAMPING	7.33
ROLLER, PNEUMATIC, SELF PROPELLED	7.17
SCRAPERS	8.38
TRACTOR-CRAWLER TYPE	9.40
TRAVELING MIXER	7.92
TRENCHING MACHINE, HEAVY	9.92
WAGON-DRILL/BORING MACHINE	8.00
REINFORCING STEEL SETTER PAVING	14.50
REINFORCING STEEL SETTER STRUCTURES	10.61
STEEL WORKER-STRUCTURAL	11.73
SPREADER BOX OPERATOR	8.55
WORK ZONE BARRICADE	8.29
SIGN INSTALLER	7.97
TRUCK DRIVER-SINGLE AXLE LIGHT	8.32
TRUCK DRIVER-SINGLE AXLE HEAVY	7.954
TRUCK DRIVER-TANDEM AXLE SEMI-TRAILER	8.02
TRUCK DRIVER-LOWBOY/FLOAT	10.12
WELDER	11.02

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR?5.5(a

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

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U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

SECTION 00120
PROPOSAL SUBMISSION REQUIREMENTS
12/99

1 GENERAL

1.1 INTRODUCTION

Through the use of a two-phase procurement process, the Department of the Army desires to obtain the Design and Construction of a Defense Reutilization and Marketing Office (DRMO) Complex at Fort Sam Houston, TX. In this procurement procedure consideration will be given initially to the
AM# 01 Project Organization and Personnel; **Offeror Experience and Resource Commitment; Management Control Systems; Past Performance; Management/Technical Compliance Certification; and Financial Capacity.** The offerors that scored the highest on the Phase I evaluation criteria, minimum of two (2) but no more than five (5), will be selected and given the opportunity to offer their preliminary design and cost proposals in Phase II. Final selection and basis for award of the Design/Build Contract will be on the basis of qualifications, technical quality, price, and other salient factors considered to be in the Government's best interests. This is not a low bid award project. If awarded the contract, the offeror shall complete the design and construction documents and construct the new complex in compliance with these completed requirements.

1.2 WHERE AND WHEN TO SUBMIT PROPOSAL

Submit Phase I of the Proposal on the date indicated in Item 13.A of the Solicitation, Offer and Award form (Standard Form 1442) found in Section 00010, SOLICITATION, OFFER, AND AWARD.

1.3 INQUIRIES ABOUT THIS REQUEST FOR PROPOSALS (RFP)

Inquiries about this RFP shall be directed to the individuals listed in Section 00100 INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS.

1.4 REQUIRED TECHNICAL DATA FOR PROPOSAL SUBMISSION

Offerors are advised that the required data will be utilized for review and evaluation and used for determination of a "Quality Rating" by a Technical Evaluation Team and that all data submitted for consideration under this proposal will be reviewed only for the purposes required for evaluation and award. The Government will not make assumptions concerning the offeror's intent, capabilities, facilities, or experiences. Clear identification is the sole responsibility of the offeror.

1.5 PROPOSAL PREPARATION

Instructions for the preparation and organization of each proposal are included herein. The proposal shall be submitted as summarized below and as required by the specifications.

I. Phase I - Management/Technical Proposal

A. Project Organization and Personnel.
B. Offeror Experience and Resource Commitment.
C. Management Control Systems
D. Past Performance
E. Management/Technical Compliance Certification
F. Financial Capacity

II. Phase II - Design Proposal

A. Volume I - Preliminary Design Proposal

1. Design Proposal
2. Preliminary Project Schedule
3. Design Compliance Certification

B. Volume II - Cost/Price Proposal

1. Standard Form 1442
2. Price Proposal Schedule, Section 00010
3. Proposal(Bid) bonds
4. Representation & Certifications, Section 00600
5. Subcontracting Plan
6. Small Disadvantage Business Utilization

Proposal submittal shall include original and the following copies. Each proposal shall be marked to clearly identify the original and the copies, and the copies shall be numbered.

Phase I - Management/Technical proposal – 10 copies

Phase II – Design Proposal

Volume I – 10 copies
Volume II – 2 copies

The Cost/Price proposal shall be sealed in a single package separate from the Preliminary Design proposal and clearly marked as indicated on Standard Form 1442.

1.5.1 Format

1.5.1.1 Written Material

a. All written material, including catalog cuts, shall be submitted in standard three ring loose-leaf binders. Proposals shall be tabbed and labeled in a manner to afford easy identification from a Table of Contents. Font size shall be not less than 10 point. Each page shall be identified with the appropriate page number centered at the bottom of the page. Sheet size of the proposal contents shall be 216 mm by 279 mm (8 ½ by 11 inches). Legibility, clarity, coherence, and the contents are important. The Phase I (Management/Technical) proposal length shall be limited to 50 single-sided or 25 double-sided pages. Any Standard Form 254s and Standard Form 255s submitted shall be included in the appendix and shall not count against the above-specified page limit. The offeror shall not submit verbatim sections

or attachments of this solicitation as part of their proposal. Offers that do not meet these requirements may be subject to rejection.

b. A cover sheet identifying the offeror and the project shall be provided. The Second sheet(s) shall be a Table of Contents.

c. Table of Contents. The proposal shall contain a detailed table of contents. The complete table of contents shall be included in each binder used.

d. Materials submitted but not required by this solicitation (such as company brochures and equipment lists) shall be relegated to appendices.

e. Proposal revisions for specifications shall be submitted as page replacements with revised text readily identifiable, e.g. bold face print or underlined. The source of the revision, e.g. Error, Omission, or Clarification (EOC) or amendment, shall be also indicated for each revision. Revised pages shall be numbered, dated, submitted in appropriate number of copies, and a different color page than the original.

1.5.1.2 Drawings

a. Drawings shall be no larger than SI A1 841 mm X 594 mm (33.11 X 23.39 inches), sheet size with 13 mm borders, all four sides. Each drawing shall be identified with the appropriate Sequence and Sheet Numbers in the lower right hand corner. All alternate designs which may or may not be priced as additive or deductive items shall be graphically described on separate drawings from the base proposal design. All alternate designs shall meet the minimum requirements of the solicitation.

b. Proposal revisions for drawings shall be submitted as sheet replacements with all changes identified on the drawings with clouds and in the title block, including the source of the revision (e.g. EOC or amendment). Revised drawings shall be numbered, dated and submitted in the appropriate number of copies.

1.6 REFERENCED PUBLICATIONS

Corps of Engineers'(COE) design criteria and manuals that are referenced in this solicitation, such as the COE SWD Architectural and Engineering Instruction Manual (COE SWD-AEIM), Technical Manuals (TM) and Instructions (TI), Military Handbooks, Engineering Regulations (ER), and Engineering Manuals (EM), will be made available to the successful offeror after award of the contract, free of charge. They also can be downloaded from the Internet at the following address: http://w2.hnd.usace.army.mil/techinfo/ or obtained from the current National Institute of Building Science's (NIB) Construction Criteria Base (CCB) CD-ROM Disk. The COE SWD-AEIM and Fort Sam Houston Installation Design Guide are on the Solicitation CD-ROM Disk. These publications will be available to prospective offerors upon request. The Installation Infrastructure Architecture(I3A)Design and Implementation Guide can be downloaded from the Internet at the following address: http://arch-odisc4.army.mil/I3A/docs/I3A%20handbook.doc. Obtaining other referenced publications such as Federal and Military Specifications, Military Standards, and industry standards (i.e., ASTM, ANSI, ACI, NFPA, Uniform Building Code) will be the responsibility of each offeror. See Section 00100, paragraph "52.211-2 AVAILABILITY OF SPECIFICATIONS LISTED IN THE DOD INDEX OF SPECIFICATIONS AND STANDARDS (DODISS) AND DESCRIPTIONS

LISTED IN THE ACQUISITION MANAGEMENT SYSTEMS AND DATA REQUIREMENTS CONTROL LIST, DOD 5010.12-L (AUG 1998)," for information on obtaining these publications. Offerors are warned that due to the limited time for proposal preparation and submittal, there may not be enough time for ordering and receiving any of the above references. Failure to receive requested references will not be sufficient reason for extension of the proposal submission date.

1.7 UNNECESSARILY ELABORATE PROPOSALS OR QUOTATIONS (APR 1984) (FAR 52.215-7)

Unnecessarily elaborate brochures or other presentations beyond those sufficient to present a complete and effective response to this solicitation are not desired and may be construed as an indication of the offeror's or quoter's lack of cost consciousness. Elaborate artwork, expensive paper and bindings, and expensive visual and other presentation aids are neither necessary nor wanted.

1.8 REQUIREMENTS FOR SPECIAL MARKING OF PROPOSAL DATA

Envelopes or other cover for material submitted in response to RFP shall be opaque, and must be so presented that they may be easily identified. Outside of envelope or other cover for each phase must show:

a. Destination of Proposal.
b. Name and location of project as described in the RFP Documents.
c. Solicitation Number.
d. Name and Address of Offeror.
e. Project Phase and Volume Number

Submit proposal in the format specified. Oral or telephonic proposals or modifications will not be considered. All required information in the form must be supplied. Signature must be in longhand, and be executed by a principal duly authorized to execute contract actions and bind the company. Offeror's legal name must be fully stated.

Mail or deliver the proposal to the address listed on Standard Form 1442, "Solicitation, Offer and Award Form."

1.9 DESCRIPTION OF EVALUATION CRITERIA

I. PHASE I MANAGEMENT/TECHNICAL PROPOSAL PREPARATION

The Management/Technical proposal shall include the information as described below and shall be presented in the sequence listed.

A. Project Organization and Personnel:

1. Personnel (Prime & Subcontractor): Provide professional resume data and letters of commitment on the individuals who will be key personnel on the project team. Key personnel identified in this Section should be senior working-level people who will be involved in design and construction on a day-to-day basis, as opposed to departmental level supervisors or executives. By identifying these personnel, the offeror is making a commitment that, barring unforeseen circumstances, they are the personnel who will be assigned to the project. See Sections 01015, 01430, and 01451

for minimum personnel qualifications. The following list shall be provided as a minimum.

- Design Project Manager
- Construction Project Manager
- Project Architect
- Senior Structural Engineer
- Senior Mechanical Engineer
- Senior Electrical Engineer
- Senior Civil Engineer
- Senior Industrial Engineer
- Fire Protection Engineer
- Registered Communication Distribution Designer
- Construction Superintendent
- Design Quality Control Manager
- Construction Quality Control Manager

Information to be provided includes:

- Name and Title.
- Project Assignment.
- Name of Firm with which Associated.
- Years Experience: With This Firm, With Other Firms.
- Education: Degree(s)/Year/Specialization.
- Active Registration: State and Year First Registered.
- Other Experience and Qualifications Relevant to the Proposed Project.

Identify the design disciplines and the number of professionals and employees in the firm(s) and those who will be directly dedicated to this project. Identify the Designer(s)-of-Record.

Resumes are required for the construction personnel. A Standard Form 255 is required for the architectural and engineering personnel involved in the project and shall be provided in the appendix.

2. Team Organization and Responsibilities: Provide an organizational chart which describes how the team will be structured, i.e., how many firms are involved and the responsibility of each firm for this project. Indicate the specific authorities for each firm in the organization and the individual(s) possessing these authorities.

3. Approach:

a. Describe interactions with the Corps of Engineers and the roles that different team members will play when dealing with design changes, construction changes, resolving potential delays, reviewing and approving submittals, attending progress meetings and facilitating contract completion and closeout.

b. Discuss how the design and construction process will be managed, to include a discussion on authority levels and interaction between the construction team and design team. Demonstrate your understanding of the design/build process including your ability to effectively coordinate architectural and engineering professionals, trade subcontractors and construction personnel in a team effort.

c. Discuss your construction management philosophy (as it relates to the design/build process) and the benefits it will bring to the Government.

B. Offeror Experience and Resource Commitment.

1. Experience: Demonstrate the experience of the team (organizations and/or individual team members) to successfully complete this facility using a design/build process. This section may be in any format; however, as a minimum, provide the following:

a. A list of industrial/warehouse facilities, or other similar facility type projects, currently underway or completed within the last 7 years that best demonstrates your experience. List no more than 10 projects total. The list of projects shall include the following information:

- Project Name and Location.
- Type of Facility
- Nature of Firm's Responsibility (design, construction or both)
- Identify whether contracts are design, design/build, or construction and whether the Offeror was the prime contractor or a subcontractor.
- Project Owner's Name and Address and Project Manager's (Point of Contact) Name and Telephone Number.
- If a Government contract, include the Contracting Agency and Contracting Officer's name and telephone number.
- Date started
- Original Scheduled Completion Date
- Actual Completion Date
- Overall Size of Facility (in square feet or square meters).
- Construction Cost (excluding design costs).
- Duration of Construction (excluding design time).
- Problems encountered and corrective actions taken.

*The architectural and engineering information shall be presented on a Standard Form 254 and made part of the appendix.

b. Joint Ventures: If offeror represents the combining of two or more companies for the purpose of this RFP, the proposal shall indicate whether the firms have experience working together in design/build ventures and for how long and how many projects. In addition, each company of this joint venture shall list their Government contract experiences.

2. Resource Commitment: Demonstrate personnel and resources to be utilized for this project as well as additional resources available if necessary. Response to this section shall include the following:

a. A list of key professional job titles and the number of personnel in each category for each key firm on the design/build team to include a resource manning chart and an estimate of how many personnel will be working primarily on this project from month to month. Include, as a

minimum, the design project manager; designers of record; design architects and engineers; design quality control manager; construction project manager, construction quality control manager, and the construction superintendent. If reassignment of personnel is considered possible, provide the names and resumes of the alternative professionals in each assignment. Provide resume information under the"Phase I: Project Organization and Personnel" factor, not this factor.

b. A list of any other corporate resources, home office support, subsidiaries, manufacturing facilities, etc. which may be used to the benefit of this project to include batch plant and heavy equipment.

c. A description of the team's computer-aided (CADD) design capabilities.

d. Warranty support plan and organization.

e. Work to be self-performed (percentage and type).

f. Identify specific subcontractors for key work items.

3. Management Commitment/Involvement:

Discuss the role(s) that upper management will play in this project and the process by which management issues encountered at the working level may be expeditiously elevated to upper management for resolution. Limit discussion to one page or less.

C. **Management Control Systems**:

1. Quality Control:

The Source Evaluation Board is more concerned with substance and capabilities than with "flowery" assurances or promises of quality. Completed design quality control plans and construction quality control plans are not required with the Phase I proposal submittal. The design and construction quality control organizations and personnel will be evaluated under the "Phase I: Project Organization and Personnel" factor, not this factor.

a. Design Quality Control

Discuss your Design Quality Control program, to include the following information as a minimum:

- Duties, responsibilities, and level of authority for Design Quality Control Manager
- List and qualifications of internal (for each design discipline) reviewers
- Review checklist for each design discipline
- Design quality control procedures

b. Construction Quality Control

Discuss your Construction Quality Control program, to include the following information as a minimum:

- Duties, responsibilities and level of authority for Construction Quality Control Manager
- Quality control staffing levels and responsibilities
- Proposed plan for providing 3-phase inspection, testing, QC reporting, shop drawing and drafting support
- Proposed testing methods and frequencies for soils, asphalt, concrete and non-destructive tests
- Method for controlling quality of subcontracted work

2. Controlling Time:

Discuss management controls that will be utilized to monitor and control time during design and construction, to ensure that the project is completed within the prescribed contract time without compromising quality of the design or construction. As a minimum, address the following:

Demonstrate team's ability to control the time during design and during construction of the project. Present the plan to control design time and construction time, to include internal procedures for handling changes, unforeseen circumstances, and delays to minimize time growth. Present the plan for maintaining the design and construction schedules. Describe the time control systems to be utilized.

3. Limiting Cost Growth:

Discuss management controls that will be utilized to monitor and control costs during design and construction to ensure that the project is completed within the budgeted contract amount without compromising quality of the design or construction. As a minimum, address the following:

Describe team's ability to maintain a project budget during both design and construction. Describe the cost control systems and procedures that will be utilized. Discuss internal procedures for handling changes, unforeseen circumstances, and delays to minimize cost growth.

D. Past Performance:

1. For each of the projects listed under "Phase I: Offeror Experience and Resource Commitment" factor, provide a brief statement (not to exceed 150 words in length) as to how the project illustrates your performance capabilities.

2. Private Sector References: Offerors should send their private sector references specified in their past performance records a letter authorizing the references to provide past performance information to a Government representative who will be assigned the task of conducting the past performance evaluation.

3. New Companies: For new companies entering the marketplace (without relevant company experience) it will be the quality of the past performance of their key management personnel that will indicate the risk of good performance and become the basis of the past performance evaluation. Identifying how long key personnel stayed on the contract and how well they managed their portion of the contract will be of great importance in the evaluation process.

E. **Management/Technical Compliance Certification:**

Offerors shall certify that all items submitted in their proposals comply with the management and technical requirements specified in this Solicitation. The criteria specified in the Solicitation are binding contract criteria and in case of any conflict, after award, between the solicitation criteria and Contractor's submittals, the order of precedence listed in Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraph " 52.36-4004 DB DESIGN-BUILD CONTRACT ORDER OF PRECEDENCE," will apply. This certification shall be included with each proposal.

F. **Financial Capacity:**

Bonding Capacity: Submit a letter of current bonding capacity from a Bonding Company.

II. PHASE II DESIGN PROPOSAL

The purpose of the Preliminary Design Proposal is as follows:

- To provide sufficient design information for the Using Agency to determine the acceptability of the proposed design as meeting their functional requirements set forth herein for operational use and economical maintenance during the anticipated life of the facility.

- To provide data for a determination of the engineering sufficiency and soundness of the basic approach to the design for each technical discipline. Also, it will serve as a documentary check that the designer has been provided or has developed the essential engineering criteria necessary for all facets of final computations and detailed development of a thoroughly engineered, coordinated, economical, and functional design.

A. Volume I – Preliminary Design Proposal

1. The Design Proposal shall include, as a minimum, the following descriptive narratives, manufacturer's catalog data, and graphic information:

a. Narratives

(1) General Description

Provide general description of the DRMO complex addressing the overall design, materials, components, and engineering. It shall describe the proposed exterior and interior building materials, floors, ceilings, walls, and structural systems, air conditioning and heating systems, plumbing system, lighting system, power distribution system and fire protection system, automated controls and communications equipment, and demolition. The structural system shall include information on the superstructure framing, foundation and lateral load resisting system. The proposal shall address the
AM# 01 compatibility of Design and Materials with Fort Sam **Houston** Installation Design Guide and the historical zone where it will be located.

(2) Traffic Control Plan

Describe your proposed traffic control plan for the reconstruction of Jadwin Road, including the intersection of Jadwin Road and Parker Road. Include discussions on construction phasing, bypass routing and timeframes.

(3) Energy Budget and Life Cycle Costs

Describe energy saving features of the project. Show calculations and data supporting special features that enhance energy conservation and reduce life cycle costs.

(4) Pallet Rack System (Option #4)

- Identify the pallet rack system to be installed if Option #4 is awarded.

- If a new rack system is to be provided, discuss the phasing that will be used for delivery and installation of the new rack system in Building 4195 in order to facilitate the partial beneficial occupancy of the facility as sections are completed.

- If the existing pallet rack system is to be utilized, describe the sequence of activities and time frames from disassembling the existing racks to beneficial occupancy of each section of Building 4195. The purposes of the sequencing are to minimize interruptions to the existing DRMO operations and to facilitate the partial benficial occupancy of the facility as sections are completed.

b. Manufacturer Catalog Data

Manufacturer catalog data shall include industry standard quality indicators for the specific material or equipment and will be used to compare construction quality during proposal evaluation. Data may be in the form of CSI standard product information formats Manu-Spec and Spec-Data, and manufacturer’s specifications and details. Furnish manufacturer catalog data, arranged by CSI Divisions, on:

(1) Windows
(2) Doors
(3) Hardware
(4) Structural Standing Seam Metal Roof (SSSMR)
(5) Exterior Finishes - EFS System
(6) Key storage and control equipment
(7) Safe
(8) Furniture (Option #3)
(9) Vehicle Scale
(10) Dock Leveler
(11) Oil/Water Separator
(12) Pallet Rack System (Option #4) [Provide catalog data only if new pallet rack system is to be provided for Option #4]
(13) * Mechanical Items
(a) Air Conditioning Systems: Proposal shall include manufacturer, capacity and data showing how capacity is achieved, cooling coil fin and tube materials, and

construction and material used for the casing and drain pan.

(b) Water heaters and Compressed Air System: Manufacturer, type, efficiency and length of standard warranty.

(14) HVAC Control Systems

(a) The following paragraphs from Specification Section 15951, Digital Control Systems for HVAC, shall be specifically addressed (including manufacturers name and supplier)

2.1	Material and Equipment
2.14.2	Basic Process PLC
2.14.2.1. a-f	Integral Functions
2.14.4	Micro PLC
2.14.4.1 a-e	Integral Features of Micro PLC

(b) Evaluation of the above HVAC Control Systems shall be based on the minimum specified requirements for each paragraph listed above. While all PLC's may not be used in the final control system architecture, all shall be included in this proposal. The successful offeror shall be responsible for complying with the entire HVAC Controls specification.

(15) Interior and Exterior Light Fixtures
(16) Lighting controls in Building 4195
(17) Fire pumps, fire pump controller, fire alarm hardware and fire sprinkler system hardware
(18) Any other catalog data deemed pertinent.

* GENERAL COMMENT ON MECHANICAL ITEMS: Where capacity or size is necessary to provide data on efficiency, etc., the offeror shall estimate the size based on sound engineering judgement. The final capacity and/or size of all equipment shall be based on actual load calculations performed during the design stage. Final installed equipment shall meet or exceed the proposed features.

AM# 01 **c**. Graphic Information

Furnish preliminary drawings and schematics to illustrate the Proposal.

(1) Site Plan

Site Plan, at a suitable scale (minimum 1:400) to fit on one standard size drawing sheet and showing:

(a) Building locations
(b) Utilities
(c) Roads
(d) Parking striping

(e) Location of site features (i.e. fencing, lighting, electrical equipment)
(f) Communication ductbanks
(g) Industrial striping layout for the Open Storage Area, to include Option 1 area

(2) Grading Plan

Grading Plan, at a suitable scale (minimum 1:400) to fit on one standard size drawing sheet. Show proposed contours at 0.25 meter intervals overlaying existing topographic contours. Indicate cut and fill quantities for each area and total cut and fill quantities.

(3) Architectural Floor Plan

Architectural floor plans, minimum scale 1:100, with all areas identified, showing:

(a) Gross area of building; exterior and interior dimensions; size of areas; critical and basic dimensions.
(b) Area calculations, “U” insulation values (floor, walls, ceilings) with calculations, and live loads.
(c) Door and window openings, locations and dimensions, including door swings.
(d) Preliminary finishes
(e) For Building 4195, show the general footprint of pallet rack locations, aisle width and number of pallet slots (40" x 48").

(3) Exterior Elevations

Exterior elevations (all views), minimum scale 1:100, showing:

(a) Fenestrations and material indications.
(b) Critical and basic dimensions.
(c) Exterior finish materials.

(4) Building Sections

Building sections (one transverse and one longitudinal) minimum scale 1:100, showing:

(a) Space for structural and HVAC systems.
(b) Clearances,
(c) Materials.
(d) Building and grade to the 1.5 meter line.

(5) Typical Exterior Wall Sections

Typical exterior wall sections including foundations, minimum scale 1:20, indicating materials, key vertical dimensions, and clearances.

2. Preliminary Project Schedule

A summary level time-scaled logic diagram and written narrative shall be submitted with the Preliminary Design proposal reflecting the detailed design phase activities and summary level construction activities from Notice to Proceed through final completion. Project Schedule shall conform to Section 01320 PROJECT SCHEDULE and may be used for preparation of the Preliminary Schedule required in Section 01320 after award.

The following shall be included as a minimum:

(1) The Summary diagram, in calendar days, to include:

Phasing
Critical Path
Milestones and Constraints
Design Duration
Construction Duration, broken out for each building or site feature
Work Items Start and Completion activities, as hammock activities
Overall Proposed Duration, as a hammock activity
“Project Must Finish By” Constraint

(2) Narrative to Identify:

Qualifications and Experience of Scheduler
Scheduling Program to be used
Activity, I.D., and Resource Coding to be used
Use of Schedule in Managing the Project
Means of Handling Out-of-Sequence Work
Method for Developing Pay Estimates
Schedule Updating Methods
Calendar(s) to be used (i.e., 5 day work week, resource calendars)

The contractor shall propose the contract durations for Work Items #4 and 5, to include the options if awarded. The proposed durations shall not exceed the durations specified in Section 01000, Design and Construction Schedule. The summary diagram and narrative shall support the proposed durations. Upon contract award, the successful offeror's proposed durations shall become the contract durations. It should be noted that the Government will include provisions in the contract for liquidated damages for each calendar day the Contractor exceeds the contract schedule.

3. Design Compliance Certification

Offerors shall certify that all items submitted in their proposals comply with the design requirements specified in this Solicitation. The criteria specified in the Solicitation are binding contract criteria and in case of any conflict, after award, between the solicitation criteria and Contractor's submittals, the order of precedence listed in Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraph " 52.36-4004 DB DESIGN-BUILD CONTRACT ORDER OF PRECEDENCE," will apply. This certification shall be included with each proposal.

B. VOLUME II COST/PRICE PROPOSAL PREPARATION

Prices shall be firm. The offeror's price, to be considered in the Competitive Negotiation Evaluation, shall be the offeror's Total Base Bid, plus all options, as shown on the Price Proposal Schedule. The Cost/Price proposal will be evaluated separately, after evaluation of design proposal. The Cost/Price proposal shall consist of the following:

1. Solicitation Offer and Award

Standard Form 1442 shall be filled out and signed by a principal of the firm authorized to bind the design/build team.

2. Price Proposal Schedule

a. Offerors shall complete the Price Proposal Schedule by filling out the pricing data blanks. An executable Price Proposal Schedule is included in Section 00010 herein.

b. Overhead and profit shall be applied proportionally to each category and will not be required to be shown separately.

c. The Contractor shall include allowance in the Cost Proposal and shall schedule any contingency for weather delays for severe weather in accordance with weather requirements included in Section 00800, SPECIAL CONTRACT REQUIREMENTS.

3. Proposal (Bid Bonds) Submitted in accordance with Section 00700.

4. REPRESENTATION AND CERTIFICATIONS

Representations and Certifications are local, state, and federal representative statements and certifications made by the Offeror concerning a variety of issues. Complete each item in Section 00600, REPRESENTATIONS AND CERTIFICATIONS and submit one original with the Phase II proposal.

5. SUBCONTRACTING PLAN (APPLIES TO LARGE BUSINESS ONLY)

All large businesses shall submit a subcontracting plan with their technical and price/cost proposals. The plan should be prepared in accordance with FAR 52.219-9. Failure to submit an acceptable subcontracting plan may make the offeror ineligible for award of the contract. The subcontracting plan submitted by a large business will be reviewed for compliance and will be scored in accordance with AFARS 19.7, Appendix CC. The submission of the subcontracting plan is in no way advantageous to large businesses over any small business in the evaluation process.

Fort Worth District's Goal of Total Subcontracted Dollars:

- Small Business Subcontracting Goals - 61.2%
- Small Disadvantaged Business Subcontracting Goals - 9.1%
- Woman Owned Small Business Subcontracting Goals - 5.0%
- Historically Black Colleges and Universities/Minority Institution Subcontracting Goals - 2.0% (Where Applicable)
- HUBZone Small Business - 0.5%

6. SMALL DISADVANTAGED BUSINESS UTILIZATION

The contractor must identify each SDB concern proposed and submit targets expressed in dollars and percentages representing each SDB concern's participation of the total contract value. The contractor is also required to submit a total target value of all SDB participation of the total contract value. The contractor is put on notice that that any targets represented in a submitted proposal will be incorporated into and become part of any resulting contract.

1.10 CLARIFICATIONS AND FINAL PROPOSAL REVISION

1.10.1 General

Any conflicting criteria which cannot be resolved by the Order of Precedence specified in Section 00800 SPECIAL CONTRACT REQUIREMENTS shall be brought to the attention of the Government by the Offeror as part of the written clarification requirement of the proposal. In the absence of such request for clarification, the Offeror shall perform to the most beneficial criteria as determined by the Government.

1.10.2 Clarifications Prior to Proposal Due Date

In the event that clarifications are required prior to submitting the Phase I or II proposal, contact the individuals listed in Section 00100 INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS. All RFP holders will be advised of significant clarifications affecting the scope of the project.

1.10.3 Clarifications Submitted with Proposals

Clarifications remaining at the time and date that proposals are due, written clarifications may be included in the proposal for consideration by the Government. Clarifications submitted with proposals shall clearly identify the understanding of the RFP documents and how this understanding is reflected in the cost proposal. Extensive qualifications, exclusions and exceptions in the form of clarifications may be considered by the Government to be non-responsive and may be grounds for rejection of the proposal.

1.10.4 Final Proposal Revision

a. The Government may select the Offerors for Phase II on the basis of the initial Phase I offers received or award a contract on the basis of the initial Phase I and II offers received without further discussions or negotiations. Offers should contain the Offeror's best terms from a cost and management standpoint.

b. The Government may contact those firms whose Phase II proposals are within the competitive range and conduct discussions/negotiations concerning their proposal. Following resolution of the discussions/negotiations, offerors in the competitive range will be given the opportunity to submit their Final Proposal Revision.

1.11 PAYMENT FOR PROPOSALS

Offerors will not be reimbursed for the costs of their proposals.

1.12 NOTICE

NOTE: FAILURE TO SUBMIT ALL THE DATA INDICATED IN THIS SECTION MAY BE CAUSE FOR DETERMINING A PROPOSAL NON-RESPONSIVE AND, THEREFORE, NOT CONSIDERED FOR AWARD.

2 PRODUCTS (NOT USED)

3 EXECUTION (NOT USED)

END OF SECTION 00120

SECTION 01000
AMENDMENT 0001

DESIGN AND CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.1 SCHEDULE

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:

Item of Work	Commencement of Work (calendar days)	Completion of Work (calendar days)	Liquidated Damages per calendar day_ __
(1) Reroof Building 4195.	Within 10 calendar days from receipt of NTP	150 days from NTP	$545.00
(2) Completion of 50% design sub-mittal to include 100% Site work, 100% facility foundations, including utilities to 1.5 m line 100% design for Building 4195, including loading dock, interior renovations, covered storage and handicap ramp; and 50% design for all other facilities.	Within 10 calendar days from receipt of NTP	90 days from NTP	***
(3) Completion of all remaining design work.	Upon receipt of Corps acceptance of 50 percent documents.	90 days from approval of 50 percent design documents.	***

(4) Completion of all construction work identified in para. 1.2.1.d below.	Upon receipt of Corps acceptance of 50 percent design documents.	314 days from NTP	$795.00
(5) Completion of all remaining construction work except as noted below.	Upon receipt of Corps acceptance of 100% design documents.	512 days from NTP.	$1,200.00
(6) Establishment of turf.	**	**	***

[1]NOTES:

a. The contract duration stated above for Work Items 4 and 5 is the maximum duration until Contract Award. Upon Contract Award, the Contractor's proposed duration as stated on the Bidding Schedule shall become the contract duration for these Work Items. The liquidated damages stated above will be applied for each calendar day the Contractor exceeds this new contract duration."

b. See Section 01015 DESIGN REQUIREMENTS AFTER AWARD, paragraph "SUBMISSION OF CONSTRUCTION DRAWINGS, SPECIFICATIONS, AND DESIGN ANALYSES," concerning submission of construction documents and Section 01000 paragraph, "SEQUENCE OF DESIGN/CONSTRUCTION," concerning start of construction.

c. For construction planning purposes Government review time for review submittals are specified in 01015 DESIGN REQUIREMENTS AFTER AWARD.

d. See Section 01015 DESIGN REQUIREMENTS AFTER AWARD, paragraph "Insufficient Design Submittals and Delays," concerning delays in completion of design.

e. If an option is awarded, liquidated damages will not be a cumulative.

**Establishment of Turf

Planting and maintenance for turfing shall be in accordance with Contractor's Section for TURFING. No payment will be made for establishment of turf until all requirements of the section are adequately performed and accepted, as determined by the Contracting Officer.

1.1.1 Testing of Heating and Air-Conditioning Systems

The times stated for completion of this project includes all required testing specified in appropriate specification sections of heating, air conditioning and ventilation systems including HVAC Commissioning. Exception: boiler combustion efficiency test, boiler full load tests,

cooling tower performance tests, and refrigeration equipment full load tests, when specified in the applicable specifications, shall be preformed in the appropriate heating/cooling season as determined by the Contracting Officer.

1.2 CONSTRUCTION PHASING

1.2.1 Phase I

a. Within 150 days after receipt of NTP, complete the re-roofing of the existing warehouse facility, Building 4195. Sequence of work should be: 1) Center top section, 2) West section, 3) East section of roof. Contractor should incorporate all penetration requirements resulting from the new warehouse design when replacing this section.

b. Within 90 days of receipt of NTP, complete 50 percent design requirement which includes

(1) 100% design of all site work,
(2) 100% design for Building 4195 including the loading dock, interior renovations, covered storage, and handicap ramp, and
(3) 100 percent design of all new facility foundations,
(4) 100 percent site utilities up to 1525 mm (5 foot) line,
(5) 50 percent design of all other facilities.

c. Within 90 days from acceptance by the Corps of the 50 percent design submittal, complete all remaining facilities design. Contractor may submit facilities design for the Scale House (Building 4232), Open Storage Office (Building 4240) and the Covered Storage Facility (Building 4230) earlier if desired.

d. Within 314 days from NTP, complete all work for the following items and turn over to Contracting Officer for beneficial occupancy for the DRMO:

1. New MP Impound lot, POV Storage Lot, and SWAT lot. (These new lots must be completed and turned over to Government prior to start of work on Option 1 if awarded. Existing lots must remain operational until the new lots are completed and turned over.)
2. Open Storage Yard and Office (Building 4240) to include Option 1, if awarded.
3. Scrap Yard and Covered Storage Facility (Building 4230).
4. Scale House (Building 4232)to include Option 2, if awarded, and Vehicle Scale.
5. Site fencing.
6. New loading dock at Warehouse Building 4195.
7. All road construction.
8. Communications duct bank and manholes.
9. All site work associated with the above items.
10. Sections A and B in Warehouse Building 4195.

1.2.2 Phase II

Within 512 days from the NTP complete all remaining construction and turn over to Contracting Officer for beneficial occupancy by the DRMO. The priority for the remaining facilities is 1) Precious Metal Building 4234, 2) Warehouse Building 4195 Sections C-G and Covered Storage (partial beneficial occupancy will be allowed for adjacent sections (2 bays) as they are completed, starting with Section C/D and working south), and 3) Administration Building 4199. The Contracting Officer will accept early beneficial occupancy on the above facilities.

1.2.3 Pallet Rack System Phasing

If Option 4 is awarded and Contractor elects to utilize existing rack system located at Kelly AFB, the removal, transport, and reassembly of racking system shall be sequenced with the turnover of the bays in Warehouse Building 4195 to minimize interruption in existing DRMO operations. Contractor shall schedule rack removal from Kelly AFB no earlier than 30 days prior to the scheduled turnover date for beneficial occupancy.

1.2.4 Beneficial Occupancy

Beneficial Occupancy is the occupancy of an uncompleted building, structure or facility for its intended purpose under circumstances which are advantageous to the occupant and which produce relatively little interference with the Contractor in completing construction. Prior to occupancy by the DRMO, a written agreement among the Contractor, Contracting Officer, and the DRMO shall be executed listing deficiencies, remaining work and other conditions of occupancy.

1.2.5 Beneficial Occupancy Date

The Beneficial Occupancy Date is the date on which beneficial occupancy is granted to the DRMO. By mutual agreement the DRMO will allow the Contractor access as required to complete remaining items of construction pursuant to the contract.

1.3 WORKING HOURS

The normal duty working hours are Monday through Friday 7:00 a.m. - 6:00 p.m. Contractor can request through the Contracting Officer's representative for other work hours to meet project needs.

1.4 UTILITIES

1.4.1 Payment for Utility Services

See Section 00800 SPECIAL CONTRACT REQUIREMENTS.

1.4.2 Outages

The Contractor shall coordinate all requests for utility outages with the Contracting Officer in writing 14 days prior to date of requested outage:

a. Water, gas, steam, and sewer outages shall be held to a maximum duration of 4 hours unless otherwise approved in writing.

b. Electrical outages shall have a maximum duration of 4 hours.

c. All utility outages shall be scheduled only on Saturdays, Sundays, or holidays unless specific approval is otherwise received.

1.5 STREET CLOSINGS

The Contractor shall coordinate all requests for street closings with the Contracting Officer in writing 14 days prior to date of requested outage:

a. One lane traffic shall be maintained at all times (except that a total closing of Jadwin Road may be allowed for the intersection construction at Jadwin Road and Parker Road.

b. The final street repair shall be completed within 14 days after the start of any street crossing. Any part of the street returned to service prior to final repair shall be maintained smooth with hot-mix cold-lay surface course.

c. One lane traffic shall be maintained at all times; at least two flag men will be on duty to assist traffic in the open lane, when other lanes are closed due to the Contractor's operations. Flag men will meet the requirements of Item 7.7 of the Texas Department of Transportation, Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, 1995 Ed.

d. Open cuts across paved roads and streets for utility crossings will not be allowed except for construction of the communication duct banks. Utility crossings will be accomplished by boring or jacking procedures except for the communication duct banks.

1.5.1 Traffic Management

The Contractor is required to provide a traffic management plan for the reconstruction of Jadwin Road (including the intersection of Jadwin Road and Parker Road) that will reflect construction phasing, bypass routing, and timeframes.

1.6 SEQUENCE OF DESIGN/CONSTRUCTION

a. After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements as covered under Division 01 General Requirements, and obtain Government review of each submission. Additionally, the Contractor shall initiate construction to reroof Building 4195. After acceptance of the 50% design submittal (the 100% design portion thereof), construction may begin on all sitework, utilities, foundations, and Warehouse Building 4195. No other construction may be started until the Government reviews the Final Design submission and determines it satisfactory for purposes of beginning construction. The Contracting Officer shall

notify the Contractor when the design is accepted for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the Contracting Officer, the initial submission failed to meet the minimum quality requirements as set forth in the Contract.

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

Am#1

c. Paragraph deleted.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

SECTION 01002
AMENDMENT 0001

GENERAL DESIGN CRITERIA

PART 1 - GENERAL

1.1 SITE/CIVIL

Refer to Section 01003 DESIGN CRITERIA - SITE.

1.2 STRUCTURAL

The structural design portion of the DRMO Complex Project includes four buildings, two covered storage facilities, loading ramps, and docks for the various facilities in the project, and miscellaneous structural elements for the utilities systems. The buildings consist of an Administration Building, Precious Metal Building, Open Storage Office, and the Scale House. The buildings will all be single story structures with floor, roof, and exterior wall configurations as indicated on the attached architectural drawings. The covered storage facilities are located in the Scrap Yard area, and at the east end of Warehouse Building 4195. Docks and ramps shall be located as indicated in the attached civil drawings. Buildings and other structures shall be structurally designed and configured by the Contractor in accordance with the criteria and other requirements stated herein.

1.2.1 Structural Loading Criteria

Develop structural loading criteria using referenced criteria sources and the procedures indicated below. Structures shall be classified as Category II facilities for the purpose of calculation of wind and earthquake loads.

1.2.1.1 Roof Live Loads

A minimum roof live load of 960 Pa, applied in accordance with ASCE 7-95, shall be used as a loading condition for the roof.

1.2.1.2 Floor Live Loads

a. Administration Building, Scale House, Open Storage Office: The design floor loading for all areas of these buildings shall be a uniformly distributed pressure in accordance with ASCE 7-95 requirements.

b. Precious Metal Building: The design floor loading for office, restroom, and communications and electrical equipment rooms shall be a uniformly distributed pressure of 2.5 kPa. Design floor loading for the storage room shall be a uniformly distributed pressure of 10 kPa.

1.2.1.3 Wind Loads

Wind loads shall be calculated in accordance with the procedures outlined in ASCE 7-95 using Exposure "C" and a Basic Wind Speed (3-Second Gust Speed) of 40 meters per second. Wind loads for the main wind-force resisting system and for components and cladding shall be considered.

1.2.1.4 Seismic Loads

The project is located in Seismic Zone 1. Structures shall be designed to withstand seismic loading in accordance with Army Corps of Engineers TI 809-04.

1.2.1.5 Dead Loads

Minimum design dead loads for common building materials shall be in accordance with ASCE 7-95. Equipment loads and loads for materials not listed in that publication may be obtained from other recognized sources.

1.2.1.6 Lateral Partition Loads

The minimum design wind pressure on interior partitions shall be 480 Pa normal to the partition.

1.2.1.7 Vehicle Loadings for Loading Ramps

Slabs for end-loading ramps used in the Scrap Yard shall be designed for forklifts of 25 kN vehicle weight. Loading represents a series of moving loads, where loads are positioned to represent a lane of continuous vehicles on the ramp structure.

1.2.1.8 Design Temperatures

Design differential temperatures shall be a minimum 55 degrees C for thermal analysis of framing systems.

1.2.1.9 Deflections

Roof and floor framing members supporting ceilings shall be designed to have deflections limited to a maximum of L/240 for any load combinations, not including dead loads, in rooms without plaster or other brittle ceiling materials, and L/360 in rooms with plaster or other brittle ceiling materials.

1.2.2 Materials

Materials for structural elements shall be as indicated herein or on the attached architectural drawings. Where materials are not indicated, selection shall be at the Contractor's discretion, with the following limitations. Cold-formed light-gage framing (i.e., steel studs) are not acceptable for use as gravity load-bearing structural elements, but may be used as a support system for veneers unless otherwise noted. Wood products are not acceptable for use as structural elements.

1.2.2.1 Structural Steel

a. Design: Structural steel shall be designed in accordance with AISC ASD Spec or AISC Pub No. S342L. All structural steel members shall be designed to support applicable loads. Structural drawings shall show structural members, connections, and locations.

b. Connections: Types of connections shall be consistent with the design assumptions for the basic type of steel construction used. Connections shall be designed and detailed to provide adequate capacities for the applied forces and moments. Connection design shall not be delegated to the steel fabricator.

1.2.2.2 Steel Joists and Joist Girders

The design and selection of steel joists and joist girders shall be in accordance with the SJI Spec and Tables. The net wind uplift requirements shall be clearly delineated on the drawings. Joists requiring special configurations or design to resist wind uplift and non-uniform loads shall be designated on the drawings along with their required design loads per SJI recommendations. Joist end supports and anchorage to resist uplift shall be designed to accommodate the applied forces, including those resulting from wind and seismic activity.

1.2.2.3 Steel Decking

The design and selection of steel deck shall be in accordance with Steel Deck Institute (SDI) Design Manual. Minimum required section properties of deck sections shall be determined as prescribed by the appropriate Specifications of the SDI Pub No. 28, and shall be specified or indicated on the drawings. Where the steel deck is designed to function as a shear diaphragm, the design shall be in accordance with the provisions of SDI Diaphragm Design Manual and TI 809-04.

1.2.2.4 Masonry

a. Design: Masonry design shall be in accordance with ACI 530, TM 5-809-3 and TI 809-04. Reinforcement shall be sufficient to satisfy the calculated requirements for strength, shrinkage crack control, and seismic design. In no case shall reinforcement be less than the minimum seismic reinforcement required by TI 809-04. If masonry walls are used in conjunction with steel framing as non-load-bearing and non-shear-resisting elements, the connections between walls and the structural steel frames shall be designed to allow vertical and horizontal frame deflection without transferring loads from steel to adjoining masonry walls.

b. Masonry Material Properties: Specified compressive strength of masonry shall be f'm = 9.3 MPa. Hollow concrete masonry units shall conform to ASTM C 90, Type I. Concrete building bricks shall conform to ASTM C 55, Type I. Masonry units for use as exterior facing shall conform to Grade N. Type S mortar shall be specified for all masonry. Specified compressive strength of grout shall be 14 MPa minimum. Masonry exposed directly to the ground or weather shall be rated for severe exposure conditions.

c. Crack Control: Concrete masonry crack control measures comprised of masonry control joints, joint reinforcement, and bond beams shall be incorporated in the design of concrete masonry walls and partitions. Masonry Control Joints (MCJ) shall be judiciously located at spacings no greater than the maximums recommended in TM 5-809-3. Control joints shall not be placed closer than 600 mm to openings.

1.2.2.5 Reinforced Concrete

a. Design: Reinforced concrete design shall be in accordance with ACI 318 and related current ACI publications which are applicable to the design, TM 5-809-02 and TM 5-809-12, and TI 809-04, as applicable. All concrete elements, including slabs-on-grade, shall be reinforced with temperature and shrinkage reinforcement as a minimum. Temperature reinforcement shall be as recommended by ACI and TM 5-809-02, as appropriate.

b. Concrete Strength: The required 28-day compressive strength of the concrete shall be left to the Contractor's discretion, except that 21 MPa shall be a minimum. For concrete that is to be installed with exterior exposure, air-entrainment producing a total air content in the concrete between 4 and 7 percent by volume, shall be required. Concrete in contact with soil shall be made with the Type II or Type V cement, unless the Contractor's Final Geotechnical Report (through testing) indicates that sulphite-resistant cement is not required.

c. Reinforcing Bar Usage Limitations: Grade 420 bars shall be used for concrete design. When available, Grade 300 bars may be used for secondary reinforcement such as stirrups and ties. Minimum bar size shall be No. 13 bars except for stirrups and ties which may be No. 10 bars in accordance with ACI.

d. Concrete Joints: Control joints and contraction joints shall be located to reduce concrete cracking to a minimum. All exposed concrete joints shall be sealed with appropriate joint sealants.

1.2.2.6 Precast Concrete

a. Design: The design shall conform with the requirements of ACI 318, Chapter 16 - Precast Concrete. The precast units shall be designed for applicable loads indicated in paragraph entitled "STRUCTURAL LOADING CRITERIA" and the design shall consider all loading and restraint conditions from initial fabrication to completion of the structure. The effects of initial and long-time deflections shall be considered in the design of precast members. Attachment of precast units shall be by welding, bolting, or embedment of bars or other connection devices, at the Contractor's option.

b. Precast Concrete Strengths: The required 28-day compressive strength of precast concrete shall be left to the Contractor's discretion, except that 35 MPa shall be a minimum. For precast

units installed with exterior exposure, air-entrained concrete, with a total air content between 4 and 7 percent by volume, shall be required.

1.2.3 Structural Framing Systems

The structural systems used for the buildings of this project shall be selected and designed by the Contractor. The lateral load resisting system shall incorporate bracing, moment resisting frames, shear walls, diaphragms, or any combination thereof, provided the elements of the system are compatible with the attached architectural floor plan. Pre-engineered metal building systems are acceptable for the structural framing system with h/600 building drift limit for buildings with CMU or brick veneer finish as noted in SWD-AEIM. Cold-formed light-gage metal framing (i.e., steel studs) systems are not acceptable as gravity load-bearing systems, but may be used to provide lateral support for exterior masonry veneer wall systems for buildings. The structural framing systems chosen shall meet all aforementioned project requirements and the requirements listed below.

1.2.3.1 Roof Framing

The roof of buildings shall have a minimum slope of 3:12. The roof slopes shall be accomplished by sloping of the structural framing members. The design of roof framing members shall include consideration of concentrated loads from suspended mechanical and electrical equipment, including cable trays and HVAC units. The location and magnitude of suspended equipment loads shall be closely coordinated with the mechanical and electrical system designs.

1.2.3.2 Location of Structural Elements

Structural elements, including columns, bracing, shear walls, and load-bearing walls shall be located as required by the structural design. The structural design and corresponding selection and location of structural elements shall be compatible with the floor plans, roof plans, elevations, and other architectural drawings included in the attachments to this document. Columns, where used, shall be located in configurations generally similar and functionally equivalent to configurations indicated on the attached architectural floor plans. Use of structural bracing shall be minimized, and shall be limited to locations where bracing is concealable at interior or exterior wall lines and will not obstruct windows, doors, or other openings. Shear walls, where used, shall be located in coordination with architectural partition requirements.

1.2.3.3 Pre-Engineered Metal Building Framing Systems

Design of the structural framing of any building accomplished by a pre-engineered metal building manufacturer shall be in accordance with TI 809-30 and the MBMA Recommended Design Practices Manual with h/600 building drift limit for buildings with CMU or brick veneer finish as noted in SWD-AEIM.

1.2.4 Exterior/Interior Walls

Criteria indicated in paragraph entitled "ARCHITECTURAL" shall be incorporated into the design of all walls. The Architectural floor plans included in the attachments indicate the location of walls to be incorporated into the project.

1.2.4.1 Load-Bearing Walls

Load-bearing walls, where used, shall be constructed of reinforced concrete masonry units or load bearing tilt-up concrete wall panels. Exterior load-bearing walls shall have a masonry veneer anchored to the reinforced masonry with an insulated cavity separating the two wythes or tilt-up wall panels. The design of the walls shall be in accordance with ACI 530 and Army TM 5-809-3, as applicable.

1.2.4.2 Non-Load-Bearing Exterior Walls

Non-load-bearing exterior walls may be constructed of reinforced concrete masonry unless otherwise noted and may have an anchored masonry veneer and insulated cavity as described in paragraph entitled "Load-Bearing Walls". Light-gage framing and masonry veneer may be designed in accordance with TI 809-07, an alternate tilt-up wall construction may also be evaluated before final scheme is selected. Framing design shall be based upon the calculated design wind pressures for components and cladding. Wall shall be laterally braced by the roof structure, but shall be connected in a manner which provides vertical deflection of the roof structure without inducing vertical loads into the wall.

1.2.4.3 Shear Walls

Shear walls, where used, shall be constructed of reinforced concrete masonry units. Shear walls shall be designed in accordance with ACI 530, TM 5-809-3, and TI 809-04.

1.2.5 Foundation Systems

Design of foundation components for buildings and other structures shall be the responsibility of the Contractor. The components of foundation systems shall be constructed of reinforced concrete. The required 28-day compressive strength of concrete for foundations shall be left to the Contractor's discretion, except that 21 MPa shall be a minimum. All parts of foundation systems shall be designed to keep dead load footing pressures relatively uniform, in order to minimize differential settlements.

1.2.5.1 Earthwork

Earthwork for the DRMO Complex project shall conform to the requirements CEGS 02315 EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS and to requirements stated in the report prepared by the U.S. Army Corps of Engineers Fort Worth District. "Foundation and Pavement Design Analysis" dated November 1999; see Attachment B.

1.2.5.2 Foundation Systems

The foundation systems for the buildings shall consist of reinforced

concrete ribbed mat slabs unless otherwise noted.

1.2.5.3 Design Parameters

Parameters used for foundation design, including the allowable soil bearing pressure, lateral earth pressure coefficients and design footing depths shall be in accordance with the report prepared by the U.S. Army Corps of Engineers Fort Worth District. "Foundation and Pavement Design Analysis" dated November 1999; see Attachment B and SWD-AEIM minimum requirement for expansive soils.

1.2.5.4 Foundation Perimeter Insulation

Perimeter insulation shall be installed on the interior face of exterior perimeter foundation walls of heated buildings. Insulation shall extend from the bottom of the floor slab down to top of footing or down to design frost depth.

1.2.5.5 Structural Stoops at Exterior Doorways

All exterior pedestrian doorways require structural stoops. Stoops shall have foundation walls extending down to frost depth and shall be rigidly attached to building foundation walls. Stoops shall have a 300 mm layer of uncompacted fill placed directly beneath the stoop slab. The stoop slab shall be 13 mm lower than the interior floor slab at the threshold and shall slope away from the building at 2 percent minimum slope.

1.2.5.6 Exterior Equipment Pads

Any exterior fixed or nonremovable mechanical or electrical equipment shall be installed on concrete pads. The pads shall be a minimum of 200 mm thick and shall be reinforced with at least the minimum temperature reinforcement required. The pads shall be sized 300 mm larger all around than the piece of equipment furnished and all edges of the pad shall be chamfered. Design of exterior pads shall be coordinated with Mechanical and Electrical system designs.

1.2.6 Concrete Floor Slabs-on-grade

Design of slabs shall be in accordance with TM 5-809-2, TM 5-809-12, and the following detailed instructions:

1.2.6.1 General

Slabs shall be designed as "floating slabs" without rigid edge support, and with lateral and vertical movement unrestrained, except where noted below. Where compressible filler is used as a cushion, its thickness shall be not less than 50 mm. An isolation joint, consisting of a 13 mm layer of expansion joint material, is required where slabs abut vertical surfaces. Slab thicknesses shall be selected in accordance with TM 5-809-2 or as required by design. Slabs shall be reinforced with a minimum of 0.2 percent steel based on cross sectional area. Control joint details and spacings shall be as delineated in TM 5-809-2. The required 28-day compressive strength of concrete for slabs shall be left to the

Contractor's discretion, except that 21 MPa shall be a minimum.

1.2.6.2 Interior Concrete Slabs-on-Grade

Surfaces of interior concrete floor slabs, where not required to be ramped or sloped for drainage, shall be flat within 3 mm when measured over any 3,000 mm length with a straightedge. Interior slabs-on-grade shall be placed over a 50 mm layer of fine granular material, a 0.15 mm polyethylene vapor retarder, and a granular capillary water barrier material not less than 150 mm compacted thickness. The fine granular material shall be placed immediately beneath the bottom of the slab. The vapor retarder shall be placed between the fine granular layer and the capillary water barrier.

a. Capillary Water Barrier Layer: Capillary water barrier material shall consist of clean, crushed, nonporous rock, crushed gravel, or uncrushed gravel. The maximum particle size shall be 25 mm and no more than 2 percent by weight shall pass the No. 4 sieve. The capillary water barrier shall be placed in a minimum of 2 lifts, each compacted by a hand operated, vibratory compactor.

1.2.6.3 Slabs to Receive Quarry Tile, Ceramic Tile, or Floor Mat Finish

Slabs to receive finishes requiring an inset grout bed or frame shall be a minimum 125 mm uniform in thickness, and shall be reinforced with No. 13 bars at 300 mm on center each way. slabs shall be depressed as necessary to receive the ceramic tile or the floor mat and frame. At interior edge locations, the slab shall be thickened and doweled into the adjacent slab with 20 mm diameter by 400 mm long dowels at 300 mm on center. At locations where the slab abuts an exterior foundation wall, it shall be supported by the wall.

1.2.6.4 Concrete Floor Slab Finishes

Interior concrete surfaces which will not receive a finish shall be steel troweled with a high solids curing, sealing, hardening and dustproofing membrane. Steel trowel concrete floor surface which will receive carpeting, resilient flooring, or thin set ceramic tile.

1.2.6.5 Interior Equipment Pads

Floor mounted mechanical and electrical equipment shall be installed on 150 mm thick raised concrete housekeeping pads. The pads shall be reinforced with at least the minimum temperature reinforcement required. The pads shall be sized 150 mm larger all around than the piece of equipment furnished and all edges of the pad shall be chamfered.

1.2.6.6 Equipment Vibration Isolation

All vibration producing mechanical and electrical equipment shall be mounted in such a manner as to prevent the transfer of vibrations to adjacent parts or areas of the building. If necessary for any large vibration producing equipment installed within the facility, the equipment will be supported on individual isolation foundations. The isolated

foundation shall be separated from the building slab by a continuous 19 mm expansion joint.

1.2.7 Other Structural Work

1.2.7.1 Standing Seam Metal Roof Systems

Standing seam metal roofs shall comply with the requirements set forth in Mandatory Guide Specification 07416 STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM and TI 809-29. Final drawings shall provide a list of loading criteria including roof live and wind uplift loads. A wind uplift roof diagram, identifying wind uplift pressures and their locations on the roof, shall be provided for each building with a standing seam metal roof.

1.3 ARCHITECTURAL

Design and construct facilities in accordance with the criteria contained herein using industry standard materials and efficient practices. Provide high quality, durable and easily maintained building designs and materials. Ensure the professional quality, technical accuracy, and coordination of all designs, drawings, specifications, and other documents or publications upon which construction is based.

The building plans included in this RFP represent the Army's minimum requirements and should not be revised, except for minor alignment, to accommodate specific equipment or other coordination adjustments. The exterior character and appearance of the new building shall be in general conformance with Zone 5 as noted in the FSH PAM 210-20-3, Fort Sam Houston Installation Design Guide. Variations from the area requirement shown in Tables I, IV, VII, and X will not be permitted. All facilities shall comply with the Americans with Disabilities Act Accessibility Guidelines with the exception of the Scale House and the Open Storage Office. The documents issued in this RFP provide sufficient detail for the proposers to obtain the final layout, dimensions, and materials for all facilities. No contact with the facilities users will be authorized.

1.3.1 Design Conditions And Criteria

1.3.1.1 Exterior Building Surfaces

Slope exterior horizontal building surfaces to drain at a minimum of 20.8 mm per meter, including, but not limited to parapet tops and window sills. Slope exterior sidewalks, covered forklift parking, stair treads, and other walking surfaces to drain in accordance with code requirements, but no less than 10.42 mm per meter. Areas of ponding will not be permitted. Provide exterior concrete walking surfaces with textured or other finish to resist slippage by pedestrians. Concrete stairs shall receive anti-slip and full width nosing with concrete anchors.

1.3.1.2 Interior Building Surfaces

Interior concrete surfaces which will not receive a finish shall be steel troweled with a high solids curing, sealing, hardening, and dustproofing membrane. Steel trowel concrete floor surfaces which will receive

carpeting, resilient flooring, or thin set ceramic tile. Concrete stairs shall receive anti-slip and full width nosing with concrete anchors. All spaces in which noise-producing and/or supervisory activities occur shall be properly isolated from other areas of the facility. Provide one hour fire rated separation walls, door and frame assemblies, and dampers at janitor closets and mechanical rooms.

1.3.1.3 Cabinetwork

The defined degree of control over the quality of materials, workmanship, and installation of wood cabinets shall be in accordance with the Architectural Woodwork Institute (AWI) for Custom Grade.

a. A minimum of one third of the base cabinet footage shall be drawers. All upper and lower cabinets shall have doors. Cabinet shelving shall be adjustable. All counters shall have base cabinets below except at restrooms. All upper wall cabinets shall be a minimum of 762 mm high. All base cabinets shall be 914 mm high.

b. Cabinets, counters, and shelving shall be constructed of laminated plastic covered wood. All exposed interior and exterior surfaces shall be covered with plastic laminate.

c. Design and detail cabinets, blocking, fasteners and supports for an assumed load of each shelf stacked to full paper capacity. Provide minimum 19 mm plywood construction at shelving and shelving dividing walls at intervals no more than 1220 mm on center.

d. All cabinet work shall be lockable. Coordinate hardware with Contracting Officer.

1.3.1.4 Roofs

Provide new prefinished structural standing seam metal roof system (SSSMR) for Warehouse Building 4195, see Appendix 1 "Replace Roofs on Building 4195, Fort Sam Houston, Texas", dated January, 1995 for criteria.

Provide new structural standing seam metal roof system (SSSMR) for Precious Metal Building, Administration Building, Scale House, Open Storage Office, Covered Storage Facility and Covered Storage Annex to Warehouse Building 4195. New metal roofs shall have a minimum slope of 3:12 and shall meet the following criteria:

a. System should have seams no wider than 600 mm apart.

b. Seam height and type (mechanically crimped side lap seams, minimum standing rib height of 50 mm) should be in accordance with manufacturer's recommendations necessary to enforce the weather tightness warranty. End laps of panels shall be provided in accordance with the manufacturer's instructions.

c. Fasteners shall be concealed, corrosion resistant, compatible with

panel materials and capable of resisting imposed loads.

d. The test for determining structural performance of the structural standing seam metal roof system shall be in accordance with ASTM E 159. Loads and load combination will be in accordance with ASCE 7-95.

e. The roof panels shall be installed with concealed anchor clips which shall be fastened directly to the structural framing members. The roof system shall be capable of supporting all design loads including live, dead, and collateral in accordance with ASCE 7-95. Provide blanket insulation conforming to ASTM C 991 with insulation retainers of the type, size, and design necessary to adequately hold the insulation and to provide a neat appearance.

f. The minimum thickness of uncoated panels shall be 0.6 mm for steel. Panels shall be within 95 percent of nominal thickness.

g. Color for prefinished metal roof shall be in accordance with FSH PAM 210-20-3, Fort Sam Houston Installation Design Guide.

h. Provide for proper disposal of rain water from roofs. Provide gutters and downspouts, prefinished to match roof panels at sloped roofs at low point of roof perimeter; size in accordance with SMACNA criteria.

i. Provide required flashings, ridge, gable, and eaves prefinished to match roof panels, as required for a complete installation.

1.3.1.5 Walls

Exterior walls may be load bearing or non-load bearing reinforced concrete masonry units or load bearing or non-load bearing tilt-up concrete wall panels or non-load bearing light gage steel stud framing with gypsum board sheathing, cavity and masonry veneer. Design and construct all buildings utilizing the same exterior finishing system. All exterior concrete masonry unit walls shall have horizontal and vertical joints cut flush with exterior face of wall. Surface preparation of exterior face of concrete masonry units shall consist of an acrylic based surface sealer/hardener interlaced open weave glass fiber reinforcing fabric and a single component polymer modified base leveler. Finish coat will consist of an acrylic based elastomeric primer and an acrylic based elastomeric textured coating with graded marble aggregate. Surface preparation of exterior tilt-up precast concrete wall panels shall consist of an acrylic based surface sealer/hardener and a single component polymer modified base leveler. Finish coat shall consist of an acrylic based elastomeric primer and an acrylic based elastomeric textured coating with graded marble aggregate

a. Wall thickness and reinforcement shall be sufficient to satisfy the calculated requirements for strength, shrinkage crack control, and deflection due to wind. Show adequate resistance to combined axial load and moment due to load eccentricity and wind. Wind loads shall be calculated in accordance with the procedures

outlined in ASCE 7-95 using exposure "C" and a basic wind speed (3-second gust speed) of 40 meters per second. Show adequacy of walls at edges of openings. Design component connection to accommodate building movement and thermal movement. Provide adjustment to accommodate misalignment of structure without unit distortion or damage.

b. Minimum thickness of concrete masonry units shall be 200 mm. Provide continuous bond beam at the top of all concrete masonry unit walls. Concrete masonry units shall be two cell block and have a specified compressive strength of 21.0 MPa on net area at 28 days. Minimum mortar compressive strength shall be 14.0 MPa at 28 days. Fill cells which contain reinforcing steel solidly with 14.0 MPa concrete or grout, including bond beams and lintels. All exterior above grade concrete masonry units shall contain an integral liquid polymeric water repellent admixture used at the time of manufacture which shall meet the performance requirements of ASTM E 72 and ASTM E 514.

c. Incorporate concrete masonry crack control measures comprised of masonry control joints, joint reinforcement, and bond beams shall be incorporated in the design of concrete masonry walls. Provide masonry control joints located at spacings no greater than 9144 mm and at major changes in wall height, at changes in wall thickness, at control joints in foundations, and floors and at one or both sides of wall openings. Masonry control joints shall be shown on the Architectural Plans and elevations. Lateral deflection due to wind loading shall be limited to L/600 where L is the wall height between points of support.

d. Minimum thickness of tilt-up precast concrete wall panels shall be 190 mm. Tilt-up precast concrete wall panels shall include site cast concrete wall panels, load or non-load bearing, erected from mold or final position, supports, devices, loading bearing supports, attachments, perimeter and intermediate joint sealant joints and grouting under panels. Wind loads shall be calculated in accordance with the procedures outlined in ASCE 7-95 using exposure "C" and a basic wind speed (3-second gust speed) of 40 meters per second, and erection forces. Calculate structural properties of units in accordance with ACI 301 and ACI 318. Design units to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings. Design component connections to accommodate building movement and thermal movement. Provide adjustment to accommodate misalignment of structure without unit distortion or damage.

e. Minimum total thickness of insulated exterior non-load bearing light gage steel stud wall framing with masonry veneer shall be 330 mm. Light-gage framing and masonry veneer shall be designed in accordance with TI-809-07. Wall shall consist of one interior layer of 16 mm thick gypsum board, 152 mm wide light gage steel studs with 89 mm thick thermal batt insulation with an R-value of 13, one layer of 13 mm gypsum board sheathing with dampproofing 50 mm wide cavity and a 100 mm wide concrete masonry exterior smooth

face unit. Masonry units shall be anchored back to steel studs with pre-manufactured adjustable wall ties. Concrete masonry units hall be two cell block and have a specified compressive strength of 21.0 MPa on net area at 28 days. Minimum mortar compressive strength shall be 14.0 MPa at 28 days. All exterior above grade concrete masonry units shall contain an integral liquid polymeric water repellent admixture used at the time of manufacture which shall meet the performance requirements of ASTM E 72 and ASTM E 514.

1.3.1.6 Windows

a. Exterior windows shall be fixed aluminum windows and shall conform to AAMA 101 HS-HC40. Windows shall be non-operable glazed frames with a 38 mm by 115 mm profile. Finish for window frames shall be 0.7 mil minimum thickness, Architectural Class I, anodized finish conforming to AAMA 611. Glazing for exterior windows shall be Class A, preassembled units of dual-seal construction consisting of lites of glass separated by an aluminum spacer and dehydrated space. Interior and exterior glass panels for insulating units shall Type I, annealed flat glass, Class 2-tinted with anti-reflective low emissivity coating on No. 2 surface, Quality q^3 - glazing select. Glass performance shall have an R-Value/winter night time 3.2, and a shading coefficient of 0.47. Design windows and window supporting system to withstand wind loads required by code.

b. Building 4195, all existing damaged, broken, or missing glass, including glass at clerestory shall be replaced with matching kind.

1.3.1.7 Doors

Exterior personnel doors and frames shall be hollow metal doors and pressed metal door frames except for exterior and interior pairs of doors at vestibule at Administration Building. Fill exterior pressed metal door frames in masonry walls solid with grout.

a. Finish for aluminum doors and frames shall be 0.7 mil minimum thickness, Architectural Class I, anodized finish conforming to AAMA 611. Glazing shall be tempered glass, Class 2-tinted, condition an uncoated surface, Quality q^3 glazing select, 53 percent light transmittance, 0.71 percent shading coefficient conforming to ASTM C 1048.

b. Provide painted pressed metal door frames and painted hollow metal doors for interior door openings.

c. Hardware on all doors shall be Grade 1. Provide mortise locksets on exterior doors, except exterior doors requiring exit devices. All interior doors shall have mortise latches or locksets. Hardware shall conform to U.S. Army Corps of Engineers Guide Specifications, CEGS 08700 Builders' Hardware, Fort Worth District Supplement to CEGS-08700, and shall conform to the FSH Installation Design Guide.

d. Exterior electric power operated overhead roll-up doors shall be spring counterbalanced, rolling type, with interlocking slats, complete with guides, fastenings, hood brackets, and electric power operating mechanisms. Doors shall be surface-mounted type with guides at jambs set back a sufficient distance to clear the opening. Exterior doors shall be mounted on interior side of wall. Door and components shall be designed to withstand the minimum design wind loads per building code. The slat system shall supply a minimum R-Value of 6.24 when calculated in accordance with ASHRAE-03. Slats shall be of the flat type as standard with the manufacturer. Slats shall consist of a urethane core not less than 17.46 mm thick, completely enclosed within metal facings. Exterior face of slats shall be a minimum of 0.75 mm thick. Interior face shall be not lighter than 0.60 mm. thick. Steel slats and hoods shall be hot-dip galvanized G60 in accordance with ASTM A 653, and shall be treated for paint adhesion and shall receive a baked-on primer top coat and finish coat.

e. Provide transition strips at changes of floor materials.

1.3.1.8 Ceramic Tile

a. At ceramic mosaic, unglazed tile floors, recess concrete floor slab the depth of the tile and setting bed to provide a level plane at access points. Provide marble thresholds at doorways or entrances to wet areas with ceramic tile. Provide ceramic tile bull nose trim at corners of tile walls and cove base at floor lines.

b. Provide full height ceramic tile at all wet walls and ceramic tile base at remaining walls of restrooms. Provide all trim and special shapes. Tile installation on walls shall be by the "thinset" method. Mortar or adhesive type will be determined by substrate and tile material. Grout material will be determined by occupancy or type of exposure.

1.3.1.9 Paint

Interior finishes of latex based paint shall be:

a. Walls: Flat.

b. Ceilings: Flat.

c. Doors/Trim: Semi-gloss.

d. Wet Area: Semi-gloss.

1.3.1.10 Specialties

a. Built-ins include tackboards, marker boards, bulletin boards, mirrors and toilet accessories, and projection screens. Develop a

schedule listing sizes, type, and mounting height. Provide proper wall construction/backing to support specialty items.

b. Provide fire extinguisher cabinets. Fire extinguishers will be provided by the Government.

1.4 FINISHES, FURNITURE, SIGNAGE AND EQUIPMENT

The interior design shall be focused on achieving harmony and unity throughout the project. Harmony results in a composition in which all the pieces reinforce the overall design theme. While seeking to achieve unity of appearance, some variety shall be introduced to prevent the overall composition from becoming dull and monotonous, such as differentiating Precious Metal Building office from Administration Building offices. The exterior architecture and the interior design shall compliment each other. Selection of materials, finish, color, and texture shall compliment the overall building design and image. Selection shall be based on consideration of anticipated use, maintenance requirements, life-cycle cost, fire, and other safety requirements.

1.4.1 Functional Space Requirements

Floor plan area requirement tables which include the listing of spaces and area requirements, the finish schedule requirements, and the equipment requirements for each facility shall be as indicated in Section 01004 through Section 01008. The area requirements shall not be adjusted or modified.

1.4.2 Finishes

Only general finish schedules are provided in this RFP. Coordinate final finishes with Contractor-furnished, Contractor-installed furniture and submit minimum three copies of the proposed comprehensive Interior Design Package (CID) to the Contracting Officer for review and approval.

1.4.3 Color and Installation Boards

Provide the following information for color and installation boards as part of the 50% design submittal. These boards shall be typically in 203 mm by 278 mm format and contain the following:

a. Table of Contents for Building Related Color Boards

Title page.
Color boards.
Interior signage color boards.
Prewired workstation color boards.
Prewired workstation floor plans.
Prewired workstation elevations, panel and component lists.
Prewired workstation electrical, data and voice plans.

b. Table of Contents for Furniture Related Color and Illustration Boards

Title page.
Composite furniture and systems furniture floor plans.
Manufacturer's summary list.
Furniture illustration sheets.

1.4.4 Furniture

All furnishing selections shall be consistent in style, form, scale, and color. Base furniture selection on function, comfort, flexibility and durability. Coordinate furniture for consistency with finish materials, textures, and colors of built-in elements. All prewired modular open office workstations, tables, and chairs, indicated on the floor plans and scheduled for the five facilities shall be furnished and installed by the Contractor, if Option 3 is awarded. Each prewired modular open office workstation shall include one ergonomic chair as part of this contract. All furniture and equipment shown on the plans is scheduled on Tables III, VI, IX, XII and XV at the end of each Section 01004, 01005, 01006, 01007, and 01008.

Contractor shall give right of first refusal for work of providing furniture and pre-wired work stations from U.S. Department of Justice, UNICOR Federal Prison Industries. Sufficient time shall be allowed for UNICOR to review the design, to determine its capability to provide what is required in accordance with the design. After reviewing the design, UNICOR will determine its capability to provide. If capable of providing the requirements, UNICOR will be the subcontractor for the CID package. **Am#1 Sentence deleted**

1.4.5 Signage

Refer to CEGS Section 10440 - INTERIOR SIGNAGE for signage requirements. Signage shall comply with ADA requirements. Provide required interior signage. All building identification signage (exterior signs) shall be Government-furnished, Government-installed.

1.4.6 Equipment

Refer to the equipment schedules for detailed definition of responsibilities as it pertains to equipment provisions. Provide mechanical and electrical rough-ins for items which will be furnished and installed by others, not in contract (NIC) items. Some items shown in the equipment schedule are not considered equipment (refrigerator), but have been included to verify that the space has been allocated for such an item, or because the item has specific utility requirements or requires a specific location and clearances.

1.5 FIRE PROTECTION

1.5.1 Existing Conditions

A preliminary survey was accomplished for the fire protection system. Record Drawings for the water distribution system are included in the Civil Drawings. Verify the existing conditions via a site investigation and obtain additional information for the accomplishment of the contract work.

1.5.2 Design Criteria

a. Fire protection systems shall utilize MIL-HDBK-1008C "Fire Protection for Facilities Engineering, Design and Construction dated June 10, 1997 as a Basis of Design. The Contractor shall review all requirements and conditions of MIL-HDBK-1008C, Section 1.3.

b. Design fire protection underground water supplies in accordance with TM 8-813-5, "Water Supply and Water Distribution".

c. Design seismic bracing in accordance with TM 5-809-10, "Seismic Design for Buildings".

d. Design shall incorporate ADA (Americans with Disabilities) requirements.

e. Attend coordination meetings as required to coordinate the fire protection and detection system with the other building systems.

f. Conduct construction progress observations for the fire suppression and fire detection/alarm systems covered by the scope of service. A letter-type punch list report will be prepared listing all deficiencies noted during this observation.

g. Supervise and witness a single final acceptance observation and test for the automatic sprinkler and fire pump systems. A letter-type punch list report will be prepared listing all deficiencies noted during these tests.

h. Supervise and witness a single final observation and test for the fire detection/alarm systems. A letter-type punch list report will be prepared listing all deficiencies noted during these tests.

1.6 PLUMBING

Design and construct a complete plumbing system for each facility. This system shall consist of domestic water distribution, sanitary waste lines and vents, condensate drainage, and compressed air distribution lines and outlets. Base design upon ASHRAE Fundamentals (1997), ASHRAE Applications (1999), and National Standard Plumbing Code (1999).

1.6.1 Design Conditions and Criteria

1.6.1.1 Domestic Water Systems

Plumbing fixtures shall be water conserving type. All plumbing fixture piping shall be chrome plated brass.

a. Provide domestic water with a new water line from the nearest water main to the building site. Install a reduced pressure backflow preventer on the building service line and lines serving sources of possible cross contamination. Install a master

shut-off valve and meter with pulse module for remote reading immediately outside each building in a concrete box with cover.

b. Domestic water distribution system shall be sized in accordance with criteria listed in National Standard Plumbing Code and ASHRAE Fundamentals, Chapter 33. Provide fixture unit and pressure loss calculations for the entire system. Limit velocity in piping system to maximum of 2 meters per second. Piping shall be copper Type L, solder joints, 95TA aboveground; Type K, below ground.

c. Provide electric tank type, dual element water heater(s), properly sized to ensure adequate supply of domestic hot water to all plumbing fixtures requiring hot water. Hot water temperature shall not exceed 49 degrees C. The system temperature shall be maintained through the use of a circulating pump. For remote fixtures requiring hot water, tankless instantaneous electric water shall be considered. Size heaters in accordance with criteria listed in ASHRAE Application, Chapter 48.

d. Provide hose bibbs every 24 meters around the perimeter of the new buildings and 48 meters along the southeast wall of the Warehouse. Hose bibbs shall be 20 mm in size with vandal-proof vacuum breakers, air chamber and isolation gate valves. Provide one hose bibb, loose key operated, within each group toilet room.

e. Provide one floor drain with trap primer in each group toilet room, mechanical rooms, water heater, backflow preventer, air compressor basins, and fire protection service entrances.

f. Provide electric drinking fountains as indicated on architectural drawings. Drinking fountains shall comply with ADA where applicable.

g. Provide emergency eyewash sinks indicated on architectural drawings and as noted in Section 01005 DESIGN CRITERIA - PRECIOUS METAL BUILDING and Section 01008 WAREHOUSE BUILDING 4195. Eyewashes shall be full face pattern, foot pedal or hand lever operated. Water supply for these emergency fixtures shall be taken from the water main upstream of the building's shut-off valve and be provided with a single, lockable open valve with a sign, and run independently with no further valving except for fixture stops.

h. Provide flow switch at or near the emergency eyewash to sound an audible local alarm whenever these emergency fixtures are in use.

1.6.1.2 Sanitary/Industrial Waste and Vent Systems

Design and construct a gravity system to convey all wastes through a sewer network connected to the sewer main available at the building site. Waste and vent systems shall be sized in accordance with the National Standard Plumbing Code. Provide fixture unit calculations for the entire system. Building drain lines 100 mm in diameter and larger shall be sized for a minimum slope of 3 mm per foot. Smaller lines shall be sloped 6 mm per

foot. Piping shall be standard weight cast iron with neoprene joints.

1.6.1.3 Condensate Drainage

Provide a gravity condensate drainage system to convey condensate waste from air handling units to janitor sinks or floor drains. Size condensate drainage system in accordance with National Standard Plumbing Code; Type L copper and minimum size of drain pan outlet. Condensate drainage system shall be trapped and vented. Provide an auxiliary drain pan under air handling units concealed above ceilings with a separate waste line discharging in conspicuous location. Connection of condensate drains to interior rainwater leaders are prohibited. Insulate condensate drain piping above ground including auxiliary drain pan of the unit.

1.6.1.4 Compressed Air Systems

a. Provide suitably sized, tank mounted air compressor as indicated in Section 01005 DESIGN CRITERIA - PRECIOUS METAL BUILDING. Sizing shall take into account proposed tool requirements, number of outlets served by the system and diversity requirements of compressor operating one-third of the time under normal usage. Compressor assembly shall be installed on 100 mm thick housekeeping pad, extending 150 mm in each direction beyond footprint of the equipment. Tank shall be ASME stamped.

b. Compressors 2.5 kW or larger shall be two stage. After cooler and refrigerated air dryer shall be provided for each system. Compressor shall be vibration isolated from the building structure and piping. The air line from the air compressor shall be provided with a 75 percent efficiency centrifugal filter-water separator, draining through an automatic water trap to funnel drain near the equipment. A regulator with a globe valve by-pass is required. Provide instrumentation including tank and system pressure gages and dryer discharge temperature. Storage tank shall be provided with a separate automatic water trap, draining into the above mentioned funnel drain. The first air riser from the air compressor shall also be provided with a water trap. Water traps of different pressures shall not be combined.

c. Provide a water trap at the end of the main line. All water traps shall be provided with a shut-off valve and bypass valve.

d. Slope air lines 25 mm in 12 meters in direction of the air flow, and shall not create any pockets where water may collect. Branches shall take-off from the top of the main. Provide drain pockets at the bottom of the air outlets. Piping shall be Type L copper with solder joints 95TA.

e. Provide air outlets with pressure regulators, lubricators, and gauges. Air outlets shall be of quick disconnect type. Overhead or wall mounted air hose reels with 16 meters of retractable hose shall be provided where indicated in Specific Requirements.

1.7 MECHANICAL

Design and construct a complete heating, ventilating, and air conditioning (HVAC) system for each facility or portions thereof in accordance with the design conditions and criteria specified in this RFP. Direct expansion cooling and electric heat have been selected as the acceptable HVAC systems. Systems are to be single or multi-zone type. Refer to Sections 01004 through 01008 for a description of which system shall be used at each facility.

1.7.1 Design Conditions

a. Location: Fort Sam Houston; San Antonio, Texas.

b. Latitude: 29 degrees, 32 min. North.

c. Longitude: 98 degrees, 28 min. West.

d. Elevation: 240.2 meters.

e. Heating degree days: 1,570.

f. Cooling degree days: 2,994.

1.7.2 Design Criteria

Refer to Sections 01004 through 01008 for additional requirements applicable to individual facilities.

1.7.2.1 Outdoor Design

a. Summer: 37.2 degrees C db / 23.3 degrees C wb.

b. Winter: Minus 3.9 degrees C db.

1.7.2.2 Indoor Design

a. Summer: 25.6 degrees C db / 50 percent RH.

b. Winter: 20 degrees C db.

1.7.2.3 "U" Values (Watts per square meter per degree celcius)

a. Wall Transmission: 0.35 Maximum.

b. Roof Transmission: 0.28 Maximum.

c. Glass Transmission: 0.35 Maximum.

d. Door Transmission: 1.1 Maximum.

e. Shading Coefficient: 0.56 Minimum.

1.7.2.4 Ventilation

a. Air Conditioned Spaces: 9.4 liters/sec. outside air per person.

b. Toilets, Janitor Closets, Electrical Rooms, and Mechanical Rooms: 0.9 liters/sec. per square foot exhaust.

1.7.2.5 Filters (Throw-away)

Pleated, 50 mm thick, 35 percent efficiency, ASHRAE 52-76.

1.7.2.6 Refrigerants

CFC refrigerants not allowed.

1.7.2.7 Miscellaneous Internal Loads (Excluding Lighting)

a. General Administration: 10 watts per square meter.

b. Work Stations: 300 watts per hour (computer and printer).

c. Communication Rooms: 100 watts per square meter.

1.7.3 HVAC Systems Descriptions

1.7.3.1 Direct Expansion, Electric Heat, Single-Zone Systems

Split direct expansion system consisting of air cooled condensing units, refrigerant piping, air handling units, exhaust and/or supply fans, distribution ductwork and air devices, electric resistance heaters, outside air intake, and controls. Refrigeration piping shall be Schedule 40, Type ACR copper for refrigerant, insulated with flexible cellular insulation.

1.7.3.2 Direct Expansion, Electric Heat, Multi-zone Systems

System shall be as described in paragraph entitled "Direct Expansion, Electric Heat, Single-Zone Systems" except the air handling units shall be multi-zone with low leakage dampers. Electric resistance heaters shall be zone duct installed. Condensing units shall be outdoor air cooled type with semi-hermetic compressors and minimum 3-step unloaders. Refrigeration piping shall be as described in paragraph entitled "Direct Expansion, Electric Heat, Single-Zone Systems" and shall include hot gas bypass for low load operations.

1.7.3.3 Packaged Through-wall Direct Expansion Units with Electric Heat

System shall be a self-contained single through-the-wall room air conditioner with electric heat. Cooling will be by a direct expansion system. Ventilation shall be provided by an outside air intake opening and damper. Unit shall provide for evaporation of condensate by the condenser coil and the unit shall be installed in a wall sleeve.

1.7.3.4 HVAC Equipment Common to Above Noted Systems

a. Central station air handling units shall be single or multi-zone type as described in the above paragraphs. Units shall consist

of, but are not limited to: mixed air plenum, filter section, coil section (2 circuits for multi-zone units), blower section, zone dampers for multi-zone units, and electric heaters installed in the supply ducts. Maximum coil face velocity shall be 235 liters per second.

b. Exhaust fans shall be of the centrifugal in-line type, electric motor, direct or belt driven for the lowest zone rating. Fans shall be installed at the spaces exhausted and ducted to wall exhaust louver.

c. All supply, exhaust, return, outside air, and ventilation ductwork shall be galvanized steel. Ductwork shall be designed, constructed, installed, and tested in accordance with SMACNA Duct Construction Standards and ASHRAE Guide.

d. Ceiling supply diffusers shall be of the louvered face with opposed blade dampers. Ceiling return registers shall be of the perforated face type. Grilles and registers shall be of the double deflection type with opposed blade dampers, bars parallel to the long dimension, and return and exhaust fixed bars at 35 degrees deflection.

e. Air cooled condensing units shall have copper tube aluminum fin condenser coils, compressors, fans, and low ambient package for operation to minus 6.7 degrees C. Units for the multi-zone units shall have dual compressors with cylinder unloading, arranged for hot gas bypass, and with accumulator and external oil return system.

1.7.3.5 Controls

Controls shall be DDC electric and/or electronic type and shall have local field interface devices and be for local standalone operation.

1.8 ELECTRICAL

Design and construct a complete electrical system for each facility and associated site. This system shall consist of electrical service and distribution, telecommunications service and distribution, emergency standby systems, interior and exterior lighting, and cathodic protection systems.

1.8.1 Exterior Electrical Service and Distribution

Design and construct new electrical service to each building. Remove existing services to buildings to be demolished. Reroute existing overhead lines to accommodate new construction.

a. Design Criteria: Basic design criteria shall include TM 5-811-1, SWD-AEIM, NFPA 70, and CEGS Section 16370 - ELECTRICAL DISTRIBUTION SYSTEM, AERIAL. Included in this RFP is Drawing C104 depicting Fort Sam Houston Department of Public Works Record Electrical Distribution Map. Drawings C101 and C201-C205 depict

existing topographical survey information including existing overhead utility lines. Verify existing conditions prior to design of the electrical distribution system. Obtain a topographical survey where work may be required and is not shown in the documents of this RFP. Drawings C202-C204 depict new work required including new services, relocation of existing lines, and removal of existing services.

b. Metering: Provide a KWH demand utility meter for new electrical service to each building. Mount each meter on the exterior of each building near electrical service entrance. Location to be approved by Contracting Officer. Meters shall be pulse initiating type capable of being connected to Base EMCS.

1.8.2 Interior Electrical Distribution

1.8.2.1 Service Equipment

a. Molded-case circuit breakers for panelboards shall be used.

b. A single disconnecting means shall be provided for each facility.

c. Equipment ampacities shall be adequate for the estimated demands, plus a reserve for future growth of 20 percent. All 120/208 volt panels shall have a minimum of 20 percent of the total circuit breaker positions reserved for future circuits.

1.8.2.2 Wiring and Raceway Systems

a. Minimum size conductor for feeder and branch circuits shall be No. 12 AWG and No. 14 AWG for control conductors.

b. All wiring shall be copper and installed in conduit.

c. All conduit will be concealed in finished areas.

d. Branch circuits shall be rated a minimum of 20 amperes.

e. All circuits shall be equipped with a grounding conductor.

f. Raceway sizes shall not be less than 13 mm.

1.8.2.3 Wiring Devices and Systems Furniture

a. All receptacles located within 1830 mm of sinks or at exterior locations shall be ground fault interrupter type.

b. Provide no more than four receptacles to a circuit in office/workstation areas. Provide a maximum of eight receptacles per circuit for warehouse and storage areas.

c. In general, provide duplex receptacles a minimum of 3048 mm on center in office/administration areas and 6096 mm on center in warehouse/storage/hallway areas. Provide a minimum of one duplex

receptacle in every room/area.

d. All prewired systems furniture shall be fed from an adjacent wall. No power poles are allowed unless preapproved by the Contracting Officer. Provide a minimum of three circuits for prewired furniture (two utility circuits and one computer circuit).

e. Provide exterior ground fault interrupter weatherproof duplex receptacles near each building entrance/exit and within 7620 mm of any outdoor HVAC equipment.

f. All convenience receptacles and lighting switches shall be rated NEMA 5-20R.

g. Provide dedicated receptacles for the following equipment when located on plans:

(1) Copier.
(2) Fax.
(3) Vending Machine.
(4) Refrigerator.
(5) Electric Water Cooler.

h. Provide a minimum of two dedicated 120 volt, 60 Hz duplex receptacles in all communications rooms and computer rooms.

i. All wiring devices (including communications devices) shall be specification grade, of the same manufacturer, style, and color.

1.8.2.4 Power

Provide power to all mechanical, plumbing, and fire protection equipment as required.

1.8.3 Communications Service and Distribution

a. Design Criteria: Basic design criteria shall include EIA/TIA 568-A, 569-A, 606 and 607, EIA/TIA TSB 67 and 75, NFPA 70, U.S. Army Installation Infrastructure Architecture (I3A) Design and Implementation Guide, March 2, 1999, SWD-AEIM, and Mandatory Specifications 16710 PREMISES DISTRIBUTION SYSTEM and 16711 TELEPHONE SYSTEM, OUTSIDE PLANT. The I3A Design and Implementation Guide can be downloaded from the following website http://arch-odisc4.army.mil/I3A/docs/I3A%20handbook.doc. Included in this RFP is Drawing C105 depicting Fort Sam Houston's Department of Public Works Record Communications Distribution Map. Drawing C201 depicts new work required including extension of communications duct system and new communications services to each facility.

b. Communications Premises Distribution System. The CC shall design the PDS for the DRMO complex buildings. The PDS shall consist of inside plant telecommunications cable, voice and data outlets, protected terminals, terminal blocks, backboards, equipment racks,

and patch panels for voice and data networks. Plywood backboards shall be provided in all telecommunications closets. Plywood back boards shall be painted with two coats of white or light colored fire resistant paint. All horizontal voice and data cabling shall be terminated on rack mounted patch panels located in the telecommunications closets. The PDS shall include both copper and fiber optic riser cable, and copper horizontal cable. Fiber patch panels shall be provided with Type ST connectors. Outlets in offices, walls and systems furniture shall be configured with four eight-pin modular connectors, serviced by four four-pair Category 5 UTP cables. Wall mounted instruments shall be configured with one eight pin modular connector serviced by one four pair Category 5 UTP cable. Terminal blocks shall be wall mounted, 110 Type blocks, rated for Category 5. Blocks shall be mounted on standoffs and shall include cable management and hardware. All PDS cable terminations and modular connectors shall be T568B as per EIA/TIA 568-A, and shall be rated for category 5 Cable. The Fort Sam Houston ITBC will complete all cross-connects between outside plant and inside plant termination points. Single mode fiber optic cabling (12 strand minimum) shall be used to connect all telecommunications closets to the main TC within a building.

c. Communications Cable Tray System: The CC shall design a telecommunications cable tray system to be installed in Warehouse Building 4195 and Administration Building 4199 and located above false ceilings. The cable tray system shall extend into each telecommunications closet and computer rooms. Distribution from the cable tray to the outlet shall be via 25 mm EMT. The CC shall provide calculations validating cable tray sizing and fill.

d. Communications Telecommunications Closets: Telecommunications Closets shall be provided in Warehouse Building 4195, Administration Building 4199, and Previous Metal Building 4234 in accordance with EIA/TIA 568-A and 569-A. The quantity, size and physical design of telecommunications closets shall meet EIA/TIA 569-A, section 7, criteria. The CC shall coordinate with the proper disciplines to ensure that all physical and environmental requirements of EIA/TIA 569-A, section 7, are included in the overall project design. The Telecommunications Closets shall be utilized to install telecommunications racks, equipment, protected terminals, connector blocks, and patch panels installed under this RFP.

e. Communications Testing: Materials and documentation to be furnished under this specification are subject to inspections and tests. All components shall be terminated prior to testing. Equipment and systems will not be accepted until the required inspections and tests have been made, demonstrating that the signal distribution system conforms to the specified requirements, and that the required equipment, systems, and documentation have been provided.

Unshielded Twisted Pair Tests: All metallic cable pairs shall be

tested for proper identification and continuity. All opens, shorts, crosses, grounds, and reversals shall be corrected. Correct color coding and termination of each pair shall be verified in the communications closet and at the outlet. Horizontal wiring shall be tested from and including the termination device in the communications closet to and including the modular jack in each room. Backbone wiring shall be tested end-to-end, including termination devices, from terminal block to terminal block, in the respective communications closets. These test shall be completed and all errors corrected before any other tests are started.

Category 3 and Category 5 Circuits: Twenty-five percent of the installed Category 3 circuits, selected on a random basis, and all Category 5 circuits shall be tested using a test set that meets the Class II accuracy requirements of EIA TSB 67 standard. Testing shall use the Basic Link Test procedures of EIA TSB 67. If more than five percent (5%) of the Category 3 circuits tested fail, then all Category 3 circuits shall be tested. Cables which contain failed circuits shall be replaced and retested to verify the standard is met.

Coaxial Cable: Cable shall be tested for continuity, shorts and opens. Characteristic impedance shall be verified over the range of intended operation. Cable length shall be verified. Cable shall be sweep tested for attenuation over the range of intended operation.

Fiber Optic Cable: Unless stated otherwise, tests shall be performed from both ends of each circuit. Connectors shall be visually inspected for scratches, pits or chips and shall be re-terminated if any of these conditions exist. Each circuit leg and complete circuit shall be tested for insertion loss at 1300 nm and 1500 nm using a light source similar to that used for the intended communications equipment, and a meter. High-resolution optical time domain reflectometer (OTDR) tests shall be performed from one end of each fiber. Scale of the OTDR trace shall be such that the entire circuit appears over a minimum of eighty percent (80%) of the X-axis.

1.8.4 Public Address System

A public address or intercom system is not required for any of the facilities except the Scale House, Building 4232 and Administration Building, Building 4199 Training Room. Refer to Section 01006 DESIGN CRITERIA - SCALE HOUSE and Section 01004 DESIGN CRITERIA - ADMINISTRATION BUILDING. DRMO uses hand held radios for communications.

1.8.5 Emergency Standby Systems

Provide emergency lighting in accordance with the basic design criteria of NFPA 101, SWD-AEIM, NFPA 70, TM 5-811-2, and CEGS 16415 - ELECTRICAL WORK, INTERIOR. Provide LED type exit signs with self-contained emergency battery equal to COE 40-06-04, Type 604.

1.8.6 Interior Lighting Systems

a. Design Criteria: Basic design criteria shall include TM 5-811-2, SWD-AEIM, NFPA 70, IES Handbook, U.S. Army COE Standard Detail No. 40-06-04, and CEGS 16415 ELECTRICAL WORK, INTERIOR.

b. Lighting Levels and Fixture Selection: General average maintained illumination levels at 910 mm above floor shall meet the following using the COE 40-06-04 type of lighting fixture.

Functional Area	LUX	COE 40-06-04 Type
Warehouse	200	302
Office	500	206
Hallway	100	206
Storage	150	206
Mechanical/Electrical Room	150	230
Communications	500	206
Computer	500	206
Training	500	206
Break Room	250	206
Janitor	50	206
Toilets	200	206
Loading Dock	50	As Required

c. All fluorescent fixture shall use electronic ballasts and T8 lamps.

d. Where Type 302 metal halide fixtures are used, provide a minimum of 10 percent of the fixtures in each area with quartz restrike.

e. Each room or area shall have a separate switch. Each room with multiple entrances shall have a switch at each entrance.

1.8.7 Exterior Lighting Systems

a. Design Criteria: Basic design criteria shall include TM-5-811-1 "Electrical Power Supply and Distribution", SWD-AEIM, NFPA 70, IES Handbook, U.S. Army COE Standard Detail No. 40-06-04 Fort Sam Houston's Installation Design Guide and CEGS 16370, Electrical Distribution System, Aerial.

b. Controls: All exterior lighting shall be controlled by photocell. Timeclocks shall not be used.

1.8.8 Lightning Protection Systems

None required.

1.8.9 Cathodic Protection Systems

Basic design criteria shall include TM 5-811-7, SWD-AEIM, NFPA 70, RP-01-69 National Association of Corrosion Engineers, and CEGS 13110 CATHODIC PROTECTION SYSTEM (SACRIFICIAL ANODE).

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 ATTACHMENTS

CID Package is attached to this section.

-- End of Section --

SECTION 01003
AMENDMENT 0001

DESIGN CRITERIA - SITE AND COVERED STORAGE FACILITY, BUILDING 4230

PART 1 GENERAL

1.1 SUMMARY

The purpose of this section is to provide specific requirements applicable to the project site and the Structural Requirements for the Covered Storage Facility, Building 4230. The criteria specified herein complements Section 01002 GENERAL DESIGN CRITERIA.

1.1.1 Existing Site Conditions

A topographical survey was accomplished for the site. Record drawings of the existing utilities, obtained from the Fort Sam Houston Director of Public Works Office, are included to supplement the field survey. Perform site surveys and site investigations as necessary to verify the existing conditions and obtain additional information and design data for the accomplishment of the Work. The Designer of Record shall be responsible to ensure that proper number of fire hydrants are available in accordance with MIL-HDBK 1008C. If additional fire hydrants are required, it will be the responsibility of the D/B Contractor to provide them as part of this project.

1.1.2 Demolition and Refuse Disposal

1.1.2.1 Demolition

Existing building foundations, pavement, curbs, sidewalks, fences, natural gas lines, and other structures not to be utilized in the design will be demolished, removed and disposed of off the installation by the Contractor in accordance with federal, state and local environmental regulations. Scheduling of demolition and removal of building foundations, pavement, curbs, sidewalks, fences and other structures shall be approved by the Contracting Officer prior to start of construction.

1.1.2.2 Refuse Disposal

Refuse will not be deposited in existing garbage cans or refuse dumpsters. Provide and maintain containers. Hazardous materials, liquid or dry, shall not be poured, drained, or washed into sanitary or storm sewers. Remove, clean, or efface debris, dirt, dust, and stains attributable to or resulting from the work effort as directed by the Contracting Officer prior to final acceptance.

Provide refuse disposal, such as handling, transportation, dumping fees as applicable, and similar costs. Provide the Contracting Officer with a copy of the federal, state and local permit or license which reflects such agency's disposal authorization.

1.1.3 Paving

a. Pavement section design is provided in the attached Foundation and Pavement Design Analysis, Attachment B. Geometric design of paved areas shall be in accordance with TM 5-822-2.

b. Provide parking stalls 2.7 m wide and 5.5 m long. Handicapped stalls will be 2.4 m wide with a 1.5 m wide aisle on one side in accordance with Americans with Disabilities Act (ADA). Van accessible spaces will be 2.4 m wide with a 2.4 m wide aisle on one side. Provide stalls marked with a minimum 100 mm wide painted white stripe. Provide handicapped stalls marked in accordance with ADA criteria. Provide appropriate handicapped sign. Provide parking layout and striping.

c. Provide jointing design for rigid pavements.

1.1.4 Grading

Soils investigations and borings for use in the design are provided in the attached Foundation and Pavement Design Analysis, Attachment B. Base grading and earthwork upon the attached analysis, use this report for compaction, foundations, groundwater elevations, satisfactory and unsatisfactory material, and backfilling methods. Recommendations for compaction, foundations, groundwater elevations, satisfactory and unsatisfactory material and backfilling methods are included. All new paved areas shall have slopes as specified for each site and in accordance with TM 5-803-14, Site Planning and Design. A balanced earth work design for cut and fill is encouraged, but not at the expense of an improper storm drainage design. All borrow needed for fill and all excavated material to be wasted shall be performed by the contractor, off government land, at the Contractor's expense and responsibility.

1.1.5 Drainage

Storm water drainage shall be accomplished by surface runoff in combination with underground drainage systems as necessary. Use existing underground storm drainage network to greatest extent possible. Design drainage system improvements in accordance with TM 5-820-4.

1.1.6 Utilities

Utilities which are in service and interfere with new design shall be relocated as necessary to maintain service. Utilities which interfere with the new design and will not be required for future service shall be cut, capped, and removed. These utilities may be abandoned in place if doing so will not be detrimental to the new design. All utilities within 1.5 m of proposed structures shall be relocated, if continued service of the utility is required, or removed if continued service of the utility is not required.

a. Water Supply: Use existing water distribution system to feed the facilities. Water pressure testing has been conducted. The results of the tests are attached. Size the new domestic and fire lines based on the fire flow information in the attached water

pressure tests, and TM 8-813-5. Provide calculations in the Design Analysis.

b. Sanitary Sewer: Use existing sanitary sewer system to collect sewage from the facilities. Design sanitary sewer collection systems in accordance with TM 8-814-1. Provide design calculations in the Design Analysis.

1.1.7 Electrical

1.1.7.1 Electrical Service and Distribution

a. Electrical distribution lines selection: Aerial lines shall be used in all areas, except in the following instances:

(1) Open Storage Area.
(2) Scrap and Covered Storage Facility, Building 4230.
(3) Precious Metal Building 4234 storage area.
Am#1 **(4) Item deleted.**
(5) Option 1, Pavement Reconstruction Area.

b. Contractor shall consider truck traffic and design/construct new overhead lines to avoid conflict. Any existing overhead lines in path of truck traffic shall be investigated to determine conflict and modified accordingly.

c. Underground Lines: Where underground primary and secondary systems are provided, cables shall be installed in underground duct lines concrete encased.

d. Aerial Lines: Design/construction shall be compatible with existing construction. Routing and relocation of all aerial lines shall be coordinated with Fort Sam Houston's Department of Public Works.

e. Poles: Solid wood 15 m, Class 3 minimum poles shall be used for electric distribution lines.

f. Distribution-to-Utilization Voltage Transformers: Aerial mounted or pad-mounted delta-wye, 3 phase transformers may be used. Secondary services to all facilities shall be underground.

g. Wiring Systems: Only copper conductors shall be used, no aluminum conductors are allowed.

h. Fence Grounding: Fences crossed by overhead power lines in excess of 600 volts shall be grounded in accordance with TM 5-811-3 and guide spec CEGS 02821 Fencing.

1.1.8 Exterior Communications

a. All underground duct shall be buried a minimum of 910 mm below grade and concrete encased. Install in accordance with Mandatory Specification Section 16711 TELEPHONE SYSTEM OUTSIDE PLANT. The

new six-way (six 100 mm conduits - two with four 25 mm innerducts) duct line shall tie into existing manhole 422, extend down 11th Street to a manhole at the corner of 11th and Parker Road, then run along the south side of Parker Road to a manhole south of the new Administration Building, then extend to a manhole south of the existing Warehouse Building 4195 and extend to a manhole east of the Precious Metal Building. A two-way (two 100 mm conduit, one with four 25 mm innerducts) duct line shall extend from the six-way duct line to each of the DRMO facilities. Provide nylon pull cord in all empty conduits.

b. Existing empty underground duct is available from existing manhole 422 to the base switch located in Building 2500 approximately 1219 linear meters away. Provide 2,400 pair copper cabling and 48 strands of single mode fiber from base switch to manhole 422 down duct line on 11th Street to new manhole south of Warehouse Building 4195. Terminate 2,400 pair cable at main distribution frame (MDF) at switch. Provide gas protected terminals. Terminate fiber at existing connector blocks in fiber patch panel in Building 2500. Terminate 48 strands of single mode fiber at the Contractor provided distant end patch panel in the Communications Room of the Administration Building 4199. Provide number of pairs of copper cabling to each building for voice as follows:

Building	# of Pairs
Administration Building	300
Scale House	50
Warehouse Building 4195	150
Precious Metal Building	100
Open Storage Office	100

Am#1 c. Provide twelve strands minimum of multi-strand single mode fiber between Buildings 4199____, 4234, and 4195. Terminate fiber in the designated network wiring area of each building. Cabling between Administration Building and Scale House and Open Storage Office shall be 26 AWG copper. Design and install copper communications connections between Administration Building, Scale House, and Open Storage Office. Terminate and secure cabling in each location to 110 type blocks per EIA/TIA 568AB.

1.1.9 Lighting Levels and Fixture Selection

a. General average maintained illumination levels at 910 mm above finished grade shall meet the following using COE 40-06-04 type of lighting fixtures:

Functional Area	LUX	COE 40-06-04
Roadways	5	402
Building Entrances	50	501, 502
Open Storage	20	402, 506, or 507

b. Use aerial electrical distribution wood poles when available for mounting of roadway and open storage lighting fixtures. Use 9 m metal poles where wood aerial electrical distribution poles are unavailable.

1.1.10 Cathodic Protection Systems

Protect metal in soil from corrosion to prevent waste, hazardous conditions, or contamination of soil. Conduct a survey of the existing Cathodic Protection System or systems in the vicinity of the new facility to ensure that interference does not occur as a result of multiple cathodic protection systems. Protect new ferrous pipe water, gas, and force main lines, as well as associated fittings. Relocate any existing cathodic protection test stations or other cathodic protection equipment located in areas conflicting with construction of the new facility. Any existing cathodic protection system equipment that has to be moved shall be relocated to a grassed area.

1.1.10.1 Locations

Provide corrosion control for all metal facilities located in the atmosphere, soil, or water electrolytes. Provide cathodic protection for metals in soils or water. Coatings are normally provided as corrosion protection in the atmosphere. As a minimum, cathodic protection is required on all metallic piping and on all metallic components on plastic pipelines of the following systems: Force mains, gas lines, water lines, and fire suppression lines.

1.1.10.2 Design Criteria

Criteria for determining the adequacy of protection on a buried structure is defined in the National Association of Corrosion Engineers' Publication RP-01-69. Provide a minimum 40 mils coating thickness on all underground metal. The design and installation of a cathodic protection system must be performed by a person that is accredited or certified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried metallic piping.

The cathodic protection system shall meet the following minimum criteria for steel and cast-iron structures:

a. A negative voltage of at least 0.85 volt as measured between the structure and a saturated copper-copper-sulfate reference electrode contacting the electrolyte. Determination of this voltage is to be made with the protective current applied.

1.1.11 Stairways

a. A minimum negative voltage shift of 300 millivolts produced by the application of protection current. The voltage shift is measured between the structure surface and a stable reference electrode contacting the electrolyte. This criteria of voltage shift does not apply to structures in contact with dissimilar metals.

b. A minimum negative polarization voltage shift of 100 millivolts measured between the structure and a saturated copper-copper-sulfate reference cell contacting the electrolyte. This polarization voltage shift shall be determined by interrupting the protective current and measuring the polarization decay. When the protective current is interrupted, an immediate voltage shift shall occur. The voltage reading, after the immediate shift, shall be used as the base reading from which to measure polarization decay.

1.2 ADMINISTRATION BUILDING

1.2.1 Location

The site for the Administration Building is located on Parker Road between 13th Street and 14th Street

1.2.2 Existing Site Analysis

The proposed site is presently an open area with grass cover.

1.2.3 Demolition

Clear and grub site as required.

1.2.4 Paving, Grading and Drainage

1.2.4.1 Sidewalks

Provide a sidewalk leading from 14th Street to the building. Sidewalks leading to building entrances shall also be provided along the south and west sides of the building. The sidewalks shall be kept a minimum 1.52 m from the building except at building entrances.

1.2.4.2 Grading

The existing topography slopes from the northwest to the southeast across the site. The existing site elevations range from 219.5 m located along 13th Street to 218 m located along 14th Street. In no case should the new grading and earthwork design result in slopes less than 1 percent in the direction of drainage. The new Administration Building shall be accessible to the physically handicapped and therefore all accessible entrances and exits to the facility should be designed in accordance with the (ADA) criteria. Finished grades should be a minimum 150 mm below the finished floor elevation, and then slope a minimum of 5 percent for the first 3 meters from the building, in turfed areas. Paved areas adjacent to the building especially sidewalks may be flatter if pedestrian access up to or into the building is warranted. But in no case should the new grading pattern in any area result in drainage toward the building or ponding. In no case should slopes on turfed areas exceed 25 percent.

1.2.4.3 Drainage

Storm runoff shall be taken off the site by surface drainage or a combination of surface drainage and an underground storm drain pipe system. There is an existing storm drain inlet at the southwest corner of the site on 13th Street and another inlet at the southeast corner of the site on Parker Road.

1.2.5 Utilities

1.2.5.1 Water Supply

The design shall include domestic water and fire water service to the building. The existing system consists of a 150 mm water main that runs along the north side of Parker Road and a 150 mm water main that runs along the east side of 13th Street. The exact locations of the water line and the fire line depend on the layout of the domestic water and fire equipment located on the west side of the new facility. A Siamese fire department connection and post indicator valve shall be provided near Parker Road. The design should provide the appropriate shut off valves and the new facility shall be metered. Water meter shall be capable of remote reading.

1.2.5.2 Sanitary Sewer Collection

The design shall include sanitary sewer service to the building. An existing 200 mm sanitary sewer line runs across the site along Parker Road. Another 200 mm line runs along 13th Street on the west side. An existing manhole is located at the intersection of Parker Road and 13th Street.

1.2.6 Electrical Utilities

See Section 01003, paragraph entitled "Electrical".

1.2.7 Structures

The building will be located off the end of an existing warehouse building with a minimum 7.62 m separation between the new building and the existing chainlink fence. The front of the Administration Building 4199 shall be parallel to and face Parker Road. A waiver for building set back requirements shall be obtained from the Installation as necessary.

1.2.8 Landscaping

Landscaping of the site shall consist of turfing disturbed areas which will not be paved. A temporary irrigation system shall be used until the turf has been established. A permanent irrigation system will not be required.

1.3 PRECIOUS METAL BUILDING

1.3.1 Location

The site for the Precious Metal Building is located on the Scrap Yard site between Meyer Road and 25th Street. The building will be located on the southeast side of the Scrap Yard.

1.3.2 Existing Site Analysis

The proposed site is presently an open area with grass cover and paved streets with curbs. There is an existing concrete pad at the southeast corner of the site.

1.3.3 Demolition

Demolish existing pavements at Meyer Road and the drive on the east side of the site. The existing concrete pad shall also be demolished. Clear and grub as required.

1.3.4 Paving, Grading and Drainage

1.3.4.1 Paving

The area outside of the building and within the fence shall have flexible pavement. A 6.09 m wide, minimum, maneuvering space is required along the perimeter of the building for vehicular access to the building. The front of the Precious Metal Building shall face the Scrap Yard area.

1.3.4.2 Grading

The existing topography slopes from the center to the east at 2 percent slope and to the south and west at 1.5 percent slope across the site. The existing site elevations range from 270.9 m located in the center to 219.9 m along the east edge of the site. In no case should the new grading and earthwork design result in slopes less than 1 percent in the direction of drainage. The new Precious Metal Building shall be accessible to the physically handicapped and therefore all accessible entrances and exits to the facility should be designed in accordance with the Americans with Disabilities Act (ADA) criteria. When ADA criteria is not specific, finished grades should be a minimum 150 mm below the finished floor elevation. But in no case should the new grading pattern in any area result in drainage toward the building or ponding.

1.3.4.3 Drainage

Storm run off shall be taken off the site by surface flow, an underground storm drain system or a combination thereof. There are two storm drain inlets in the south east corner of the site and an existing 76 mm RCP storm drain line along the road to the south of the site.

1.3.5 Utilities

1.3.5.1 Water Supply

The design shall include domestic water and fire water service to the building. The existing system consists of a 150 mm water main that runs along the road on the south side of the site. The exact location of the water line and the fire line depends on the layout of the domestic water and fire equipment located on the north side of the new building. The design should provide the appropriate shut off valves and a PIV value. The new building shall be metered.

1.3.5.2 Sanitary Sewer Collection

The design shall include sanitary sewer service to the buildings. An existing sanitary sewer line, size unknown, runs along 25th Street. An existing manhole is located at the intersection of Jadwin Road and 25th Street. The exact location of the sanitary sewer service line depends on the layout of the waste lines inside the new building.

1.3.6 Electrical Utilities

See Section 01003, paragraph entitled "Electrical".

1.3.7 Structures

The building shall be located such that a 1070 square meters, minimum, open storage area is placed on the west side of the building as shown on Sheet C203, Layout Plan - Area 2. A waiver for building set back requirements shall be obtained from the Installation as necessary. A 2.13 m high chainlink fence with double swing gates shall enclose the Precious Metal Building and storage area. Locate fence and gates as shown on Sheet C203, Layout Plan - Area 2.

1.4 SCALE HOUSE

1.4.1 Location

The site for the Scale House is located on Jadwin Road between Meyer Road and 25th Street, across from the Scrap Yard.

1.4.2 Existing Site Analysis

The topographic survey shows an Incinerator Building located at this site. This building, associated structures, and street leading to the building has been demolished by the Government. The proposed site is presently an open vacant area.

1.4.3 Demolition

Demolish existing pavements and curbs on Jadwin Road as required for the new construction. Clear and grub as required.

1.4.4 Paving, Grading and Drainage

1.4.4.1 Paving

An asphalt pavement drive with curbs and gutters will be constructed to Scale House from Jadwin Road. The drive shall be 7.5 m wide. The drive shall be capable of carrying two way traffic of 16.76 m long tractor trailers. The drive at the scale shall be capable of holding an incoming or an outgoing tractor trailer on the scale and one holding to get on the scale.

1.4.4.2 Grading

The existing topography slopes from the west to the east across the site. The existing site elevations range from 220.5 m located along west side to 220 m located along Jadwin Road. In no case should the new grading and earthwork design result in slopes less than 1 percent in the direction of drainage Finished grades adjacent to the building should be a minimum 150 mm below the finished floor elevation. Paved areas adjacent to the building especially sidewalks may be flatter where pedestrian access into the building is warranted. But in no case should the new grading pattern in any area result in drainage toward the building or ponding.

1.4.4.3 Drainage

Storm run off shall be taken off the site by surface flow and an underground storm drain system. There is a storm drain inlet in the south side of the site tieing to an existing 0.32 m storm drain line. There are also two storm drain inlets and a .32 m RCP line along Jadwin Road in front of the site.

1.4.5 Utilities

1.4.5.1 Water Supply

An option will be included in the contract to provide a restroom facility for Scale House. This option will also include water service to the building. The existing system consists of an existing water main, size unknown, that runs along the west side of site. The design should provide the appropriate shut off valves and the new facility shall be metered.

1.4.5.2 Sanitary Sewer Collection

Sanitary sewer service will be taken to the building if the option for the restroom facility in the building is accepted. An existing sanitary sewer line, size unknown, runs along 25th Street. An existing manhole is located near the intersection of Jadwin Road and 25th Street.

1.4.5.3 Natural Gas Supply

No gas supply is required to this site.

1.4.6 Electrical Utilities

See Section 01003, paragraph entitled "Electrical".

1.4.7 Structures

The Scale House shall be located as shown on Sheet C203, Layout Plan - Area 2. The building shall be oriented such that the operator inside the building has a clear line of site to traffic entering the scale from either side and a clear line of site to the gate at the Scrap Yard entrance. A waiver for building set back requirements shall be obtained from the Installation as necessary. A 30.48 m long scale will be located on this site as shown on Sheet C203, Layout Plan - Area 2. Load requirements for the scale shall be 45,360 kg.

1.5 OPEN STORAGE OFFICE

1.5.1 Location

The site for the Open Storage Area is located on 25th Street between Meyer and Reed Road. The site encompasses approximately 20,360 square meters.

1.5.2 Existing Site Analysis

The proposed site is presently an open area with grass cover paved streets with curbs.

1.5.3 Demolition

There is an existing railroad spur on the north side of the site. This railroad spur is abandoned and shall be removed. Existing pavement and curbs shall be removed. Clear and grub as required.

1.5.4 Paving, Grading and Drainage

1.5.4.1 Paving

a. The area will be paved with flexible pavement. The purpose of this section is to provide general guidelines for striping the open yard sales and storage area. This area will contain different sizes of rectangular "slot" locations with outline stripes for each "slot" location painted on the yard surface. Each commodity shape will fit efficiently within the designated "slot" location with a minimum of nonutilized space. A high percentage of the items will be stacked on 1016 mm by 1219 mm wooden, 4-way entry pallets. Some items will be stored on other size pallets, and some items will be stored directly on the yard surface. A traffic lane (fire lane) with ingress/egress for truck traffic must be provided with entrance at one side of the yard area and exit directly opposite on the other side of the yard area. Cross aisles will be striped for fork truck use to put away items for storage and retrieve items for loading onto customer trucks.

b. The layout design will include one Truck Traffic Lane (Fire Lane) for trucks to enter the yard, travel along the lane at random, and exit the yard.

(1) Truck Traffic Lane is to be 6 m wide from center line to center line of outside lane stripes. The lane is to be designed as close to a straight line as possible from point where trucks enter the yard area to point where trucks exit the yard area.

(2) The Truck Traffic Lane is to be located as close to the center of the yard area as geographic conditions will allow.

(3) Truck types travelling on the Truck Traffic Lane will range from 16.7 m long flat bed or totally enclosed tractor/trailer combinations to 4.6 m to 6 m long stake body, dry freight enclosed

body, or enclosed delivery vans.

c. Cross aisles (rows) will be provided for fork truck access to store items in designated storage "slots" and retrieve items from designated storage "slots" for loading onto or inside trucks parked in the Truck Traffic Lane. These cross aisles (rows) will be perpendicular to the Truck Traffic Lane.

(1) The cross aisles (rows) are to be 5.2 m in width from center line to center line of outside aisle stripes.

(2) There will be only one deep storage "slot" locations on each side of a cross aisle (row).

(3) Each cross aisle (row) will have a predesignated row number painted in the center of the row in four locations, at both ends of the row and at each entrance where the row intersects with the Truck Traffic Lane.

d. Storage "Slot" Locations: The quantity and dimensions of the individual storage "slot" locations will be determined by consultation with DRMO personnel after the contract has been awarded.

(1) The smallest "slot" location measures 1448 mm facing the cross aisle (row) and 1549 mm deep. All dimensions are center line to center line of the individual stripes.

(2) Each "slot" location will have a separate locator number painted in the center of the area inside the "slot". Even numbers will be used on one side of the aisle and odd numbers will be used on the other side of the aisle.

(3) Blockout stripes will be painted across the Truck Traffic Lane where "slot" row intersects the fire lane stripes (Truck Traffic Lane stripes). When two "slot" rows, back to back, intersect the Truck Traffic Lane Stripes, there will be three blockout stripes painted across the Truck Traffic Lane.

(4) Striping widths will be 100 mm for all stripes.

e. Grading: The existing topography slopes from the west to the east across the site. The site is at the bottom of a hill. The areas to the west and the north of the site are approximately 6.1 m higher in elevation than the site. The existing site elevations range from 212 m along the west side to 210 m along the east side. In no case should the new grading and earthwork design result in slopes less than one percent in the direction of drainage. Finished grades of paved areas adjacent to the Forklift Storage Building should be a minimum 150 mm below the finished floor elevation. Paved areas adjacent to the building especially sidewalks may be flatter if pedestrian or vehicle access up to or into the building is warranted. But in no case should the new grading pattern is any area result in drainage toward the building

or ponding.

f. Drainage: Storm run off shall be taken off the site by surface flow and an underground storm drain system. There are existing storm drain inlets on the north and south sides of the site along 25th Street and Wright Road. An existing 0.76 m RCP storm drain line runs along 25th Street and an 0.76 m RCP storm drain line runs north of Wright Road.

1.5.5 Utilities

a. Water Supply: The existing system consists of a 150 mm water main that runs along the north side of 25th Street and a 150 mm water main that runs along the south side of Wright Road. The exact location of the water service line depends on the layout of the domestic water equipment inside the new building. The design should provide the appropriate shut off valves and the new facility shall be metered.

b. Sanitary Sewer Collection: An existing sanitary sewer line, size unknown, runs along 25th Street. Two existing manholes are located on this section of the line. The exact location of the sanitary sewer service line depends on the layout of the waste lines inside the new building.

c. Natural Gas Supply: No gas supply is required to this site.

1.5.6 Electrical Utilities

See Section 01003, paragraph entitled "Electrical".

1.5.7 Structures

The Open Storage Office shall be located as shown on Sheet C204, Layout Plan-Area 3. Provide bollards on the side of the building adjacent to the truck lane as shown on Sheet C204, Layout Plan-Area 3.

1.6 WAREHOUSE BUILDING 4195

1.6.1 Location

The existing Warehouse Building 4195 is located between 14th Street and 15th Street north of Parker Road.

1.6.2 Existing Site Analysis

There are paved streets on all sides of Warehouse Building 4195. Docks are located all along the west side of the building and one dock is centrally located on the east side of the building. There is an existing drainage channel which runs underneath the docks on the west side of the building.

1.6.3 Demolition

Site demolition will include removal of the existing docks on the west side

of the building and removal of the street asphalt pavement as required. The existing concrete open channel shall also be removed for construction of the new docks. See Architectural for demolition inside the warehouse building.

1.6.4 Paving, Grading and Drainage

1.6.4.1 Paving

New docks will be constructed on the west side of the existing building. New paving will consist of rigid pavement in and around the docks and flexible pavement on the street as required. A minimum of 6 m of rigid pavement shall be placed in front of the docks.

1.6.4.2 Grading

14th Street has a crowned cross section draining to either side. This drainage pattern shall be maintained.

1.6.4.3 Drainage

Drainage off 14th Street and from the warehouse roof shall be captured in a new drainage structure replacing the existing open channel. Drainage from the docks shall also be taken to the new structure.

1.6.5 Utilities

1.6.5.1 Water Supply

The design shall include domestic water and fire water service to the building. The existing system consists of a 250 mm water line north of Building 4195 and a 150 mm water line east of this same building. The feed water (main) supply will be supplied from the 250 mm waterline. The exact location of the domestic water line and the fire main depends on the location of the respective equipment inside the building. The design should provide the appropriate shut off valves and the new facility shall be metered. A PIV valve shall be provided on the fire main.

1.6.5.2 Sanitary Sewer Collection

The design shall include sanitary sewer service to the building. An existing 200 mm sanitary sewer main runs along 15th Street. New sanitary sewer service shall be installed from the main to the building. The exact location of the sanitary sewer service line depends on the location of the waste lines inside the building.

1.6.5.3 Natural Gas Supply

No gas supply is required to this site.

1.6.6 Electrical Utilities

See Section 01003, paragraph entitled "Electrical".

1.6.7 Structures

New docks will be constructed on the west side of the existing building as shown on Sheet C202, Layout Plan - Area 1.

1.7 SCRAP YARD/COVERED STORAGE FACILITY

1.7.1 Location

The site for the Scrap Yard/Covered Storage Facility is located on Jadwin Road between Parker Road and 25th Street. Meyer Road runs between the two yards and will become the access drive.

1.7.2 Existing Site Analysis

The proposed site is presently an open area with grass cover and paved streets with curbs. The site of the Covered Storage Area was the site of a Hazardous Waste Material storage Building. This building and all associated structures will be demolished by the Government. The existing loading dock adjacent to the building will also be demolished.

1.7.3 Demolition

Demolish existing pavements and curbs as required for the new construction. Demolish the existing loading dock and associated structures. Clear and grub as required.

1.7.4 Paving, Grading and Drainage

1.7.4.1 Paving

The entire area of the yards shall be paved. Areas under the containment bins shall have rigid pavement. All other areas shall have flexible pavement. Provide 9.14 m turning radii at the entrance off Jadwin Road.

1.7.4.2 Grading

The existing topography slopes from the center to the sides across the site. The existing site elevations range from 220.75 m located at the center to 220 m located along the east side of the site. In no case should the new grading and earthwork design result in slopes less than 1 percent in the direction of drainage.

1.7.4.3 Drainage

Storm run off shall be taken off the site by surface flow and an underground storm drain system. There are existing storm drain inlets on the northeast side of the site and an existing 76 mm RCP storm drain line along the road to the south of the site. There are also two storm drain inlets and a 0.34 m RCP line on Jadwin Road in adjacent to the site.

1.7.5 Utilities

1.7.5.1 Water Supply

No water supply to this facility required.

1.7.5.2 Sanitary Sewer Collection

The design shall include sanitary sewer service to an oil/water separator. An existing sanitary sewer line, size unknown, runs along 25th Street. An existing manhole is located at the intersection of Jadwin Road and 25th Street. The exact location of the sanitary sewer service line depends on the location of the oil/water separator.

1.7.5.3 Natural Gas Supply

No gas supply is required to this site.

1.7.5.4 Industrial Waste System

An oil/water separator shall be used to collect spills from the baler and shredder equipment. Location of the oil/water separator shall be determined by the final location of the baler and shredder equipment. The oil/water separator shall be connected to the sanitary sewer system.

1.7.6 Electrical Utilities

See Section 01003, paragraph entitled "Electrical".

1.7.7 Structures

The Covered Storage Facility Building shall consist of a roof structure over storage bins formed using Jersey Barriers. The Jersey Barrier layout shall be as shown on Sheet C203, Layout Plan - Area 2. The Jersey Barriers shall be anchored to the pavement slab.

The structural system for the storage facility roof shall consist of a structural steel framing system or a prefabricated metal building to support the roof only. The roof may consist of steel trusses or part of the prefabricated metal building. Structural Engineer shall select, design, and detail a roof diaphragm system that is independent to the standing seam metal roof used in this project. Wind resistant shall be resisted by frame action, no vertical bracing will be allowed.

A stand alone dock shall be centrally located between the Scrap Yard and the Covered Storage Facility. The dock shall have two levels, 1.26 m high and 762 mm high. The overall dimensions of the dock shall be 7.31 m wide by 4.87 m long. A ramp 2.44 m wide shall be constructed to each of the dock levels. The maximum slope on the ramps shall be 10 percent. The dock heights shall be field verified. 6.1 m by 12.2 m storage bins formed with Jersey Barriers shall be placed in the Scrap Yard. This type of storage bins shall also be placed in the Covered Scrap Yard Storage Area. The Jersey Barriers used to form these storage bins are Government Furnished/Contractor Installed materials. The Contractor shall be responsible for pickup of the Jersey Barriers from Kelly Air Force Base and transportation of the Jersey Barriers to Fort Sam Houston. The layout of the storage bins shall be similar to that shown on Sheet C203, Layout Plan

- Area 2. An area shall be designated for the crane, baler, shredder, loose scrap as shown Sheet C203, Layout Plan - Area 2. Final layout of the bins and equipment shall be coordinated with DRMO personnel. An acceptable alternative to the stand alone dock would be a stand alone electrically powered hydraulic scissors lift operation capable of lifting a fork truck with load from maximum 300 mm above grade to a maximum height of 1.5 m, stopping at any height in between. This lift shall be located on top of a concrete pad, sized per manufacturer's recommendation. The capacity of the lift shall be 9075 kg. The lift size shall be 2.133 m wide by 3.658 mm long. Provide a 3.05 hinge ramp plate for truck entrance onto lift and a 457 mm hinged ramp plate for truck entrance from lift onto vehicle. Provide all safety measures including guard rails, safety chains, emergency lift stops, etc.

1.8 OVERALL SITE

1.8.1 Location

The overall site is located south of Parker Road between Jadwin Road and Reed Road. Construction on Jadwin Road will extend down to 23rd Street. The POV Storage Yard, MP Impound Yard, and the SWAT Parking Lot are located on the east side of the site on Reed Road and 25th Street.

1.8.2 Existing Site Analysis

Jadwin Road is presently an asphalt pavement road with curbs and gutters on the portion of the road north of 25th Street. There is an abandoned railroad spur along the east side of Jadwin Road that runs from Parker Road to 23rd Street. There is also an abandoned railroad spur on north side of the POV Storage Yard, and the SWAT Parking Lot sites and another abandoned railroad spur on the west side of Reed Road.

1.8.3 Demolition

Jadwin Road will be demolished completely, including curbs and gutters, from Parker Road to the south edge of 23rd Street for reconstruction as shown on Sheet C203, Layout Plan - Area 2 and C205, Layout Plan - Area 4. The portion of Jadwin Road between Warehouse 4206 and Warehouse 4205 shall be demolished from the concrete joint along Warehouse 4206 to the concrete swale joint along Warehouse 4205. The concrete swale running along Warehouse 4205 shall be cleaned of all sediment. The railroad spur on Jadwin Road will be removed. The railroad spur on the north side of POV Storage Yard and the SWAT Parking Lot and the railroad spur on the west side of Reed Road will also be removed as necessary for the new construction. The existing parking lot located across Parker Road from Warehouse 4195 shall be cleared of all vegetation growing through the pavement. Apply herbicide to inhibit the growth of new vegetation.

1.8.4 Paving, Grading and Drainage

1.8.4.1 Paving

Jadwin Road will be reconstructed with flexible pavement. Curbs and gutters shall be constructed on the portion of the existing street where

curbs and gutters presently exist. Jadwin Road shall be realigned at the intersection of Parker Road as shown on Sheet C201, Overall Site Plan. The SWAT Parking Lot and the MP Impound Yard shall have flexible pavement. The POV Storage yard shall have a gravel surface. The existing parking lot located across Parker Road from Warehouse 4195 shall be resurfaced and restriped. The parking layout shall follow the existing parking layout to the extent possible. Four handicap accessible spaces shall be included and located as shown on Sheet C201, Overall Site Plan. An option will be included in the contract to include resurfacing of the existing POV Storage Lot, MP Impound Yard, and the SWAT Parking Lot. These areas shall be paved with flexible pavement to the limits shown on Sheet C201, Overall Site Plan.

1.8.4.2 Grading

The existing topography at the POV Storage Yard, MP Impound Yard, and SWAT Parking Lot sites slopes to the southeast. The sites are at the bottom of a hill. The area to the north of the site is approximately 2.33 m higher in elevation than the site. The existing site elevations range from 213 m along the northwest side to 209.25 m along the east side. In no case should the new grading and earthwork design result in slopes less than 1 percent in the direction of drainage. If the option to include resurfacing of the existing POV Storage Lot, MP Impound Yard, and the SWAT Parking Lot is accepted, the grading of these areas shall be consistent with and match the grading for the Open Storage Yard.

1.8.4.3 Drainage

Storm run off shall be taken off the sites by surface flow or a combination of surface flow and an underground storm drain system. There is an existing storm drain inlet at the south east side of the site at the corner of 25th Street and Reed Road. There are also two storm drain inlets and a 0.34 m storm line on Reed Road in front of the MP Impound Yard.

1.8.5 Utilities

No utilities required.

1.8.6 Structures

The Scrap Yard, the covered storage facility, and the Open Storage Office areas shall be enclosed by a 2.13 m high chain link fence. Remote controlled sliding gates shall be located at the entrance to the Scrap Yard and at the exit from the Open Storage Area. The layout of the fence shall be as shown on Sheet C201, Overall Site Plan. The POV Storage Yard, MP Impound Yard, and SWAT Parking Lot shall also be enclosed by a 2.13 m high chain link fence with 3.65 m wideleaf double gates located as shown on Sheet C201, Overall Site Plan.

1.8.7 Signage

Design site signage in accordance with TM 5-807-10. Provide signage to direct incoming DRMO traffic from the installation truck entrance off Interstate 35 to the Scale House. Travel from the truck entrance to the Scale House and back to the truck entrance shall be along Jadwin Road.

From the Scale House, traffic will be directed over to the Scrap Yard, Covered Storage Facility, Open Storage Office, or to the Warehouse Building 4195.

a. Traffic to the Scrap Yard and the Covered Storage Facility shall enter and exit through the gate on Jadwin Road. All traffic exiting from the Scrap Yard and Covered Storage Facility shall be directed to the Scaled House.

b. Traffic heading to the Open Storage Office will head north on Jadwin Road to Parker Road, East on Parker Road to Reed Road, South on Reed Road to 25th Street, West on 25th Street to the entrance gate. To exit the Open Storage Office, this traffic will go through the Scrap Yard/Covered Storage Facility to the gate on Jadwin Road.

c. Provide adequate signage to direct traffic, using the DRMO Facility, to the facility and out of the Base.

d. A new 1.52 m wide stairway shall be constructed on the north side of the Open Storage Office to provide access to the Open Storage Office from the parking lot on Parker Road. The location of the stairway shall be similar to that shown on Sheet C201, Overall Site Plan.

e. The existing stairway connecting the proposed Precious Metals Building and the Open Storage Office shall be refurbished and provided with new handrails.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01006
AMENDMENT 0001

DESIGN CRITERIA - SCALE HOUSE

PART 1 - GENERAL

1.1 SUMMARY

The purpose of this section is to provide specific requirements applicable to the Scale House, Building 4232. The criteria specified herein complements Section 01002 DESIGN DESIGN CRITERIA.

1.2 SITE/CIVIL

Refer to Section 01003 DESIGN CRITERIA - SITE.

1.3 STRUCTURAL

1.3.1 Structural System

The structural systems used for the buildings of this project shall be selected and designed by the Contractor. The lateral load resisting system shall incorporate bracing, moment resisting frames, shear walls, diaphragms, or any combination thereof, provided the elements of the system are compatible with the attached architectural floor plan. Pre-engineered metal building systems are acceptable for the structural framing system with h/600 building drift limit for buildings with CMU or brick veneer finish as noted in SWD-AEIM. Cold-formed light-gage metal framing (i.e., steel studs) systems are not acceptable as gravity load-bearing systems, but may be used to provide lateral support for exterior masonry veneer wall systems for buildings. The structural framing systems chosen shall meet all aforementioned project requirements and the requirements listed below.

1.3.2 Foundation System

The foundation system shall consist of a 125 mm minimum slab-on-grade with perimeter turn-down to support the CMU walls. Slab shall be poured over a 6-mil vapor retarder over a prepared subgrade as recommended in the Soil Investigation Report by the U.S. Army Corps of Engineers dated November 1999, see Attachment B and SWD-AEIM minimum requirements for expansive soils.

1.3.3 Roof System

The roof for the Scale House shall consist of steel joists or a prefabricated metal roof as established by a engineering evaluation. Structural engineer shall select, design, and detail a roof diaphragm system that is independent to the standing seam metal roof used in this project.

1.4 ARCHITECTURAL

The new Scale House incorporates one activity function which is designated as an enclosed conditioned office under the Base Bid. Bid Option No. 2 will include all work required to construct a unisex restroom adjacent to the Scale House facility. This restroom will have outside access only and will include a water closet, urinal, lavatory, and toilet accessories. There are no handicap requirements for this facility. All utility services, water, sanitary sewer, and electricity will be included in Bid Option price.

1.4.1 Functional Space Requirements

Listed below are specific criteria in addition to the standard construction requirements.

1.4.1.1 Office

Enclosed conditioned office space which shall contain space for one modular open office workstation.

1.4.1.2 Unisex Restroom (Option No. 2)

a. All plumbing fixtures shall be wall mounted.

b. Provide the following toilet accessories:

(1) Surface mounted toilet dispensers: One per water closet.

(2) Surface mounted soap dispenser: One per lavatory

(3) Recessed paper towel dispenser/waste receptacle: One per restroom.

(4) Recessed sanitary napkin receptacle: One per restroom.

(5) Recessed sanitary napkin and tampon dispenser: One per water closet.

(6) Mirror with stainless frame: One per lavatory.

1.4.2 Area Requirements

Refer to area requirement Table VII.

1.4.3 Specific Life Safety Requirements

The Architect of Record shall perform a detailed code search to ensure compliance with all applicable life safety requirements.

a. Construction: Type II-N.

b. Allowable Building Height: 16.76 meters (two stories).

c. Occupancy Classification: Office occupancy; Group B.

d. Occupancy Separation: Not applicable.

e. Occupancy Load (Code Defined): Two occupants.

f. Allowable Area (Basic): 1114.84 square meters.

g. Allowable Area Increase (Sprinklered): Not applicable.

h. Exit Requirements:

1) Travel Distance: 76.2 meters.

2) Groups, not equipped with an automatic sprinkler, 60.96 meters.

i. Fire Rating Requirements (in Hours) for:

(1) Exterior Bearing Walls N

(2) Interior Bearing Walls N

(3) Exterior Nonbearing Walls N

(4) Structural Frame N

(5) Partitions Permanent N

(6) Shaft Enclosure 1

(7) Floor and Floor-Ceiling N

(8) Roofs and Roof-Ceiling N

N = No general requirements for fire resistance.

j. Sprinkler Requirements: No requirements for automatic sprinkler system.

k. Fire Extinguisher Cabinets: 22.9 meters maximum distance between fire extinguisher cabinets. Provide one fire extinguisher cabinet in office. (Government to furnish and install fire extinguishers.)

1.5 FIRE PROTECTION

1.5.1 Requirements

The building for the Scale House does not require the use of an automatic sprinkler system or fire alarm system in accordance with the MIL-HDBK-1008C. This area will receive a wall mounted fire extinguisher as stated in the architectural requirements. Provide cabinet mounted at 1220 mm above finished floor.

1.6 PLUMBING (Option No. 2)

1.6.1 Domestic Water System

The building domestic water will be supplied by service piping extended to 1.5 m outside the building. Extend the piping to the Toilet Room and install a reduced pressure back-flow preventer. Extend the piping to the various fixtures: lavatory, water closet, urinal, and point of use electric water heater installed below the lavatory with hot water to lavatory.

1.6.2 Sanitary Sewer

Connect the sanitary drainage system at a point 1.5 m outside the building. This includes fixtures stated in Paragraphs entitled "DOMESTIC WATER SYSTEM" and "FIXTURES", and floor drain with trap primer in Toilet Room.

1.6.3 Roof Drainage

Provide roof drainage accomplished by external gutter, downspouts, and splash blocks.

1.6.4 Fixtures

Provide fixtures shown on Architectural Drawings as a minimum.

1.7 MECHANICAL

1.7.1 System Description

Provide packaged through-wall air conditioners with electric heat.

1.7.2 Controls

Controls shall be electric, stand alone, and unit installed.

1.7.3 Ventilation (Option No. 2)

Toilet room ventilation shall be provided by transfer duct and grilles from the Office and a ceiling installed exhaust fan discharging through a wall louver.

1.8 ELECTRICAL

1.8.1 Electrical Service and Distribution

a. Refer to Section 01002 GENERAL DESIGN CRITERIA.

b. Provide new 208/120 volt, three phase, four wire secondary services. Provide power to scale equipment as required.

1.8.2 Communications Service and Distribution

a. Refer to Section 01002 GENERAL DESIGN CRITERIA.

Am#1 b. Item deleted

c. The facility shall be equipped with an intercom system from the

interior of the building to the exterior scale area to allow communications between the Scale House operator and truck drivers on the vehicle scale.

1.8.3 Emergency Standby Systems

Refer to Section 01002 for GENERAL DESIGN CRITERIA.

1.8.4 Interior Lighting Systems

Refer to Section 01002 for GENERAL DESIGN CRITERIA.

1.8.5 Exterior Lighting Systems

Refer to Section 01002 for GENERAL DESIGN CRITERIA.

PART 2 PRODUCT

Not used.

PART 3 EXECUTION

Not used.

TABLE VII

AREA REQUIREMENTS

Building: Scale House

ROOM NAME	QTY	SPACE TYPE	TOTAL AREA	OCCUPANCY	REMARKS
Office (Base Bid)	1	Office	14.4	1	Area in square meters.
Unisex Restroom (Bid Option No. 2)	1	Restroom	6.0	0	

TABLE VIII

FINISH SCHEDULE

Facility: Scale House

AREA NAME	FLOORS	BASE	WALLS	CEILING	NOTES
Office (Base Bid)	VCT	RB-2	PGWB	ACT	
Unisex Restroom (Bid Option No. 2)	CT	CT	CT/PGWB	ACT	Provide CT at wet walls full height.

FINISH SCHEDULE LEGEND

Facility: Scale House

Floors:

VCT Vinyl Composition Tile
CT Ceramic Tile

Walls:

PGWB Painted Gypsum Wall Board
CT Ceramic Tile

Base:

Ceilings:

TABLE VIII

RB-2 Resilient Base (coved, 102 mm high)
CT Ceramic Tile (102 mm high)
ACT Suspended Acoustical Ceiling Tile

TABLE IX

EQUIPMENT SCHEDULE

Facility: Scale House

MARK	ITEM	QTY	SIZE HT	SIZE WD	SIZE DP	ELECTRICAL V	ELECTRICAL PHS	ELECTRICAL AMPS	ELECTRICAL KW	PLMB	HVAC	REMARKS
1	Modular Workstation	1										CFCI-Type 2
2	Fire Extinguisher Cabinet	1										CFCI
3	Fire Extinguisher	1										GFGI
4	Intercom System	1										CFCI

CFCI - Contractor Furnished/Contractor Installed
GFCI - Government Furnished/Contractor Installed
GFGI - Government Furnished/Government Installed

-- End of Section --

SECTION 01008
AMENDMENT 0001

DESIGN CRITERIA - WAREHOUSE BUILDING 4195

PART 1 GENERAL

1.1 SUMMARY

The purpose of this section is to provide specific requirements applicable to the Warehouse Building 4195. The criteria specified herein complements Section 01002 GENERAL DESIGN CRITERIA.

1.2 SITE/CIVIL

Refer to Section 01003 DESIGN CRITERIA - SITE.

1.3 STRUCTURAL

A complete and coordinated demolition plan shall be furnished along with new plans for the modification. All loading dock modifications shall specify the concrete, reinforcement, and dowels into the existing structure, used for the retrofit. A new cast-in-place reinforced concrete handicapped access ramp shall be provided as shown on the plans. The structural modifications to the existing Warehouse shall include:

a. Demolition of existing loading dock to the structural face of the building and construction of a new saw-tooth loading dock shown on the drawings. The foundation shall be drilled and underreamed piers. Piers shall bear at least 5 m below existing grade. The clay shale bearing capacity is 720 kPa. Pier underreams shall be no greater than 3 times the diameter of the pier shaft. Minimum reinforcement shall be a minimum of 1 percent steel. Proper subgrade preparation and site grading shall be performed in accordance with the report by the U.S. Army COE, Fort Worth District "Fort Sam Houston, Texas, Foundation and Pavement Design Analysis" dated November 1999, See Attachment B, and SWD-AEIM Minimum Requirements for Expansive Soils.

b. Demolition of existing floor in the RCP Office and construction of new concrete floor system.

c. The loading ramp shall be founded on a continuous spread inverted "T" footing. The footing shall be a minimum 610 mm below outside finish grade. Allowable bearing capacity for footing design shall be 96 KPa.

d. New covered storage annex on southeast corner of building. Structural Engineer shall select, design, and detail a roof diaphragm system that is independent to the standing seam metal roof used in this project. The structural framing for the warehouse annex shall consist of structural steel columns and beams, column layout as indicated on the Architectural Drawings.

The roof beams to support the standing seam metal roof. Lateral framing system may be provided using the new framing or a combination of new framing and warehouse. The annex building should be founded on reinforced concrete slab-on-grade with turn-down edge beams. Subgrade preparation should consist of removing a minimum of 1 m of existing soils and replacing with compacted nonexpansive backfill. The column foundation can be designed using an allowable bearing capacity of 96 kPa (net).

1.4 ARCHITECTURAL

The renovation of Warehouse Building 4195 incorporates 10 activity functions which are designated as follows:

a. New saw-toothed shipping/receiving dock on west side of building.

b. Warehouse with 3 and 4 high pallet racks (Bid Option No. 4_____ **Am#1**), divided by separation walls into 7 modules, designated Section A through G.

c. Section A, which will include the following new functions: Civilian Office which will contain 2 modular open workstations; Communication Room; Fire Pump Room; open striped pallet storage area; and an Open Area for pallet breakdown and repalletize. Two workstations located at overhead door, bordering the shipping/receiving dock.

d. Section B, which will include the following new functions: Mens and Womens Restrooms; open striped pallet storage area and an Open Area for pallet breakdown and repalletize. Two workstations located at overhead door, bordering the shipping/receiving dock, and a secure caged storage area.

e. Section C, which will include the following new functions: Communication Room; open striped pallet storage area and an Open Area for packing/storing/shipping customer orders. Two workstations located at an overhead door, bordering the shipping/receiving dock, and a secure caged storage area.

f. Section D, which will include the following new functions: Loading Dock; one RCP Office which will contain one modular open workstation, one GSA Office which will contain two modular open workstations, open striped pallet storage area, two workstations located at an overhead door bordering the shipping/receiving dock and a secure caged storage area.

g. Section E, which will include the following new functions: New Break Room with seating for 32; Mens and Womens Restrooms; Communication Room; Open Areas for Striped Pallet Storage. Two workstations located at an overhead door bordering the shipping/receiving dock; and a caged storage area.

h. Section F, which will include the following new functions:

Mechanical Room; Mens and Womens Restrooms with showers for each; office space for reservists which will contain five modular open workstations, and combined storage area; open striped pallet storage area; two workstations located at an overhead door bordering the shipping/receiving dock; and a caged storage area.

i. Section G, which will include the following new functions: Communication Room; office space for Environ/Dist and PMB which will contain 14 modular open workstations; cashier room; and an existing fire protection riser room, open striped pallet storage area; two workstations located at an overhead door bordering the shipping/receiving dock; and a secure caged storage area.

j. New covered storage located on south end of existing Warehouse Building 4195, 12,000 mm wide by 28,000 mm long.

k. New ramp at southeast corner in order to comply with ADA requirements.

The existing single-story facility has approximately 12,389.11 gross square meters. Its purpose is to receive, store, and dispose of salvaged material and items received from military installations and other federal generators in the greater San Antonio area.

1.4.1 Functional Space Requirements

Listed below are only those spaces which have specific criteria that is in addition to the standard construction requirement for the organization requirement for the organizational relationships of the various functions within the Building. Refer to the Architectural Drawings.

1.4.1.1 Saw-Toothed Shipping/Receiving Docks:

a. Shipping/receiving dock shall have minimum clear width of 3660 mm for driving fork trucks on the dock and shall have a height of 1270 mm from top of dock to finish grade. Provide five hydraulic dock levelers as indicated on floor plans. Dock leveler platform size shall have a length of 2440 mm and a width of 2130 mm. Capacity of leveler shall be 1360 kg plus weight of forklift 5543 kg with adjustments of plus or minus 305 mm from horizontal or level position. Dock leveler shall be provided with two 102 mm thick by 380 mm wide by 305 mm high tire fabric bumpers.

b. Provide concrete stairs to grade at each dock with leveler.

c. Provide concrete ramps down to grade from north and south ends of shipping/receiving dock as indicated on the floor plans.

1.4.1.2 Warehouse Building 4195: Sections A through G.

a. Provide 100 mm wide painted (safety yellow) floor striping at open striped pallet storage area and Column Line A to Column Line EE, between Column Lines J and K.7, S and T, and U.8 and B.7 between Column Lines 9 and 10, as indicated on the floor plans.

b. Provide 100 mm wide painted (safety yellow) safety lane floor striping for circulation aisles from Column Line A to Column EE, between Column Lines 2 and 3. Additionally, provide the same between Column Lines A and N, S and EE, between Column Lines 8 and 9.

c. Maintain a minimum circulation aisle width of 4572 mm, excluding passageway openings between Sections A through G.

d. Maintain a minimum aisle width of 2440 mm between bulk storage racks.

e. For 3-high pallet racks, the upright trusses shall be approximately 3048 mm in height. For 4-high pallet racks, the upright trusses shall be approximately 3810 mm in height. Pallet rack type shall be selective, and the pallet rack components shall be constructed using cold formed steel. Load-bearing capacity of each 2-pallet wide section (bay) shall be a minimum of 2495 kg. Warehouse Building 4195 is projected to contain approximately 6,027 individual pallet slots (1020 mm by 1220 mm pallet size) after installation of the pallet rack storage system.

f. Design of bulk storage rack lay out is based upon 1020 mm by 1220 mm, 4-way entry standard wooden grocery pallets. These pallets are stored with the 1220 mm side parallel to the front face of the pallet rack. Each individual 2 pallet rack section measures approximately 2920 mm wide by 1020 mm deep outside of rail to outside of rail. For layout purposes, the footprint shall be 2920 mm wide by 2130 mm deep for each 4 pallet tier or layer (double row). One 2 pallet section will face one aisle and the other 2 pallet section will face the adjacent aisle. Each double row shall be tied together with 102 mm metal spacer plates. Pallet racks shall be 4 high from Column Line A to Column Line EE, between column Lines 4 and 7 and 3 high from Column Line A to Column Line EE, between Column Lines 3 and 4, and 7 and 8.

g. Provide fully enclosed caged storage area in Sections B through G, sides and ceiling with wire mesh partitions. Provide 1220 mm wide by 2440 mm lockable swing gate. Enclosed caged storage area shall be approximately 2130 mm wide by 4880 mm long and 3050 mm high. Provide storage shelving inside caged storage area, with a minimum of three levels of shelving. Shelving to be 1066 mm deep. Provide one each in sections B through G as indicated on the floor plans.

h. At existing vertical lift doors between Warehouse Building 4195 and New Loading Dock in each of the 7 modules, A through G, provide one new electrical door operator with all required controls for each door. Contractor shall field verify that all existing vertical lift door hardware is operational. Door hardware that is not operational shall be replaced.

i. Provide one eyewash and one high-low drinking fountain in each of

the 7 modules, A through G. Locate on east side of Warehouse Building 4195 as indicated on floor plans.

j. Field verify that all doors and hardware in separation walls between the 7 modules are code compliant. Doors and hardware that are not code compliant shall be replaced.

k. Additional personnel fire rated doors, frames and hardware shall be installed in separation walls between the 7 modules and the exterior in order to meet life safety egress requirements.

1.4.1.3 Section A

a. Civilian Office: Provide acoustical sound attenuation blankets above suspended acoustical ceiling tile (full coverage) of office. Provide two modular open office workstations in civilian office.

b. Communication Room: Refer to installation Infrastructure Architecture (I3A) Design and Implementation Guide.

c. Provide 100 mm diameter steel tube guard rail between circulation aisle and workstations.

1.4.1.4 Section B

a. Mens and Womens Restrooms: All plumbing fixtures shall be wall mounted except the lavatories which shall be counter mounted. Provide floor mounted overhead braced toilet partitions. Minimum of 1 water closet in each restroom shall meet ADA requirements. Counters shall meet ADA requirements.

b. Provide the following toilet accessories:

(1) Stainless steel grab bars: Two per handicap water closet.

(2) Surface mounted toilet tissue disposers: One per water closet.

(3) Counter mounted soap dispensers: One per lavatory.

(4) Recessed paper towel dispenser/waste receptacle: One per restroom.

(5) Recessed sanitary napkin disposer: One each womens water closet.

(6) Recessed sanitary napkin and tampon dispenser: One each womens restroom.

(7) Adjustable tilt-frame handicapped mirrors: One per restroom.

(8) Mirrors with stainless steel frames: One per lavatory.

(9) Coat hooks with bumpers at toilet partitions: One per toilet

stall.

c. Provide acoustical sound attenuation blankets above suspended acoustical ceiling tile (full coverage) at toilets.

d. Provide 100 mm diameter steel tube guard rail between circulation aisle and workstations.

1.4.1.5 Section C

a. Communication Room: Refer to Installation Infrastructure Architecture (I3A) Design and Implementation Guide.

1.4.1.6 Section D

a. RCP Office: Provide acoustical sound attenuation blankets above suspended acoustical ceiling tile (full coverage) of office. Provide one modular open office work station.

b. GSA Office: Provide acoustical sound attenuation blankets above suspended acoustical ceiling tile (full coverage) of office. Provide two modular open office work stations.

c. Provide 100 mm diameter steel tube guard rail between circulation aisle and workstations.

1.4.1.7 Section E

a. Break Room: Provide wall and base cabinets with double sink. Provide one recessed paper towel dispenser above base cabinet at sink. Base and wall cabinets shall comply with ADA requirements. Provide space for Government-furnished and installed refrigerator. Provide space for four vending machines to be furnished and installed by others.

b. Provide batt insulation blankets (R19) above suspended acoustical ceiling tile (full coverage of Break Room).

c. Mens and Womens Restrooms: All plumbing fixtures shall be wall mounted except the lavatories which shall be counter mounted. Provide floor mounted overhead braced toilet partitions. Minimum of one water closet in each restroom shall meet ADA requirements. Provide wall mounted counters and lavatories. Counters shall meet ADA requirements. Provide the following toilet accessories:

(1) Stainless steel grab bars: Two per handicap water closet.

(2) Surface mounted toilet tissue disposers: One per water closet.

(3) Counter mounted soap dispensers: One per lavatory.

(4) Recessed paper towel dispenser/waste receptacle: One per restroom.

(5) Recessed sanitary napkin disposer: One each womens water closet.

(6) Recessed sanitary napkin and tampon dispenser: One each womens restroom.

(7) Adjustable tilt-frame handicapped mirrors: One per restroom.

(8) Mirrors with stainless steel frames: One per lavatory.

(9) Coat hooks with bumpers at toilet partitions: One per toilet stall.

d. Communication Room: Refer to U.S. Army Installation Infrastructure Architecture (I3A) Design and Implementation Guide.

e. Provide 100 mm diameter steel tube guard rail between circulation aisle and workstations.

1.4.1.8 Section F

a. Mens and Womens Restrooms: All plumbing fixtures shall be wall mounted except the lavatories which shall be counter mounted. Provide floor mounted overhead braced toilet partitions. Minimum of one water closet and one shower in each restroom shall meet ADA requirements. Counter shall meet ADA requirements.

b. Provide the following toilet accessories:

(1) Stainless steel grab bars for toilets and showers - 2 per handicap water closet.

(2) Surface mounted toilet tissue dispensers: One per water closet.

(3) Counter-mounted soap dispensers: One per lavatory.

(4) Recessed paper towel dispenser/waste receptacle: One per restroom.

(5) Recessed sanitary napkin disposer: One each womens water closet.

(6) Recessed sanitary napkin and tampon dispenser: One each womens restroom.

(7) Adjustable tilt-frame handicapped mirrors: One per restroom.

(8) Mirrors with stainless steel frames: One per lavatory.

(9) Coat hooks with bumpers at toilet partitions: One per toilet stall.

(10) Shower curtain rods and shower curtains: One per shower.

(11) Recessed soap dishes: One per shower.

(12) Handicapped shower seats: One per shower.

(13) Towel pins: Two per shower.

(14) Clothes hooks: Two per shower.

c. Reservists Office:

(1) Provide acoustical sound attenuation blankets above suspended acoustical ceiling tile (full coverage) of offices. Provide 5 modular open office work stations.

(2) Copier machine shall be Government-furnished, Government-installed.

d. Provide 100 mm diameter steel tube guard rail between circulation aisle and workstations.

1.4.1.9 Section G

a. Environ/Dist and PMB Office:

(1) Provide acoustical sound attenuation blankets above suspended acoustical ceiling tile (full coverage) of office. Provide 14 modular open office work stations.

(2) Copier machine shall be Government-furnished, Government-installed.

b. Cashier Area: Provide stainless steel transaction window with circular draft. Free talk through and 457 mm deep by 51 mm high stainless steel shelf, providing a 191 mm deep writing surface in front of built-in deal tray.

c. Communication Room: Refer to Installation Infrastructure Architecture (I3A) Design and Implementation Guide.

d. Provide a steel tube railing between circulation aisle and workstations.

1.4.1.10 Covered Storage

a. Provide covered area at southwest corner of existing Warehouse Building 4195. Roof shall be single slope shed type roof with gable ends on east and west sides. Roofing and gable end material shall be non-insulated structural standing seam metal roof (SSSMR) with a roof slope of 1/2 in 12. Provide gutters, downspouts, and precast concrete splash blocks at low side. Eave height at low point shall be approximately 3660 mm above finish floor of new floor. Color of standing seam metal roof shall match main

building.

b. Install new concrete floor slabs 27,762 mm long by 12,193 mm wide at covered storage area. Fully enclose covered storage area with full height (3660 mm) chain link fence. On west side, provide a pair of 1220 mm by 2440 mm chain link swing gates and one 914 mm by 2130 mm chain link single swing gate at southeast end of covered storage area. Provide one 914 mm by 2130 mm chain link single swing gate at the southeast corner layout and provide space for 10 forklift battery charging stations. Mount Government-furnished, contractor-installed battery chargers on south wall of existing buildings.

1.4.1.11 Ramp

Provide new ADA compliant handicapped ramp with 38 mm diameter steel guard rail and handrails at southeast corner of existing building as indicated on floor plans. Ramp shall be constructed of concrete.

1.4.2 Specific Life Safety Requirements

The Architect of Record shall perform a detailed code search to ensure compliance with all applicable life safety requirements.

a. Construction Type: Type II-N.

b. Allowable Building Height: 16.7 meters (2 stories)

c. Occupancy Classification: Low-Hazard Storage Groups, Division 2.

d. Occupancy Separation: Not applicable.

e. Occupancy Load: (Code Defined) 252 occupants.

f. Allowable Area (Basic): Unlimited area per 505.2.

g. Allowable Area Increase (Sprinklered): Not applicable.

h. Exit Requirements; Travel Distance: 76.2 meters.

i. Fire Rating Requirements (in hours) for:

(1) Exterior Bearing Walls N

(2) Interior Bearing Walls N

(3) Exterior Non-Bearing Walls N

(4) Structural Frame N

(5) Partitions Permanent N

(6) Shaft Enclosure 1

(7) Floor and Floor-Ceiling N

(8) Roofs and Roof-Ceiling N

N = No general requirements for fire resistance.

j. Sprinkler Requirements: Fully protected by automatic sprinkler system.

k. Fire Extinguisher Cabinets: 22.9 meters maximum distance between fire extinguisher cabinets. (Government to furnish and install fire extinguishers.)

1.5 FIRE PROTECTION

1.5.1 Existing Conditions

1.5.1.1 Water Supply

Presently the water supply is inadequate. Provide a new fire pump.

A flow test was conducted on October 4, 1999, by Fort Sam Houston Fire Department personnel. The flow data for the hydrants located near the existing Warehouse Building 4195 and east of the Administration Building is 482.65 KpA static pressure with a residual pressure of 427.49 KpA at 4670.69 L per minute. See Sprinkler System Data Sheet at end of this section for water supply curve.

1.5.2 New System Description

Prior to installation the Contractor shall prepare drawings and specifications (in CSI format) for automatic sprinkler system and fire pump systems in accordance with Owner's criteria MIL-HDBK-1008C, local codes, insurance authorities requirements, and NFPA criteria. The new fire protection system will be supplied from risers located within the Pump Room for the Warehouse.

1.5.2.1 Sprinkler and/or Other Automatic Fire Extinguishing Systems.

The Warehouse Building 4195 is currently protected with an existing closed head wet pipe automatic system. Remove existing system and provide a new double interlock preaction system. The new preaction system will be designed to MIL-HDBK-1008C and NFPA 13, NFPA 20, NFPA 24, NFPA 231C. The preaction system is designed to provide a density of 12.21 L per minute per square meter (NFPA 231C Table 6-11(d), Curve "A") over a remote area of 278.7 square meters. The calculated hose demand stream will be calculated separate from the sprinkler system. The hose stream will be taken from the outside hydrants and is not part of this calculation. The estimated sprinkler demand is 5.534 L per minute at 425 KpA. This is an Extra Hazard Group I Area.

The fire suppression system design drawings will show the following:

a. Schematic diagram of valve and riser arrangements.

b. Schematic diagram of fire pump arrangement.

c. Sprinkler locations in all areas. (Coordinate with reflected ceiling plan).

d. Typical pipe sizing, pipe routing, and valve locations. (Located within the Warehouse Building.)

e. The Fire Pump Room will provide the location for all fire protection risers in the Warehouse Building. The riser will have the pipe routed to each zone from the Pump Room. The piping will reside inside the Warehouse and will not exit the Warehouse and reenter at a later point.

1.5.2.2 New Fire Pump Room and Equipment

The fire pump design is based on a primary diesel pump for the demand requirements. The fire pump is rated for approximately 518 kPa pressure. There is one jockey pump provided to maintain pressure in the piping. Based on the MIL-HDBK-1008C (page 52), a "reliable source of power" is required when designing an electric fire pump. As a result of this requirement, a diesel fire pump was used for the Base Design.

1.5.2.3 Standpipes and/or Fire Hydrants

Standpipes are not required in this building. Interior hose station requirements are met by exterior hydrants in accordance with NFPA 13 and MIL-HDBK-1008C, Section 5.7.3.2.

1.5.2.4 Automatic and/or Manual Fire Alarm Systems

Provide an automatic addressable alarm system in accordance with MIL-HDBK-1008C, Section 7. The new alarm system shall consist of manual call points, notification devices, and sprinkler initiating devices. The Warehouse Building 4195 alarm system shall be an addressable type.

1.5.2.5 Heat Detection System

Heat detectors will be provided in Warehouse Building 4195 in accordance with MIL-HDBK-1008C. Heat detectors will automatically activate the preaction sprinkler system in the Warehouse Building 4195 area. Linear heat protection may be used in place of spot type heat detection.

The heat detection system Design Drawings will show the following:

a. Floor plans with alarm device location.

b. Typical installation and connection details.

c. Fire alarm system riser diagram.

1.5.2.6 Alarm

Alarm signals shall be sounded by the building fire alarm system. An alarm signal shall be transmitted to the base fire department headquarters via Monaco "BT-7" or "BT-8" compatible (freq. 140.862501) equipment in accordance with MIL-HDBK-1008C.

1.5.2.7 Annunciation

Annunciation shall be provided for all fire detection and alarm devices at the building fire alarm control panel. The following signals shall be transmitted to the base fire department:

a. Alarm.

b. System trouble.

c. Supervision.

d. Pump running.

e. Loss of power.

f. Phase reversal.

1.5.2.8 Functional and Technical Requirements

a. Building Classification: Between each separate occupancy a 1-hour rated separation partition is required, as well as a 1-hour rating on the corridors. All major building elements are not required to have any other general fire resistance requirements except being constructed of non-combustible materials, since the building area complies with the Type II-N construction materials classification.

b. Programmed Building Classification, Types of Occupancies, and List of Hazardous Areas/equipment/building Contents: Refer to the Architectural Analysis building Occupancy Load Summary@ for further information.

c. Area Separation of Structures And Exposure Protection: The building is totally separated from any other existing structure by more than 18.3 meters on all sides.

d. Fire Fighting Support Including Access and Clearances to Site and Structure: The building is accessible from the roadway by drives on all sides, exceeding minimum clearance requirements.

e. Presence of Handicapped Occupants: The building is designed for full accessibility by handicapped occupants. ADA requirements are required for this building design.

f. Resistance of Interior Finishes and Materials: Interior finishes shall be Class I flame spread and have a smoke density rating of less than 450.

g. Zoning for Fire and Smoke Control: There are area separation

walls to separate the Warehouse from the offices and shops.

h. Seismic Design: Seismic design: Zone 1. Comply with TM 5-809-10.

i. Manual Fire Extinguishing (FE) Systems: Fire Extinguisher Cabinets (FECs) are required to be installed at the locations shown on the RFP Drawings Sequence A206 through A209.

1.5.3 Construction Materials, Finishes, Equipment

1.5.3.1 Warehouse Area

The sprinklers will be upright type rated at 141 degrees C. Sprinkler spacing will not exceed 12.07 l/min/m^2 per sprinkler. The maximum distance either between sprinklers on branch lines or between branch lines will not exceed 3.048 meters. The floor area covered by a system will not exceed 1,675 m^2.

1.5.4 Economic Justification

The fire protection system is required under the applicable design criteria.

1.5.5 Calculations

See water flow requirements in Sprinkler System Data Sheet at end of this section.

1.6 PLUMBING

1.6.1 Domestic Water System

The building domestic water will be supplied by service piping extended to 1.5 meters outside the building. Extend the piping to the Mechanical Room and install a reduced pressure back-flow preventer. Extend the piping to the various fixtures: janitor sink, lavatories, electric water coolers, water closets, urinals, sink in break room, refrigerator, eye wash sinks, floor drain with trap primer, and water heater with hot water piping to sinks and lavatories. Provide 40 degrees C heat maintenance cable to eye wash sinks. Install the water heater in the Mechanical Room. Provide recirculating hot water system to all fixtures with the pump at the heater.

1.6.2 Sanitary Drain System

Connect the sanitary drainage systems at a point 1.5 meters outside the building. This includes fixtures stated in paragraph entitled "Domestic Water System" and paragraph entitled "Fixtures" and floor drain with trap primer in Mechanical Room, each Toilet Room, Fire Pump Room, at water heater, and back flow preventer. The floor is existing concrete and must be cut and replaced for the installation of the piping.

1.6.3 Roof Drainage

Roof drainage is accomplished by external gutter, downspouts, and splash

blocks.

1.6.4 Fixtures

Provide fixtures shown on Architectural Drawings including fixtures to meet ADA requirements.

1.7 MECHANICAL

1.7.1 System Description

Two system types shall be used for this building.

1.7.1.1 System 1

Provide multi-zone direct expansion cooling and electric heating system. This system shall consist of an indoor multi-zone unit installed in the Mechanical Room (minimum number of zones shall be eight) with supply and return ducts to each zone and outside air to wall intake louver. Electric heaters shall be installed in the zone ducts. The outdoor air cooled condensing unit shall be connected with two separate circuits to the indoor coil from two condenser circuits and compressors. The systems shall be provided with cylinder unloading, accumulators, external oil return piping system, hot gas bypass, and control package for operation down to minus 6.7 degrees C. Toilet Rooms and Janitor Closets shall be provided with transfer air duct systems from the adjacent conditioned spaces and exhausted by an in-line centrifugal fan and ductwork to an outside wall louver. The area conditioned shall between Columns 8.8 and 10 from columns A through J and Columns K.8 and N.9. Provide fire damper (2-hour) at all penetrations of fire walls at Columns E, J, and N. Controls shall be direct digital controls with electric/electronic actuators and connected through field interface devices to the Central Monitoring System. Each system, each item of equipment, and each zone shall be controlled from the central system. The system is stand alone and the operating console shall be located as directed.

1.7.1.2 System 2

Provide through wall air conditioner with electric heat for the following spaces:

a. Communications Rooms: Three.

b. RCP Office.

c. CV Office.

Controls shall be integral with the unit.

1.7.1.3 Toilet Rooms

Toilet Rooms between Columns 9 and 10 and Columns Z and AA shall be ventilated and heated by cabinet unit heaters with intake air from the warehouse discharging into the rooms by ductwork and diffusers. Room shall

be exhausted by an in-line centrifugal fan through ductwork to an exterior wall louver. Room thermostat shall control the heater.

1.7.1.4 Fire Pump Room

Provide an electric heater with room thermostat.

1.7.1.5 Warehouse

No heating or ventilation is required.

1.8 ELECTRICAL

1.8.1 Demolition

Am#1 a. All existing interior and exterior electrical systems/devices and telecommunications systems/devices shall be removed including associated wiring and **all exposed** conduit.

b. Provide drawings indicating all major electrical and communications devices to be removed.

1.8.2 Electrical Service and Distribution

a. Refer to Section 01002 GENERAL DESIGN CRITERIA.

b. Provide new 480/277 volt, three phase, four wire secondary service to a main distribution panel in the Mechanical/Electrical Room. Lighting and appliance branch circuit panelboards may be located outside of the Mechanical/Electrical Room as approved by the Contracting Officer.

c. Provide transient voltage surge protection for the main service panelboard.

d. Provide circuit for existing overhead doors to be equipped with an electrically operated door opener.

e. Each section of the Warehouse Building 4195 shall have general purpose receptacles located on the northwest and southwest walls. Provide 4 quad receptacles on each wall evenly spaced for a total of 8 receptacles per section. Circuit 2 quad receptacles per circuit to allow for use of portable radiant heaters.

f. Provide special receptacles (eight at 208 volt, 1 phase, NEMA 6-30R, and two at 208 volt, 1 phase, NEMA 6-50R) with weatherproof covers at the south end of the building under the covered lean-to for GFGI battery chargers for forklifts. Verify electrical requirements with chargers to be installed.

g. Provide three dedicated duplex receptacles on east wall in Section E to accommodate one scale and small equipment used in parking/shipping operation.

h. Provide dedicated duplex receptacles to accommodate two workstations in each warehouse section. Refer to Architectural Floor Plan A208 and A209 for locations of workstations. User will be installing floor mounted portable fans at these locations in addition to the computers.

i. Provide a receptacle on each wall for enclosed offices and rooms.

j. Provide a dedicated receptacle for DRMO's hand held radio and bar code battery rechargers (location per DRMO).

1.8.3 Communications Service and Distribution

a. Refer to Section 01002 GENERAL DESIGN CRITERIA.

b. Provide data and telephone outlets to accommodate two workstations in each warehouse section. Refer to Architectural Floor Plans A208 and A209 for locations of workstations.

1.8.4 Emergency Standby Systems

Refer to Section 01002 GENERAL DESIGN CRITERIA.

1.8.5 Interior Lighting Systems

a. Refer to Section 01002 GENERAL DESIGN CRITERIA

b. Motion sensor controlled lighting in the warehouse areas may be provided or separate switching located in each section.

c. Provide suspended industrial type fluorescent fixtures over the two workstations located in each bay for task lighting.

1.8.6 Exterior Lighting Systems

Refer to Section 01002 GENERAL DESIGN CRITERIA

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

3.1 [Enter Appropriate Subpart Title Here]TABLE XIII

AREA REQUIREMENTS

Building: Warehouse Building 4195

ROOM NAME	QTY	SPACE TYPE	TOTAL AREA	OCCUPANCY	REMARKS
Warehouse Section A	1	Storage	1,586.41	0	
Civilian Office	1	Office	35.34	2	
Communication Room	1	--	6.4	0	
Fire Protection Riser Room	1	Fire Protection	20.93	0	

TABLE XIII

AREA REQUIREMENTS

Building: Warehouse Building 4195

ROOM NAME	QTY	SPACE TYPE	TOTAL AREA	OCCUPANCY	REMARKS
Warehouse Section B	1	Storage	1,620.00	0	
Mens Restroom	1	Restroom	13.90	0	
Womens Restroom	1	Restroom	13.90	0	
Warehouse Section C	1	Storage	1,643.16	0	
Communication Room	1	--	9.80	0	
Warehouse Section D	1	Storage	1,267.42	0	
Mens Restroom	1	Restroom	12.74	0	
Womens Restroom	1	Restroom	12.74	0	
Break Area	1	Break Area	63.45	0	
RCP Office	1	Office	34.80	1	
GSA Office	1	Office	34.80	2	
Warehouse Section E	1	Storage	1,554.35	0	
Communication Room	1	--	5.92	0	
Warehouse Section F	1	Storage	1,466.56	0	
Mens Restroom	1	Restroom	18.83	0	
Womens Restroom	1	Restroom	18.83	0	
Reservists Office	1	Office	72.68	5	
Mechanical Room	1	Mechanical	21.90	0	
Combined Storage	1	Storage	32.40	0	
Warehouse Section G	1	Storage	1,436.39	0	
Fire Protection Riser Room	1	Fire Protection	8.12	0	
Environ/PMB Office	1	Office	174.60	14	
Cashier	1	Office	7.0	0	
Communication Room	1	--	8.62	0	
Total Net Area			11,201.99		
Circulation and Wall			355.16		
Total Gross Area			11,557.15		
West Covered Dock*	1	Dock	513.40		
East Covered Dock*	1	Dock	149.33		
Covered Storage*	1	Storage	169.23		
Adjusted Gross Area			12,389.11	Area in Square Meters	

* Covered areas are included as half scope.

TABLE XIV

FINISH SCHEDULE

Facility: Warehouse Building 4195

AREA NAME	FLOORS	BASE	WALLS	CEILING	NOTES
Warehouse Section A	Exist. Conc.	--	Exist	Exist	
Civilian Office	VCT	RB-2	P-CMU P-Exist	 ACT	
Communication Room	Exist. Conc.	RB-2	P-CMU P-Exist	 ACT	
Fire Protection Riser Room	Exist. Conc.	--	P-CMU P-Exist	 EC	

TABLE XIV

FINISH SCHEDULE

Facility: Warehouse Building 4195

AREA NAME	FLOORS	BASE	WALLS	CEILING	NOTES
Warehouse Section B	Exist. Conc.	--	Exist	Exist	
Mens Restroom	CT	CT	CT-CMU P-Exist	ACT	Provide CT at wet walls full height
Womens Restroom	CT	CT	CT-CMU P-Exist	ACT	Provide CT at wet walls full height
Warehouse Section C	Exist. Conc.	--	Exist	Exist	
Communication Room	Exist. Conc.	RB-2	P-CMU P-Exist	ACT	
Warehouse Section D	--	--	--	--	
Mens Restroom	CT	CT	CT-CMU P-Exist	ACT	Provide CT at wet walls full height
Womens Restroom	CT	CT	CT-CMU P-Exist	ACT	Provide CT at wet walls full height
Break Area	VCT	RB-2	P-CMU P-Exist	ACT	
East Loading Dock	Exist. Conc.	--	Exist	Exist	
RCP Office	VCT	RB-2	P-CMU P-Exist	ACT	
GSA Office	VCT	RB-2	P-CMU P-Exist	ACT	
Warehouse Section E	--	--	--	--	
Communication Room	Exist. Conc.	RB-2	P-CMU P-Exist	ACT	
Warehouse Section F	Exist. Conc.	--	Exist	Exist	
Mens Restroom	CT	CT	CT-CMU P-Exist	ACT	Provide CT at wet walls full height
Womens Restroom	CT	CT	CT-CMU P-Exist	ACT	Provide CT at wet walls full height
Reservists Office	VCT	RB-2		ACT	
Mechanical Room	Exist. Conc.	--	P-CMU P-Exist	EC	
Combined Storage	Exist. Conc.	--	P-CMU P-Exist	EC	
Warehouse Section G	Exist. Conc.	--	Exist	Exist	
Fire Protection Riser Room	Exist. Conc.	--	P-CMU P-Exist	EC	
Environ/PMB Office	VCT	RB-2	P-CMU P-Exist	ACT	
Cashier	VCT	RB-2	P-CMU	ACT	

TABLE XIV

FINISH SCHEDULE

Facility: Warehouse Building 4195

AREA NAME	FLOORS	BASE	WALLS	CEILING	NOTES
			P-Exist		
Communication Room	Exist.	RB-2	P-CMU	ACT	
	Conc.		P-Exist		
Covered Storage	SC	--	CL	EC	
West Loading Dock	Conc.	--	Exist	Exist	
Fire Pump Room	Conc.	--	PCMU	EC	

FINISH SCHEDULE LEGEND

Floors:

Conc	Concrete
CT	Ceramic Tile
Exist Conc	Existing Concrete
VCT	Vinyl Composition Tile
SC	Sealed Concrete

Base:

CT	Ceramic Tile (4 inches high)
RB-2	Resilient Base (coved, 4 inches high)

Walls:

Exist	Existing
P-CMU	Paint-Concrete Masonry Units
P-Exist	Paint-Existing
CL	Chain Link Fence

Ceilings:

ACT	Suspended Acoustical Ceiling Tile
EC	Exposed Construction
Exist	Existing

TABLE XV

EQUIPMENT SCHEDULE

Building: Warehouse Building 4195

MARK	ITEM	QTY	SIZE HT	SIZE WD	SIZE DP	ELECTRICAL V	ELECTRICAL PHS	ELECTRICAL AMPS	ELECTRICAL KW	PLMB	HVAC	REMARKS
1	Dock Levelers	5										CFCI-West Loading Dock
2	Bulk Storage Pallet Racks (3 High)											CFCI-Warehouse Section A Option 4 **Am#1**
3	Bulk Storage Pallet Racks (4 High)											CFCI-Warehouse Section A Option 4 **Am#1**
4	Fire Extinguisher Cabinet	6										CFCI-Warehouse Section A
5	Fire	6										GFGI-Warehouse Section A

TABLE XV

EQUIPMENT SCHEDULE

Building: Warehouse Building 4195

MARK	ITEM	QTY	SIZE HT	SIZE WD	SIZE DP	ELECTRICAL V	ELECTRICAL PHS	ELECTRICAL AMPS	ELECTRICAL KW	PLMB	HVAC	REMARKS
6	Extinguisher Modular Workstation	1				120	1					CFCI-CV Office Type 1
7	Modular Workstation	1				120	1					CFCI-CV Office Type 1
8	Modular Workstation	2				120	1					CFCI-Warehouse Section A Type 4
9	Bulk Storage Pallet Racks (3 High)											CFCI-Warehouse Section B Option 4 **Am#1**
10	Bulk Storage Pallet Racks (4 High)											CFCI-Warehouse Section B Option 4 **Am#1**
11	Fire Extinguisher Cabinet	6										CFCI-Warehouse Section B
12	Fire Extinguisher	6										GFGI-Warehouse Section B
13	Modular Workstation	2				120	1					CFCI-Warehouse Section B Type 4
14	Bulk Storage Pallet Racks (3 High)											CFCI-Warehouse Section C Option 4 **Am#1**
15	Bulk Storage Pallet Racks (4 High)											CFCI-Warehouse Section C Option 4 **Am#1**
16	Fire Extinguisher Cabinet	6										CFCI-Warehouse Section C
17	Fire Extinguisher	6										GFGI-Warehouse Section C
18	Modular Workstation	2				120	1					CFCI-Warehouse Section C Type 4
19	Large Supply Bin Racks	1										GFGI-Packing Area
20	Small Parts Bin Racks	1										GFGI-Packing Area
21	Scale	1										GFGI-Packing Area
22	Work Table	1				120	1					GFGI-Packing Area
23	Bulk Storage Pallet Racks (3 High)											CFCI-Warehouse Section D Option 4 **Am#1**
24	Bulk Storage Pallet Racks (4 High)											CFCI-Warehouse Section D Option 4 **Am#1**
25	Fire Extinguisher Cabinet	6										CFCI-Warehouse Section D

TABLE XV

EQUIPMENT SCHEDULE

Building: Warehouse Building 4195

MARK	ITEM	QTY	SIZE HT	SIZE WD	SIZE DP	ELECTRICAL V	ELECTRICAL PHS	ELECTRICAL AMPS	ELECTRICAL KW	PLMB	HVAC	REMARKS
26	Fire Extinguisher	6										GFGI-Warehouse Section D
27	Modular Workstation	1				120	1					CFCI-RCP Office Type 3
28	Modular Workstation	1				120	1					CFCI-GSA Office Type 5
29	Modular Workstation	1				120	1					CFCI-GSA Office Type 1
30	Modular Workstation	2				120	1					CFCI-Warehouse Section D Type 4
31	Bulk Storage Pallet Racks (3 High)											CFCI-Warehouse Section E Option 4 **Am#1**
32	Bulk Storage Pallet Racks (4 High)											CFCI-Warehouse Section E Option 4 **Am#1**
33	Fire Extinguisher Cabinet	6										CFCI-Warehouse Section E
34	Fire Extinguisher	6										GFGI-Warehouse Section E
35	Modular Workstation	2				120	1					CFCI-Warehouse Section E Type 4
36	Refrigerator	1										GFGI-Break Room
37	Tables	8										CFCI-Break Room Type 7
38	Chairs	32										CFCI-Break Room Type 6
39	Vending Machines	4										GFGI-Break Room
40	Bulk Storage Pallet Racks (3 High)											CFCI-Warehouse Section F Option 4 **Am#1**
41	Bulk Storage Pallet Racks (4 High)											CFCI-Warehouse Section F Option 4 **Am#1**
42	Fire Extinguisher Cabinet	6										CFCI-Warehouse Section F
43	Fire Extinguisher	6										GFGI-Warehouse Section F
44	Modular Workstation	2				120	1					CFCI-Warehouse Section F Type 4
45	Modular Workstation	1				120	1					CFCI-Reservists Office Type 5
46	Modular Workstation	1				120	1					CFCI-Reservists Office Type 5
47	Modular Workstation	1				120	1					CFCI-Reservists Office Type 2
48	Modular	1				120	1					CFCI-Reservists Office

TABLE XV

EQUIPMENT SCHEDULE

Building: Warehouse Building 4195

MARK	ITEM	QTY	SIZE HT	SIZE WD	SIZE DP	ELECTRICAL V	ELECTRICAL PHS	ELECTRICAL AMPS	ELECTRICAL KW	PLMB	HVAC	REMARKS
	Workstation											Type 2
49	Modular Workstation	1				120	1					CFCI-Reservists Office Type 2
50	Copier	1				120	1					GFGI-Reservists Office
51	Bulk Storage Pallet Racks (3 High)											CFCI-Warehouse Section G Option 4 **Am#1**
52	Bulk Storage Pallet Racks (4 High)											CFCI-Warehouse Section G Option 4 **Am#1**
53	Fire Extinguisher Cabinet	6										CFCI-Warehouse Section G
54	Fire Extinguisher	6										GFGI-Warehouse Section G
55	Modular Workstation	2				120	1					CFCI-Warehouse Section G Type 4
56	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
57	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
58	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
59	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
60	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
61	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
62	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 5
63	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
64	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
65	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
66	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
67	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
68	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
69	Modular Workstation	1				120	1					CFCI-Environ/PMB Office Type 1
70	Copier	1				120	1					GFGI-Environ/PMB Office
71	Fork Lift System/	10										GFCI-Covered Storage

TABLE XV

EQUIPMENT SCHEDULE

Building: Warehouse Building 4195

MARK	ITEM	QTY	SIZE HT	SIZE WD	SIZE DP	ELECTRICAL V	ELECTRICAL PHS	ELECTRICAL AMPS	ELECTRICAL KW	PLMB	HVAC	REMARKS
72	Fire Extinguisher Chargers Cabinet	2										CFCI
73	Fire Extinguisher	2										GFGI

CFCI - Contractor Furnished/Contractor Installed
GFCI - Government Furnished/Contractor Installed
GFGI - Government Furnished/Government Installed

-- End of Section --

SECTION 01016
AMENDMENT 0001

DESIGN DOCUMENT REQUIREMENTS

PART 1 GENERAL

1.1 SUBMITTALS

SD-01 Data

Design Data Attachments; FIO.

Submit the Design Data Attachments A, B, and C at the end of this Section with the 50% and 100% design submittals as part of the design analysis.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 DRAWINGS

Prepare, organize, and present drawings in the format specified. Provide drawings complete, accurate and explicit enough to show compliance with the RFP requirements and to permit construction. Drawings illustrating systems proposed to meet the requirements of the RFP performance specifications shall reflect proper detailing for each such system to assure appropriate use, proper fit, compatibility of components and coordination with the design analysis and specifications required by this section. Coordinate drawings to ensure there are no conflicts between design disciplines and between drawings and specifications. For specific drawing requirements, see paragraphs: 50 PERCENT DESIGN REQUIREMENTS and 100 PERCENT DESIGN REQUIREMENTS. The following subparagraphs cover general drawing requirements.

3.1.1 CADD Drawings

The Contractor shall ensure that all delivered CADD digital files and data (e.g., base files, reference files, cell/block libraries) are compatible with the Government's target CADD system and operating system, which is Bentley Systems MicroStation, version 5 or SE, running on Microsoft Windows 95/NT, and adhere to the standards and requirements specified. The term "compatible" means that data is in native digital format i.e., .dgn, and can be accessed directly by the target CADD system without translation, preprocessing, or postprocessing of the digital data files. It is the responsibility of the Contractor to ensure this level of compatibility.

3.1.2 CADD Standards

CADD drawings shall be prepared in accordance with the applicable general and discipline-specific provisions for drawing formats, level/layer assignments, line colors, line weights, and line types of the "Tri-Service A/E/C Standards" and the "SWD Architectural and Engineering Instruction

Manual (AEIM), Chapter VIII, "Drafting Standards."

The CADD standards for design of this project is located at the following Web sites:

http://tsc.wes.army.mil/html/standards/aec

Seed/prototype files, containing the Government's preset standard metric settings can be downloaded from the Internet at the following address:

http://www.swf.usace.army.mil/ed/stdshts.htm

Electronic reference files containing the Government's standard metric border/title block sheets can be downloaded from the Internet at the following address:

http://www.swf.usace.army.mil/ed/stdshts.htm

The Contractor shall submit a written request for approval of any deviations from the Government's established CADD standards. No deviations will be permitted unless prior written approval of such deviation has been received from the Government.

3.1.3 Size of CADD Drawings

Size of CADD drawings shall be SI AI, 594 mm by 841 mm (23.39 by 33.11 inches), trim to trim, with Government standard metric borders. Full size drawings shall be submitted for all design submittals. Metric (SI) working units shall be used.

3.1.4 Drawing Format

Title block shall include, as a minimum, project title and location, sheet title, and sequence number. At the 50 percent and 100 percent design submittals, each Contractor-prepared drawing shall bear the printed name and signature of the registered architect or appropriate registered engineer responsible for the work portrayed on that drawing and proposed to meet the RFP requirements. For the final submittal, each Contractor-prepared drawing shall bear the stamp or seal and signature of the registered architect or appropriate registered engineer responsible for the work portrayed on that drawing and proposed to meet the RFP requirements.

3.1.5 Drawings Sequence

Arrange drawings by design discipline in accordance with the SWD Architectural and Engineering Instruction Manual, Chapter 8, Appendix A.

3.1.6 Drawings Required

As a minimum, the construction drawings shall consist of the following:

a. Title Sheet, Index of Drawings (each technical discipline shall have a separate drawing legend sheet located in front of each

respective section), Legend, and Abbreviations and Soil Borings

b. Civil Drawings

c. Utility Drawings (Water Supply, Wastewater, Gas, Electrical, Fiber and Communication)

d. Architectural Drawings

e. Interior Design Drawings

f. Structural Drawings

g. Mechanical Drawings

h. Electrical Drawings (including security, cathodic protection, and fire alarm)

i. Lightning Protection

j. Fire Protection Drawings

k. Environmental Drawings (Identification and removal of hazardous materials from Building 4195, Storm Water Control Details for all sites.)

3.1.7 Legends

Standard material symbols used on the drawings shall be provided as a separate legend drawing located just in front of the drawings in the set. Additional material symbols should be added to the Legend Sheet as needed for the project.

3.1.8 North Arrows

North arrows shall be oriented the same direction on all plan sheets and by all disciplines, including site and civil drawings. Plan north shall be "up" or to the left on the drawings. Indicate true north on composite plan drawings.

3.1.9 Symbols

The standard symbols used for amendments (a triangular box) or contract modifications (a type of circular box, see the chapter on Drafting Criteria) shall not be used for any other purpose, and care must be taken to avoid using even similar appearing but technically different symbols.

3.1.10 Schedules

Schedules shall be clear and complete. Furnish as many columns as necessary to present the essential information. Do not use the "Remarks" column as a substitute for an information column. Normally a single item should be presented on each schedule line. Other scheduling methods as standard with the Architect-Engineer may be used if approved by written

authorization from the Contracting Officer.

3.1.11 Notes

Notes may be placed on drawings to reduce the amount of repetitive drafting, provided that clarity is not lost. General notes should be placed at the right-hand edge of the sheet and, if possible, should be located on the first sheet in the set. Notes that pertain to each drawing should be placed on each drawing.

3.1.12 Dimensions

Dimensions shall be complete, accurate, and fully coordinated. Dimensions should be to points easily measurable in the construction, and should be laid out to eliminate refiguring in the field. Dimensions should be tied-in to column lines, etc., to facilitate checking. Plan dimensions for frame construction should be to face of stud (or sheathing) for exterior walls, to one face of stud for interior partitions, and to centerline of openings. For masonry construction, dimensions should be to one or both nominal faces of masonry and to jambs of openings.

3.1.13 Standard Drawings

Standard Drawings, when furnished for site adaptation, will generally be utilized without basic architectural change. Portions of the drawings not pertinent to the project will be deleted. Specific instructions will be given when design changes are required.

3.1.14 Sketches

All sketches presented during the design phase shall be reduced to 216 mm by 280 mm (8-1/2" by 11") and included in the design analysis to document the design options and decisions evaluated during the design process.

3.1.15 Record Drawings

Submission requirements for record (as-built) drawings are specified in Section 01770 CONTRACT CLOSEOUT.

3.2 TECHNICAL SPECIFICATIONS

3.2.1 Editing Technical Specifications

The Contractor shall use applicable guide specifications for developing construction specifications. Specification paragraphs and subparagraphs shall not be rewritten to lessen the quality of the original guide specification sections. Only bracketed choices and inapplicable items may be deleted. Designer note numbers and bracketed choices are marked with redline (shading) for removal in corrected 100 percent specifications submittal. The Contractor shall complete the editing of all options in these specifications. Where designer notes are provided, the Contractor shall edit the choice in accordance with the recommendations and guidance of the Notes. The specifications shall clearly identify, where appropriate, the specific products chosen to meet the requirements of the

specifications (manufacturers' brand names and model numbers or similar product information). The Contractor shall be responsible for coordinating references, along with the RFP requirements, to specific specification sections (number and title) within the project specifications. Section references (title and number) shall be revised to reflect the titles and numbers of specification sections used. See additional requirements in paragraphs: 50 PERCENT DESIGN REQUIREMENTS and 100 PERCENT DESIGN REQUIREMENTS.

3.2.1.1 Additions

If the Technical Specifications do not cover a feature that is in the project, new sentences and/or paragraphs shall be inserted in the proper locations to adequately cover the feature of work. Additions shall not lesson the quality of materials indicated by the specifications. If a new material is added, it shall be properly referenced in "REFERENCES," "MATERIALS," "SUBMITTALS," "TESTS," and "INSTALLATION" paragraphs, as applicable.

3.2.1.2 Deletion of Inapplicable Text Material

Delete all inapplicable text material to tailor the specifications to fit the project. After deletion has been made of all inapplicable paragraphs, subparagraphs, choices, and schedules from the body of the guide specifications (including but not limited to the correction of lists in "SUBMITTALS," "TESTS," and "INSTALLATION" paragraphs), delete all nonapplicable references listed in the preceding "REFERENCES" and "MATERIALS" paragraphs.

3.2.1.3 References to Specification Sections

The Contractor shall be responsible for coordinating references, along with the RFP requirements, to specific specification sections (number and title) within the project specifications. Section references (title and number) shall be revised to reflect the titles and numbers of specification sections used.

3.2.1.4 Submittals

The Contractor is responsible for all submittals. See Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES for the definition of Government Approved and For Information Only submittals. All submittals shall be "FI0" unless otherwise specified. Submittals noted in the CEGS guides as "GA" shall be changed to "FIO".

3.2.2 Commercially Available Guide Specifications

For items of work not covered by the CEGS guide specifications, the Contractor may develop specifications utilizing commercially available construction guide specifications such as "SpecText" published by The Construction Specifications Institute and "MasterSpec" published by The American Institute of Architects. These must be converted to CEGS format to be compatible with the Corps of Engineers Resident Management System (RMS) and the Specsintact Guide Specification and Submittal Register

System. The CEGS format is specified in CEGS guide specifications CEGS-01010 CEGS ORGANIZATION GUIDANCE and CEGS-01020 CEGS TEMPLATE. Commercially available guide specifications must be converted to the CEGS format in order to develop the submittal register. Use Wordspec to convert the sections to Specsintact SISGML to produce the sections' submittal registers. References to the "Architect/Engineer" and the "Owner" shall be changed to refer to the "Government" or "Contracting Officer" as appropriate.

3.2.3 Division 1 Sections

Include Division 1 specifications sections contained in the RFP as part of the project specifications without change.

3.2.4 FORMAT FOR PROJECT SPECIFICATIONS

Submit the project specifications, including cover page and Table of Contents, printed with a word processor using the Corps of Engineers Specsintact with SGML, Version 2.8.6 or higher, software. DO NOT submit sections that were created as straight MSWord documents. The use of the Wordspec Macro and Specsintact are compatible with MS Word and will produce the submittal register. Use Microsoft Word for Windows, Version 7.0 or higher and the Wordspec Macro to convert the sections to MS Word documents for those users who are specified to receive MS Word copies of the specifications.

The Corps of Engineers Specsintact and the Wordspec macro software can be downloaded from the Internet at the following address:

http://kscdl2.ksc.nasa.gov/specsintact/.

The Corps of Engineers CEGS guide specifications (SI SGML format) and the Lighting Fixture Standard Drawing 40-06-04 Details can be downloaded from the Internet at the following address:

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

The guides can only be downloaded in *.zip files. PKZIP software will be required to unzip them into working files.

Specsintact software and the CEGS guide specifications can also be obtained from the current version of the Construction Criteria Base (CCB) CD issued by the National Institute of Building Sciences (NIBS), telephone number 202/289-7800, fax number 202-289-1092, internet address is:

http://www.nibs.org.

Fort Worth District guide specifications and the District supplements to the CEGS guide specifications can be obtained from the Fort Worth District upon request and will be on the solicitation CD-ROM disk.

Print hard copies using laser printer and good quality white bond paper (75 g/m^2(20 pound Copier/Laser/Fax/Inkjet/Offset type), 215 mm by 279 mm (8 1/2 by 11 inch) in size. For the 50 percent and 100 percent design submittals,

editing of the Technical Specifications shall be shown by using redlining (shaded text) for text insertions and strikeouts for text deletions. The corrected 100 percent specifications with review comments incorporated shall be cleaned up (markings for insertion and deletion removed) and submitted in both hard copy and on magnetic media (CD-ROM disk). Carbon copies are not acceptable.

3.2.4.1 Format

Format shall match that used by the CEGS guide specifications.

3.2.4.2 Cover Page

The Cover page shall be similar to the RFP Cover page and shall include:

a. Project title, activity and location

b. Construction contract number

c. Construction Contractor's name and address

d. Design firm's name and address

e. Names of design team members responsible for each Contractor prepared technical discipline of the project specification

f. Name and signature of a Principal of the design firm

g. The Table of Contents shall list the 16 Divisions contained in CSI format and the specification section umbers and titles contained in the project specification.

3.2.5 Construction Submittals

All construction submittals shall be in accordance with Section 01330, "CONSTRUCTION SUBMITTAL PROCEDURES."

3.2.6 Mandatory Guides

The following guides shall be incorporated into the construction specifications for this project and submitted at the 50% and 100% design submittals. Other sections may be necessary as determined by the Designer of Record.

DIVISION 02 - SITE WORK

CEGS-02051 REMOVAL, RECYCLING AND DISPOSAL OF REGULATED MATERIALS
CEGS-02217 FOUNDATION PREPARATION
CEGS-02220 DEMOLITION
CEGS-02230 CLEARING AND GRUBBING
CEGS-02300 EARTHWORK
CEGS-02315 EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS
CEGS-02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS
cegs-02466 DRILLED FOUNDATION CAISSONS (PIERS)

CEGS-02510 WATER DISTRIBUTION SYSTEM
CEGS-02531 SANITARY SEWERS
CEGS-02630 STORM-DRAINAGE SYSTEM
CEGS-02722 AGGREGATE AND/OR GRADED-CRUSHED AGGREGATE BASE COURSE
FW-02735 PREFABRICATED GRAVITY OIL/WATER SEPARATOR
CEGS-02741 HOT-MIX ASPHALT (HMA) FOR ROADS
CEGS-02748 BITUMINOUS TACK AND PRIME COATS
CEGS-02754 CONCRETE PAVEMENTS FOR SMALL PROJECTS
CEGS-02763 PAVEMENT MARKINGS
CEGS-02770 CONCRETE SIDEWALKS AND CURBS AND GUTTERS
CEGS-02821 FENCING
CEGS-02921 SEEDING

DIVISION 03 - CONCRETE
CEGS-03101 FORMWORK FOR CONCRETE
CEGS-03150 EXPANSION JOINTS, CONTRACTION JOINTS, AND WATERSTOPS
CEGS-03200 CONCRETE REINFORCEMENT
CEGS-03300 CAST-IN-PLACE STRUCTURAL CONCRETE
FW-03370 CONCRETE FLOOR HARDENER

DIVISION 05 - METALS
CEGS-05090 WELDING, STRUCTURAL
CEGS-05120 STRUCTURAL STEEL
CEGS-05210 STEEL JOISTS
CEGS-05300 STEEL DECKING
CEGS-05400 COLD-FORMED STEEL FRAMING
CEGS-05500 MISCELLANEOUS METAL

DIVISION 06 - WOODS & PLASTICS
CEGS-06100 ROUGH CARPENTRY
CEGS-06200 FINISH CARPENTRY

DIVISION 07 - THERMAL & MOISTURE PROTECTION
CEGS-07220 ROOF INSULATION
CEGS-07416 STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM
CEGS-07600 SHEET METALWORK, GENERAL
CEGS-07840 FIRESTOPPING
CEGS-07900 JOINT SEALING

DIVISION 08 - DOORS & WINDOWS
CEGS-08110 STEEL DOORS AND FRAMES
CEGS-08120 ALUMINUM DOORS AND FRAMES
CEGS-08330 OVERHEAD ROLLING DOORS
CEGS-08353 ACCORDION PARTITIONS, FOLDING DOORS, AND OPERABLE PARTITIONS
CEGS-08520 ALUMINUM WINDOWS
CEGS-08700 BUILDERS' HARDWARE
CEGS-08770 KEY STORAGE AND CONTROL EQUIPMENT
CEGS-08810 GLASS AND GLAZING

DIVISION 09 - FINISHES
FW-09150 ACRYLIC POLYMER EXTERIOR COATING SYSTEM
CEGS-09250 GYPSUM WALLBOARD
CEGS-09310 CERAMIC TILE

CEGS-09510 ACOUSTICAL CEILINGS
CEGS-09650 RESILIENT FLOORING
CEGS-09680 CARPET
CEGS-09900 PAINTING, GENERAL
CEGS-09915 COLOR SCHEDULE

DIVISION 10 - SPECIALTIES
CEGS-10100 VISUAL COMMUNICATIONS SPECIALTIES
FW-10101 MISCELLANEOUS ITEMS (FOR FIRE EXTINGUISHER CABINETS AND PROJECTION SCREENS)
CEGS-10160 TOILET PARTITIONS
CEGS-10260 WALL AND CORNER PROTECTION
CEGS-10440 INTERIOR SIGNAGE
CEGS-10800 TOILET ACCESSORIES

DIVISION 11 - EQUIPMENT
CEGS-11162 LOADING DOCK LEVELER

DIVISION 12 - FURNISHINGS
CEGS-12320 CABINETS AND COUNTERTOPS
CEGS-12490 WINDOW TREATMENT

DIVISION 13 - SPECIAL CONSTRUCTION
CEGS-13110 CATHODIC PROTECTION SYSTEM (SACRIFICIAL ANODE)
CEGS-13280 ASBESTOS ABATEMENT
CEGS-13281 LEAD HAZARD CONTROL ACTIVITIES
CEGS-13814 BUILDING PREPARATION FOR ENERGY MONITORING AND CONTROL SYSTEMS (EMCS)
CEGS-13820 MULTI-BUILDING EXPANSION OF ENERGY MONITORING AND CONTROL SYSTEMS
CEGS-13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE
CEGS-13920 FIRE PUMPS
CEGS-13930 WET PIPE SPRINKLER SYSTEM, FIRE PROTECTION
CEGS-13935 DRY PIPE SPRINKLER SYSTEM, FIRE PROTECTION
CEGS-13945 PREACTION AND DELUGE SPRINKLER SYSTEMS, FIRE PROTECTION

DIVISION 15 - MECHANICAL
CEGS-15080 THERMAL INSULATION FOR MECHANICAL EQUIPMENT
CEGS-15400 PLUMBING, GENERAL PURPOSE
CEGS-15653 AIR-CONDITIONING SYSTEM (UNITARY TYPE)
CEGS-15895 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM
CEGS-15951 DIRECT DIGITAL CONTROL FOR HVAC
CEGS-15990 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS

DIVISION 16 - ELECTRICAL
CEGS-16370 ELECTRICAL DISTRIBUTION SYSTEM, AERIAL
CEGS-16415 ELECTRICAL WORK, INTERIOR
CEGS-16710 PREMISES DISTRIBUTION SYSTEM
CEGS-16711 TELEPHONE SYSTEM, OUTSIDE PLANT

3.3 DESIGN ANALYSES

Prepare design analyses (basis of design and calculations) for each design discipline. Specific requirements relative to the technical content to be

provided are specified in the paragraphs for 50 and 100 percent design requirements. The design analyses shall be a presentation of facts to demonstrate that the concept of the project is fully understood and that the design is based on sound engineering. The design analysis for each discipline shall include, as a minimum:

a. A basis of design consisting of:

(1) An introductory description of the project concept which addresses the salient points of the design;

(2) An orderly and comprehensive documentation of criteria, rationale, assumptions and reasoning for system selection.

b. Calculations required by the specifications sections to support the design.

All sketches presented during the design phase shall be reduced to 216 mm by 280 mm (8-1/2" by 11") and included in this design analysis to document the design options and decisions evaluated during the design process.

3.3.1 Format

The design analysis shall include:

a. a cover page indicating:

(1) the stage of design ("PRELIMINARY DESIGN ANALYSIS" for 50 percent design submittal and "FINAL DESIGN ANALYSIS" for 100 percent design submittal).

(2) the project title and location,

(3) who prepared the design analysis ("Prepared By:" followed by Name of the Contractor and the Contractor's AE, and the locations of the AE and the Contractor's Office(s) involved with the design),

(4) construction contract number; and

(5) the volume number and total number of volumes for the project.

b. table of contents; and

c. tabbed separations for each part of design analysis for quick reference.

Provide a cover sheet for each volume. Submit design analyses prepared on 215 mm by 279 mm (8 1/2 by 11 inch) white bond paper. The design analysis for all disciplines shall be bound in one volume, excluding calculations. Multiple volumes for individual disciplines, appropriately numbered, may be provided when required. Organize the design analysis narrative into the following parts, as follows:

3.3.1.1 General Description

This part will provide statements of purpose, authority and applicable criteria. A description of the project and a summary of the economic factors influencing the choice of the architectural, structural, mechanical, electrical, fire safety, water supply and wastewater disposal systems used in the project shall be provided along with an indication of how initial and life costs were considered.

a. Purpose: Include the project description contained in the Contract Summary on the Contract Award CD-ROM disk.

b. Authority: Provide the following authorization statement under the heading "AUTHORITY" for the project; "The preparation of design documents was authorized for this project by the Contract Notice to Proceed dated _____ for Contract No. DACA63-00-C-00__."

c. Applicable Criteria: Provide a list of the general criteria that pertains to all disciplines used in the design. Specific criteria used in a particular engineering /architectural discipline shall be listed in the text of the appropriate discipline in Part 2 of the design analysis. Such criteria shall be referenced accordingly.

d. Project Description: Provide a description of the project and summary of economic factors influencing the choice of materials and systems used in the project.

3.3.1.2 Design Requirements and Provisions

This part of the design analysis shall provide statements of factors considered and provided in the design along with supporting justification of design decisions and design calculations. Include narratives for each of the following areas. See paragraphs: 50 PERCENT DESIGN REQUIREMENTS and 100 PERCENT DESIGN REQUIREMENTS for specific requirements.

a. Civil

b. Architectural

c. Interior Design

d. Structural

e. Mechanical

f. Plumbing

g. Electrical

h. Fire Protection

i. Environmental

3.3.2 Calculations

All calculations shall be placed in separate appendix volume(s). Calculations shall include a cover page similar to the design analysis narrative cover page, a table of contents, index page and a summary of criteria for each appendix on the first pages and the project title, and location identified on every page of the calculations. All calculation pages shall be clearly legible and photo-ready. Each discipline which requires calculations shall be consecutively numbered (Example: A-1, A-2, A-3 etc. for Water Supply and Wastewater Calculations and B-1, B-2, B-3, etc. for Structural Calculations) and the date. Cite criteria from which the calculations, rationale, and formulas are extracted by publication number, title, edition and page number. The cover page and each page of calculations shall also include the names of the persons originating and checking the calculations. The person checking the calculations shall be a registered professional engineer other than the originator. In addition, the signature and seal of the appropriate registered professional engineer responsible for the work shall appear on the cover page of the calculations for each discipline. Each appendix index page shall list subtopics (e.g. for Structural - Loads, Materials, References, Wind Analysis, Footing Design, Wall Design, Column Design, etc.) with pages numbers where each of these subtopics can be found in the calculations. Computer printouts shall be consecutively page numbered and identified similar to the calculations. Identify the computer program name, source, and version. All schematic models used for computer input shall be provided.

3.4 COMMON DESIGN DEFICIENCIES

The work involved in making corrections due to common deficiencies becomes lost effort and time for both the designer and the reviewer. Carefully compare the design and contract documents with all requirements at several points in the design process to avoid unnecessary changes at a later date. Some of the requirements which are most often overlooked include:

a. Requirements of the COE 2, Southwestern Division's ARCHITECTURAL AND ENGINEERING INSTRUCTIONS MANUAL (SWD-AEIM) have been repeatedly overlooked in the past.

b. Failure to incorporate the Fort Worth District's supplemental local requirements to the CEGS guide specifications.

c. Not using correct abbreviations or terminology on the drawings. Abbreviations must match what is used on the standard abbreviation sheet and terminology must match what is used in the standard technical guide specifications.

d. Not using the correct scales, north arrow designation, section cut system, or incomplete dimensioning on the drawings.

e. Not providing sufficient space for door operation hardware at doors which swing into a wall running perpendicular to the opening. 100 mm minimum is required between edge of door frame and perpendicular walls.

f. Not providing correct and complete Design Analysis information written in the present tense. The Design Analysis will be written

following the format indicated herein. A separate Fire Protection section in the Design Analysis with input from all disciplines is one area which is often overlooked and shall be included.

g. Not correctly presenting or coordinating (to avoid interference) features of Fire Protection, Noise Control, and Physical Security.

h. Not correctly referencing and cross referencing building sections, wall sections, details, etc.

i. Failure to read and use technical notes in editing the Technical Guide Specifications.

j. Failure to coordinate all disciplines prior to submittal of projects for review.

k. Improper use of fire-retardant wood. Fire-retardant wood is combustible; its use in buildings that are of noncombustible construction is extremely limited (see UBC for the minor allowable uses). Because of the potential for severe degradation, fire retardant plywood shall not be used in a roof or roofing system, or in structural applications.

l. Incorrectly listing trade names in door hardware specifications in lieu of ANSI numbers and failure to correctly specify hardware finishes.

m. Control joints in CMU walls and brick expansion joints in face brick are not shown on both architectural plans, elevations and structural plans, or are inconsistent. Note also control joint locating and coordination for floor tile per Tile Council of America recommendations.

n. Failure to delete all publications which do not apply to the particular project.

o. North is not oriented the same direction on all sheets (civil, site, arch).

p. Failure to use the latest edition (at time of Contract award) of applicable criteria unless a specific edition is specified.

3.5 DESIGN CERTIFICATION

The Contractor shall provide certification for each design submittal in accordance with paragraph SUBMISSION OF CONSTRUCTION DRAWINGS, SPECIFICATIONS AND DESIGN ANALYSES, subparagraph "Certifications," of Section 01015 DESIGN REQUIREMENTS AFTER AWARD.

3.6 50 PERCENT DESIGN REQUIREMENTS

Submit the following:

3.6.1 Drawings

Furnish all drawings that are required for the 100% submittal. Except for site work, utilities, foundations, and Building 4195, all drawings shall be

developed to approximately 50 percent completion. Site work, utilities, foundations, and Building 4195 shall be 100 percent complete.

3.6.2 Specifications

All specification sections required for 100 percent submittal. Specifications for site work, utilities, foundations and Building 4195 shall be 100 percent complete. All other specifications required for the completion of the buildings, and turfing shall be at least mark-ups of the required technical sections and trade sections. Include the identification of the "author" of any industry standard guide specifications used, any mandatory guide specifications required in para 3.2.6, and a table of contents listing all sections to be included in the project.

3.6.3 Submittal Register

Prepare a Submittal Register using ENG Form 4288 "Submittal Register" as specified in Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES (DURING CONSTRUCTION). Submittals for site work, utilities, foundations, and Building 4195 shall be 100 percent complete. Submittals for all other work shall be developed to the extent required to support the level of design included in this submittal.

Use the Corps of Engineers' Specsintact software to produce the submittal register. Section format must follow the format shown in Corps of Engineers guide specification CEGS-01020 CEGS TEMPLATE.

3.6.4 Civil

50 percent civil drawing submittal shall be a complete set of civil drawings without large scale details. All other drawings shall be complete except referencing of the large scale details. The drawings shall be complete, include all necessary and required details, thoroughly checked, and fully coordinated with the technical Specifications and all other Construction Documents. Removal work and details should be shown on separate drawings. The contract drawings shall fully describe the type and the scope of work required. The layout of individual sheets and the organization of the assembled set shall follow and communicate a logical sequence. General information shall be presented first, progressing to more detailed information. When assembling details, begin in the upper left-hand corner of the sheet with letters progressing to the right and down. When dimensioning, use arrowheads, not dots or slashes. The drawings shall include the following as a minimum:

Cover Sheet and index of drawings
Location and vicinity map including haul routes
Site demolition plan
Site plan and details
Grading and drainage plan
Utility plan with profiles and details
Pavement plan and details
Soils boring logs

3.6.4.1 Drawings

a. Location Plan and Vicinity Map: A Vicinity Map consists of a small scale drawing of the project location, similar to a road map. A Location Plan consists of a small scale drawing showing the Government property or reservation limit with the construction project site shown. The drawing shall show the facility approved Contractor Access and Haul Routes load limits on any bridges along haul routes, and the designated waste and/or borrow areas. A reproducible base sheet, if available, may be provided by the Omaha District for the Contractor's use in preparing the Location Plan.Upon request, a reproducible base sheet will be provided by the Fort Worth District for the Contractor's use in preparing the Location Plan.

b. Site Demolition Drawings (Removal Plan): New work and removal work should be shown on separate drawings. The type and the scope of removal work intended shall be clear from an inspection of the documents. Keyed notes for removal will be allowed.

   The removal plan will show the existing physical features and condition of the site before construction. This information should include the field survey to show all above and below ground utilities; buildings, drives, roads and parking areas, walks, and vegetation; and such facilities as retaining walls, underground storage tanks, foundations, existing contours, etc. Each physical feature to be removed shall be as indicated on the standard legend sheet, a legend on the removal plan, and properly noted: to be removed, to remain, or to be relocated.

c. Site Plan: The Site Plan shall show all the site layout information necessary to field locate the building, walks, parking lots, and all other appurtenances to be constructed on the project. All site related work to be constructed will be located by dimensions. The Site Plan will identify all site related items such as: curbs, pavements, walks, courtyards, bollards, trash enclosures, retaining walls, etc. in accordance with a standard legend sheet or with additional legends or notes. Site Plans shall be at a scale of 1:400, 1:500, or 1:600 (1" = 20' or 1" = 30'). No existing or proposed contours shall be shown on this Plan. The Site Plan, prior to adding the dimensions, should serve as the base sheet to the other Plans, such as the Utilities Plan, Grading and Drainage Plans and the Landscape Plan. The Site Plan will show all existing physical features and utilities within and adjacent to the work site that will remain after the proposed construction has been completed. This plan will also show any free zones, construction limits, and storage areas etc. Whenever the Site Plan occupies more than one sheet of drawings, a Key Plan shall be included. Additional plans showing specific areas of the site in smaller scales can be included if more detail is necessary.

   Show the building orientation and horizontal dimensional relationships to streets, walks, property lines, easements, fences and other structures. Space between structures will provide open areas in accordance with good land-use planning and due

consideration of future development plans. Fire clearance separations will be maintained for access for equipment acceptable to the installation (Fire Chief). Show geometric features of all roads, streets, sidewalks and parking areas. Provide details of all site features.

d. Grading and Drainage Plan: Provide a preliminary grading and drainage plan at a scale of 1:400, 1:500, or 1:600 (1" = 20' or 1" = 30'). Indicate tentative new and existing grading contours at 305 mm (1-foot) contour intervals. Provide spot elevations in sufficient numbers so that interpolation between contours is not required. Some examples are: corners of paved areas and parking lots, low points, high points, flow lines of ditches and swales, changes in degree of slope and grading at building corners to insure positive drainage from the facility.

   Indicate finished floor elevation of new building(s). It shall be a minimum of 300 mm above the highest point of the outside finished grade. Grade contours shall be at 240 mm250 mm intervals and spot elevations shall be provided at all site development features.

   Show layout of the new and existing storm drainage systems, including existing and new storm drainage flows, ditches, swales and piped systems.

   Provide the appropriate top of structure elevations and pipe invert elevations of both the new and existing drainage system.

e. Erosion Control Plans: Erosion control plans shall show locations of all sediment basins, diversion ditches, areas to receive rock blanket, and other erosion control structures, indicating the approximate drainage areas each will serve. Indicate the materials, construction and capacity of each structure.

f. Composite Utilities Plan With Profiles And Details: Provide a Composite Utilities Plan at a scale of 1:400, 1:500, or 1:600 (1" = 20' or 1" = 30'). Tentative new and existing utilities shall be indicated. Plans shall show layout of the new and existing storm drainage, gas, sanitary sewer, fire protection, electrical, communication, water, steam, and any other utility systems which need to be provided for. Include new and existing contours. Show mains and distribution lines as well as all appurtenances such as meters, manholes, and valves.

g. Grading Sections: Provide grading sections through the new building showing finished and existing grades.Grading sections through the new building showing finished and existing grades may be provided to supplement the required grading plan.

h. Pavement plan and details: Provide pavement plans for all parking lots, roads, equipment pads and sidewalks. Include cross sections of all paving designs and include details of curbs, gutters, pads, sidewalks, stairs, inlets and other features.

3.6.4.2 Soils Boring Logs

Provide all logs of soil borings provided by the geotechnical engineer.

3.6.4.3 Specifications

Coordinate the specifications with the drawings. Provide a list of specifications which will be utilized for the project and complete edited copies of special sections that cover those subjects which are not covered by CEGS guide specifications.The technical specifications shall be complete, fully coordinated with the drawings, and include all civil work. Special sections shall be prepared to cover those subjects for which no pattern guide specification is available. Notes to the Designer that accompany specifications shall be used in editing technical guide specifications. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the guide. These specifications shall be in final form for construction.

3.6.4.4 Design Analysis Narrative

Design analysis shall include the following:

a. References: Design references used in preparing the civil design.

b. Grading: A narrative of the grading design and criteria used.

c. Drainage: A narrative of the drainage design and criteria used. Include information on the storm drain pipe materials selected and their ability to withstand earth dead loads and live loads that will be imposed.

The Design Analysis should give the basis for the site design and should establish specific goals, objectives and priorities for site design of the project. Identify, explain and document use of design criteria and how the design meets goals, objectives and priorities. Identify the preferred site development concept. Document pollution prevention measures and other environmental considerations made during design. The 50 percent Design Analysis shall accepted before start of the Final (100%) Design.

3.6.4.5 Design Analysis Calculations.

Storm Drainage System Calculations shall include the following:

a. Drainage area map showing boundaries of each drainage area and respective drain inlet or culvert.

b. Storm run-off calculations for each drainage area.

c. Preliminary storm drain pipe sizing calculations.

3.6.5 Architectural

3.6.5.1 Drawings

50 percent architectural drawing submittal shall be a complete set of architectural drawings without large scale details. All other drawings shall be complete except referencing of the large scale details.

a. Removal (Demolition) Drawings - Plans and Elevations: New work and demolition work should be shown on separate drawings. The type and the scope of removal work intended shall be clear from an inspection of the documents. Keyed notes for removal will be allowed.

b. Floor Plans: Provide a double line Composite Floor Plan of the entire building, drawn at the largest scale practicable to include the entire building or floor level on a single sheet. This The building is may be of a size that will require the floor plans to be divided into multiple areas. See paragraph on Drawing Scales for plan scale requirements. Floor plans shall essentially be complete with the exception of large scale detail referencing. Floor plans shall be scaled double-line drawings showing the functional arrangement, material patterns, location of all openings and plumbing fixtures, all section cuts, wall types, all notes and leaders, all general notes, and all dimensions shall be completed. The plans shall indicate door swings, door numbers and window type; door and window schedules are required. A north arrow shall be shown on each floor plan. Enlarged toilet and stair plans shall also be included. The first composite plan sheet shall include a gross area tabulation comparing the actual square footage with the authorized square footage of the facility. Architect-Engineer suggestions for plan improvement shall be fully shown and justified. Include:

Overall, Control, Opening, and complete dimensioning
Match Lines for combining individual portions of floor plans
Room Names and Numbers
Structural Column or Bay Indicators
Wall and Building section cuts
Door Swings and Numbers
Window Types
Square Footage
General Notes

Also provide a Key Plan at a uniform location on all Floor Plan sheets which shows the interrelationships between the building portions. This key plan will also be used, scaled, and oriented in the same manner as the floor plan on all plan type drawings of all disciplines.

When dimensioning, use arrowheads, not dots or slashes. Where major structural elements are included as parts of architectural detailing, do not indicate sizes. These elements should all be fully defined as part of the structural design documents. Major

elements of mechanical and electrical equipment affecting space allocation, shall be shown on the architectural plan to the extent practicable and coordinated with other respective disciplines. When applicable, Government-furnished, Contractor-installed, or Government-furnished and installed items shall be shown as a dashed line.

c. Reflected Ceiling Plans: Reflected ceiling plans shall be completed including all notes, complete legends and pocheing patterns of all materials to be used. Reflected Ceiling Plans shall be provided for all spaces in the building. Reflected ceiling plans shall show the ceiling tile layout and location of gypsum wallboard and other ceiling types where applicable. All light fixtures, air diffusers, grilles, registers, exit lights, public address speakers, fire alarm strobe lights, sprinkler head layout, ceiling mounted equipment access panels or removable ceiling tile and grid elements, smoke and heat detectors, wall fire ratings, ceiling mounted equipment removal pathways, and other ceiling mounted items will also be shown on the reflected ceiling plans. The fixtures and other equipment shall be laid out in a regular pattern symmetrical with the ceiling tile grid, or symmetrical with the room centerlines, columns, windows, or other feature that dominates. All ceiling mounted items shown shall be fully coordinated with all other disciplines.

d. Roof Plan: Composite and larger area roof plan shall be complete including all notes, legends, slope indications, and roof and overflow drains. All elements located on the roof shall be coordinated with all disciplines. See paragraph on Drawing Scales for roof plan scale requirements.

e. Building Elevations: Provide all building elevations complete showing the appearance and architectural treatment. Elevations shall be dimensioned to show story height, total height, and relation to grade. Critical elevations such as top of finish floor, top of steel, etc. shall be indicated. All notes for materials shall be included. See paragraph on Drawing Scales for Exterior Building Elevation scale requirements.

f. Building Sections: Building cross section and longitudinal sections shall be included to show general interior volumes, framing method, relationship to adjacent structures, and height of ceilings and partitions. Identify materials used and necessary dimensions. See paragraph on Drawing Scales for Building Section scale requirements.

g. Wall Sections: Drawings shall include all wall section and stair section conditions including enclosed corridor showing vertical control elevations and dimensions with all materials labeled. The sections should normally be cut through doors, windows, and other critical wall section locations. Wall sections shall not be broken. Additional details shall be included when necessary to illustrate abutting adjacent buildings and important or unusual features. All horizontal dimensions shall occur on the plans and

vertical dimensions on the sections and elevations. See paragraph on Drawing Scales for Wall Section scale requirements.

h. Room Finish Schedules: Room finish schedule shall be complete. Include signage.

i. Door, Window, and Louver Schedules: Door schedule shall be complete including door and frame types, except referencing to door details and hardware sets. Window and louver schedules shall be complete including window and louver types except referencing to details.

j. Fire Ratings: Wall ratings and fire hazards shall be clearly indicated as required by the National Fire Protection Association Codes (NFPA). See Military Handbook MIL-HDBK-1008C, particularly Section 2.1 Basic Criteria and Section 2.1.2 Partitions. In addition to the wall rating criteria required by the Codes, provide a minimum of one-hour rated wall assembly around all Janitors Closets, Store Rooms, Mechanical and Electrical Rooms or Closets. Wall fire ratings shall be graphically shown by a continuous symbol or pattern within the wall on the reflected ceiling plan and/or on a Fire Protection/Life Safety Plan. When other functions coexist with the fire protection functions, their integration shall be clearly indicated with an analysis that describes how both functions will be served. Provide a separate, composite type floor plan which makes an accurate presentation of these various features and functions. By authorized written permission, where the building and features being shown are unusually simple, this information may be included on other drawings. Rated wall details shall include the design number of the testing laboratory certifying the rating.

k. Drawing Scales: Architectural work shall be drawn at the scales listed below. Other scales may be used only by written authorization through the Contracting Officer. All disciplines, except civil, should use the same scale for plan sheets.

	METRIC (SI)
Composite Plans (Note 1)	Varies
Floor Plans	1:5100
Reflected Ceiling Plans	1:5100
Detail Plans (Note 2)	1:20
Roof Plans	1:100
Exterior Elevations	Same scale as plan
Interior Elevations	1:50 min
Interior Toilet Elevations	1:20
Building Cross Sections	1:50
Wall Sections (Note 3)	1:10
Stair Sections	1:20
Details (Note 2)	1:5
Wall Types	1:5

Notes:

1. Scale of composite plan shall be as required so that the entire facility is drawn on one sheet without break lines.

2. The goal of this requirement is that the details be large enough to show all fixtures, accessories, equipment, materials, manner of construction, clearances required for proper maintenance, and complete dimensions. Toilet rooms and Equipment rooms are examples of the kind of spaces which shall be drawn as a Detail Plan. All details containing sheet metal flashing shall be 1:5.

3. May be 1:20 if pertinent details are shown at larger scale.

l. Modular Design: Modular Design practices shall be followed in the design of all masonry buildings or components of buildings. Dimensions shall be figured to whole or half-unit lengths (in increments of 100 mm) in order to reduce on-site cutting of masonry. Units less than 100 mm long shall be avoided.

m. Symbols: The Room and Door Numbering system shall be consistent for all buildings designed under any one contract. Room numbering shall start at the main entrance and proceed clockwise around functional areas.

n. Schedules: Schedules for room finish, doors, windows, louvers, etc., shall be clear and complete. As many columns as necessary should be provided in order to present the essential information. The "Remarks" column should not be used as a substitute for an information column. Normally a single item should be presented on each schedule line.

o. Dimensions: Dimensions must be complete, accurate and fully coordinated. Dimensions should be to points easily measurable in the construction, and should be laid out to eliminate refiguring in the field. Dimensions should be tied-in to column lines, etc.,

to facilitate checking. Plan dimensions for frame construction should be to face of stud (or sheathing) for exterior walls, to one face of stud for interior partitions, and to centerline of openings. For masonry construction, dimensions should be to one or both nominal faces of masonry and to jambs of openings.

p. Facility Elevation: The elevation of the first floor shall be indicated as 100 000 mm and shall be a minimum of 300 mm above finish grade. Elevation for other floors, footings, etc., shall be related to this figure. Sea level elevations shall not be shown on the building drawings. Elevations of the first floor above sea level are to be shown on the grading plan (Civil).

q. Access to Utilities: All utilities within the building, such as piping, ductwork, electrical work, etc., shall be concealed in finished areas. Provide plumbing chases in toilet areas. The clear space above ceilings and the size of chases must be carefully figured to accommodate piping slopes and connections, ductwork crossovers, and fittings, HVAC piping and valve service spaces, and similar situations. Access must be provided to valves, cleanouts, etc. Space provided for utilities systems must be adequate but should not be excessive.

3.6.5.2 Specifications

Coordinate the specifications with the drawings. Provide a list of specifications which will be utilized for the project and complete edited copies of special sections that cover those subjects which are not covered by CEGS guide specifications.

3.6.5.3 Design Analysis Narrative

The Design Analysis shall be essentially complete with emphasis on the following:

a. A statement indicating the basic criteria to be applied to the design including type of construction (noncombustible, etc.), category of construction (permanent, etc.), major fire protection and exit requirements, etc.

b. A description of materials for all major building components and of all interior and exterior finishes. The description of materials must include type of exterior wall construction, room finish schedule, window types, panel materials, etc. The description of finishes may be presented in schedule form.

c. A list of items on which additional criteria, clarification, or guidance is required.

d. The written presentation must include the designer's reasons for selecting specific materials, architectural compatibility, and architectural treatment in all cases in which the reason for selection is not obvious.

e. Site adaptation of standard drawings shall include the following in the design analysis:

(1) An outline of the selections made where the standards permit the designer a choice of design or material.

(2) An outline of items on the standard that do not conform to current criteria or to the design instructions, and suggested methods for changing the standards.

(3) An outline of errors found in the standards and suggested methods for correction.

(4) An outline of improvements the designer feels should be made to the standards, with full explanation and justification.

3.6.5.4 Design Analysis Format

The design analysis shall follow the format described herein and include the following:

a. The purposes, overall functions, and total capacities of the facility.

b. The design theme or visual appearance of the exterior and interiors of the building, and how this facility coordinates with the image criteria of the installation on which it will be constructed.

c. The number of personnel to use facility.

d. The type of activities and equipment involved.

e. The anticipated life of the functions to be accommodated.

f. The category of construction; permanent.

g. Functional and RFP requirements.

h. Functional areas, occupant capacities, and allocation, including a functional relationship matrix.

i. All items of equipment, required.

j. Occupational safety and health.

k. Handicapped accessibility.

l. Energy conservation energy budget goals.

m. Sound and vibration control.

n. Interior service areas.

p. Physical security; lock and keying, intrusion-detection, alarms, restricted access areas, interior guard support, and ties to local authorities.

o. Justification for selection of exterior and interior finishes and materials.

p. Moisture vapor control.

r. Lessons learned incorporated into the design.

3.6.5.5 Design Objectives and Provisions

a. Adaptation of the building to the size, shape, and orientation of the site.

b. Building layout to establish convenient circulation flows during normal operation and emergency evacuation activities, for materials, equipment, services, and people.

c. Grouping spaces into sound-compatible zones and protective 0construction zones, e.g., for fire and storm.

d. Space layout compatible with modular (structural and environmental) support systems.

e. Type of construction materials, architectural systems, and finishes.

f. Building expendability/changeability.

g. Physical security.

h. Barrier-free design.

i. Energy conservation (insulation, orientation).

j. Acoustical design.

k. Moisture vapor condensation design.

l. Composition of masses and spaces, architectural compatibility and architectural details to reflect the design theme and desired image, and the scale and nature of the activities involved.

m. Perception of the building details and volumes. (Specific provisions made, e.g., an identifiable sequence of viewing positions for experiencing the interior and exterior architectural design.)

n. Enhancement of materials and systems maintenance and operation.

o. Economy of building construction, operation, and maintenance: life-cycle cost effectiveness.

p. Coordination with Installation or Outside Agencies

q. Physical security support.

r. Occupational safety and health, as required.

s. Government furnished equipment.

t. Operations and maintenance support.

u. Government furnished and installed Communications Cables.

3.6.5.6 Checklists

Fire Protection, Code Analysis and Handicapped Checklist shall be included in the Design Analysis. See Attachments A and B at the end of this Section.

3.6.5.7 Design Analysis Calculations

Calculations shall include the following:

a. Net room areas, occupant capacity and gross building areas. (Categorize areas and capacities under the titles of "Operational Space Requirements", "Administrative Space Requirements", "Storage Space Requirements", and "Support Space Requirements".)

b. K-values for each wall, window, door, or roof type studied or selected.

c. Acoustics.

d. Rainfall intensity relative to roof area and roof drain size and number calculations.

3.6.6 Interiors

3.6.6.1 Drawings

A furniture footprint indicating proposed furniture layout shall be incorporated into the drawings for coordination with building utilities and indicate spatial relationships. All furnishings including consoles are not considered part of the construction contract and shall be indicated as such on the drawings by the use of dashed lines.

3.6.6.2 Technical Specifications

Technical specifications shall be provided and coordinated with the drawings and design analysis. Specifications shall be edited to identify proposed product and installation requirements. Where materials or installation requirements are not covered in the provided specifications, information shall be prepared to cover these items.

3.6.6.3 Design Analysis/Narrative

The design analysis will contain an explanation of the desired image or visual appearance of the interior of the facility.

3.6.6.4 Building Related Exterior/Interior Design (SID)

a. Definition: SID is the term referring to the building related exterior and interior finishes. An SID shall involve the selection and sampling of all applied finishes necessary to complete the building's interior and exterior architectural features. Finishes include, but are not limited to, floor, wall and ceiling finishes; roofing; siding and trim; interior paints and finishes; wall covering; trim items; carpet; floor, wall and ceiling tiles; doors; plastic laminates for cabinet work, and signage. All of the SID components shall be included in the base bid.

b. Interior and Exterior Materials, Finishes, Textures and Colors: Specific project and Army requirements for interior and exterior materials, finishes, textures and colors include:

(1) General: Finishes, materials and colors chosen shall be in accordance with the RFP requirements and the Post/Base's Installation Design Guide. The design shall meet fire, health, safety, and accessibility codes and standards.

(2) Exterior: The exterior portion of the materials and finishes design effort emphasizes the overall exterior appearance and the attention to details that produce a good architectural solution. The exterior solution shall satisfy the architectural and functional requirements of the design program.

(3) Interior: The interior portion of the materials and finishes design ties the exterior of the facility to the habitable spaces. The material and finish selection shall be appropriate to the function of the space.

c. Submittal Requirements for SID Notebooks (Color/Finish Sample Boards)Furnish 4 sets of color/finish board(s) with attached samples of the proposed building-related finish materials mounted on 215 mm by 280 mm by 1.5 mm (8-1/2 inch by 11 inch by 1/16 inch) thick mat board in three-ring notebooks. Epoxy glue, hot-melt glue, or contact cement shall be used to attach samples; Scotch tape, double-backed tape, or rubber cement will not be acceptable. Heavy samples shall be mechanically fastened. Photographs or colored photocopies of SID materials are not acceptable.

The notebooks shall be labeled on the outside spine and front cover with the phase percentage, SID, project title and location, Contract number, date, and the Contractor's name and address.

Final color/finish board will be submitted at the 50% Design Submittal.

d. Sequence and Content of SID SubmittalThe sequence and content of SID Submittals shall be as follows:

Title Page.

Table of Contents.

Narrative of Interior Design Objectives.

Exterior Elevation Drawing.

Exterior Building Material Legend.

Exterior Building Material Color Board.

Interior Color Placement Plan.

Interior Color Boards (according to color placement plan).

Each sample shall indicate color, texture, and finish; and, if patterned, shall be large enough to define full pattern. Samples shall be identified as to type of material, area of installation, manufacturer, and transmittal number under which certification of the material represented will be submitted in accordance with the requirements of Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES (DURING CONSTRUCTION).

Interior Signage Color Boards.

Interior Floor Plans.

Room Finish Schedules.

Signage Plans.

3.6.7 Structural

3.6.7.1 Drawings

Drawings shall include roof framing plans, second floor framing plans (if applicable), floor slab plans, and 100 percentfoundation plans and details.

a. Roof framing plans shall show sufficient details to clearly indicate the type of framing system used, size and spacing of members and their elevations.

b. The location of all in-wall columns or pilasters shall be shown and all building structural members shall be at least outlined.

c. Foundation and slab plans shall show the size and location of all foundation elements, such as foundation walls, grade beams and footings. Elevations for footings shall be indicated on the plan. Plans for slabs-on-grade and exterior stoop slabs at building entrances shall show location and type of joints, slab thicknesses and reinforcing, elevation of slab surfaces, and any other design

features, such as equipment bases, heavy Lab equipments, isolated foundations and the in-slab electrical raceway, which affect the slab design.

d. The sizes, locations and elevations of footings shall be shown.

e. Slab plans shall be coordinated with the Electrical sheets and shall indicate the locations of any in-slab electrical raceway trench ducts or similar items.

f. Concrete slab-on-grade thicknesses and sections shall be shown.

g. Proposed treatment of special foundations and other unique or complex features and details shall be shown on the drawings.

h. Provide Elevation views, sections, and details necessary to illustrate the design at a 50% level of completion shall be provided.

i. Drawings shall also include overall building plan dimensions, north arrows, and design notes.

3.6.7.2 Specifications

For the 50% design submittal the Contractor shall provide a listing by title and number of all Technical Specifications proposed for use in the final structural design.

3.6.7.3 Design Analysis

Design analysis shall follow the format described above in Paragraph "Design Analyses" and the specific content shall be essentially as outlined below.

a. Design Criteria References: A list of design criteria references, such as Uniform Building Codes, ACI Standards, AISC Specifications, etc., which were used in the design of the project shall be included in the narrative.

b. Design Loads and Conditions: A list of structural design loads and conditions shall be provided, including:

- Snow load and wWind load parameters;
- Roof live loads;
- Floor live loads, identifying each loading with usage and the room or space where used;
- Lab Equipment loads, identifying each loading with usage and the room or space where used;
- Foundation design criteria, including the design depth for footings, allowable soil bearing pressure, equivalent fluid densities (or lateral earth pressure coefficients) for the design of earth retaining structures and building components, modules of subgrade reaction, and any other pertinent data derived from the recommendations of the Foundation Analysis, a copy of which shall

be included as an Appendix to the design analysis.

c. Structural Materials: A list of structural materials shall be provided, together with the stress grades and/or ASTM designations, as applicable, for structural steel, concrete, and reinforcing steel; the series for steel joists; and identification of the proposed use of each material in the structure.

d. Availability of Precast Concrete Units: Where precast concrete units of particular cross section(s) and concrete strength are a part of the structural design, verification of their availability from precast producers in the project vicinity shall be documented. Acceptable documentation consists of letters from the producers or a written statement by the Contractor identifying the name and address of the precaster(s), description of units and concrete strength(s) available, date when availability was verified, and name of Contractor's staff member who obtained the verification.

e. Description of the Structural System: A concise description of the proposed structural system for the building, together with the reasons for its selection, shall be provided. All principal elements of the structural system selected shall be described. Typically, these shall include:

- Roof systems, deck material, type and span direction of secondary roof framing members;
- Primary supporting members for the roof, whether steel frame, concrete frame, and/or concrete or masonry bearing walls;
- Masonry walls, type of material, and whether load bearing or non-load bearing, with location of load-bearing walls defined;
- The proposed system for resisting lateral forces (wind and earthquake) and transferring them to the ground, whether diaphragms, shear walls, braced or moment resisting frame, etc;
- Foundations, whether spread footings or continuous footings with concrete foundation walls;
- Concrete slab-on-grade floors, description of use and the location and types of crack control joints;
- The proposed treatment of any unusual structural loadings, features or unique solutions to structural problems;
- Measures taken to compensate for expansion/contraction and crack control in masonry walls;
- Identification of any major vibrating elements and measures taken to isolate them.
- Identification of any major Lab equipments and measures taken to support them.

3.6.7.4 Design Analysis Calculations

The extent of the structural calculations shall be indicative of a design which has reached a 50% level of completion. Computations shall include snow, wind, dead and live loads. Computations shall show sizing and spacing of structural members for roof framing, sidewalls and foundation sizes.

3.6.8 Mechanical

Compliance with the Contract RFP design requirements for the building mechanical systems will be reviewed at the submitted 50 percent drawings, design analysis, and specifications. Any conflicts in the design requirements or lack of thorough understanding of the nature and scope of work shall be identified and resolved prior to submittal of the 100 percent design. The Contractor must comply with Attachment C for mechanical room sizing.

3.6.8.1 Design Drawings

The 50 percent design drawings shall be fully coordinated with the design analysis. Sufficient plans, piping diagrams, sections, flow diagrams, details, schedules, and control diagrams/sequences shall be provided as necessary to define the required design intent. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. Unless otherwise indicated, all floor plans shall be drawn at a minimum 1:100 scale and shall show room names and numbers. Sheet reference number sequencing shall be in accordance with the Fort Worth District CADD Standards Manual. Submittal drawings shall include, but not limited to, the following:

a. Mechanical Abbreviation, Legend, and General Notes Sheet: This sheet shall include all mechanical abbreviations and symbols that will be used on the drawings. Symbols shall be grouped into sections; as a minimum, provide sections for Plumbing and HVAC. Control drawing symbols shall be shown on separate drawing.

b. Plumbing Drawings: The following plumbing drawings shall be provided:

<u>Composite Plumbing Plan</u>: For reference, composite plumbing plans shall be provided showing all plumbing systems for each level. Building outline and pertinent HVAC equipment shall be half-toned with plumbing system at standard lineweight. No construction notes shall be provided on the plans. A key plan and room schedule legend shall also be included on the composite plumbing plan sheets.

<u>Plumbing Plans</u>: Plumbing plans showing the design and tentative layout of the domestic hot and cold water distribution systems; make-up water piping; soil, waste and vent piping; and storm water drainage system shall be provided. Plans shall show all anticipated routing of piping systems from the connections within the structure to a point 2 meters outside the structure. The grade of all drain lines shall be calculated and invert elevations established. All plans shall show all plumbing fixtures. All electrical panels/equipment and pertinent HVAC equipment (AHU's, condensing units, etc.) shall be outlined in half-tone on the plumbing plans. Plans may be drawn at 1:100 scale as long as legibility is not compromised. Plumbing fixtures and drains shown on the drawings shall be designated by the same identification system used in the Technical Specification and Plumbing Fixture Schedule. Soil, waste, vent and storm drainage piping shall be shown

on separate sheets from cold and hot water distribution piping and make up water piping as a minimum. A roof plan shall be provided to show and sanitary vent penetrations. Additional sheets shall be provided as need so legibility is not compromised.

Enlarged Mechanical/Boiler Room Plumbing Plan: An enlarged mechanical/ boiler room plumbing plan drawn at a minimum 1:50 scale shall be provided. Plan shall show layout of all plumbing equipment and piping within the rooms. In addition to all the plumbing systems required, the plan shall show half-toned outlines of all HVAC equipment located in the room, gas service, condenser water or refrigerant piping entrances, the fire protection entrance and risers, and the outline of any electrical panels or equipment located in the room.

Plumbing Detail and Schedule Sheet: The following details shall be provided: roof/overflow drains, gas fired water heater and hot water storage tank, and water service entrance. The provided plumbing fixture schedule and a contractor generated gas fired water heater schedule shall be provided.

c. Mechanical HVAC Drawings: Show on mechanical HVAC drawings, all items of mechanical equipment, including boiler room equipment, chilled water equipment, condenser water equipment, air handling units, air distribution and exhaust systems, etc., to clearly illustrate all HVAC system designs, and to determine proper space allocation within the intent of the architectural layout requirements. Plans and sections shall be developed sufficiently to insure that major equipment items, piping, and ductwork cause no interference with structural members, electrical equipment, etc. The following HVAC drawings shall be provided:

Composite Mechanical HVAC Plan: For reference, composite mechanical HVAC plans shall be provided showing all associated mechanical systems for each level. For review purposes, all interior walls that extend from the floor to the roof structure shall be identified on the plans. Wall identifications shall be omitted from the 100 percent Corrected Design and Construction drawings. Building outline and electrical equipment shall be half-toned with mechanical systems at standard lineweight. No construction notes shall be provided on the composite mechanical HVAC plans. A key plan and room schedule legend shall also be included on the composite mechanical HVAC plan sheets.

Mechanical HVAC Plans: Mechanical HVAC plans showing the design and tentative layout the mechanical equipment and piping system. Air supply and distribution systems, and ventilation and exhaust systems shall be provided. Air supply and distribution systems shall show all ductwork, including supply and return mains, branch ducts, ductwork to diffusers, all diffusers grilles and registers, and all fire dampers. For the 50 percent submittal, all supply and return mains shall be shown as double-lined, while branch ducts, takeoffs, and ductwork to diffusers may be single-lined. The final design submittal shall show all ductwork as double-lined. Piping 6 inches and larger shall be shown as double-lined for the 50 percent and final submittals. All electrical panels/equipment and pertinent plumbing equipment shall be

outlined in half-tone on the HVAC plans. Plans may be drawn at 1:100 scale as long as legibility is not compromised. Air supply and distribution systems and ventilation and exhaust systems shall be shown on separate sheets from HVAC piping systems as a minimum. Additional sheets shall be provided as needed so legibility is not compromised.

Enlarged Mechanical and Boiler Room HVAC Plans: Enlarged mechanical room and boiler room HVAC plans showing all mechanical systems drawn at a minimum 1:5025 scale shall be provided. Plans shall show layout of all HVAC equipment, piping, and ducts located within the rooms. Equipment shall include (but not be limited to) air handling units with associated outside air, relief air, and supply/return air ducts, plenums and louvers; CW,and HW and condenser water pumps, exhaust/supply fans, and ducts, unit heaters, boilers,separators, and DDC control panels. Plans shall show dedicated access space for items requiring maintenance. In addition to all the mechanical HVAC systems required, the plan shall show half-toned outlines of all major plumbing equipment, the water service entrance, fire protection entrance and riser, and any electrical equipment or panels located in the room.

Mechanical Room Sections: Preliminary mechanical room section shall be provided to ensure that major equipment items, piping and ductwork will fit as designed.

Hot Water System Flow Diagram: Provide a hot water flow diagram showing the boiler, pumps, and all connected heating equipment. Each equipment item shall show associated GPM flow rate. All thermometers, pressure gauges, valves, and piping shall be shown on the flow diagram.

Airflow Diagrams: Airflow diagrams shall be provided for each air handling system showing CFM quantities for outside air, return air, and supply air. Supply-air side of each diagram shall be broken down into zones, with each zone supply, return, and relief/exhaust CFM quantities identified.

Mechanical Detail Sheets: Installation details showing all specification requirements such as isolation and balancing valves, thermometers, pressure gauges, equipment pads, strainers, vents, hangers, vibration isolation, etc. shall be provided for each item of mechanical equipment. As a minimum, and as applicable, the following mechanical details shall be provided:

Hot Water Boiler Piping Diagram
Through-wall Unit Detail
Vertical Unit Heater Piping Detail
Wall Propeller Supply/Exhaust Fan
In-line Supply/Exhaust Fan
In-line Pump
Air Handler Cooling Coil Piping Detail and Installation Detail
Condensing Unit Piping Detail and Installation Detail
Air Handler Heating Coil Piping Detail
Terminal Unit Heating Coil Piping Detail

Mechanical Equipment Schedule Sheets: Schedules shall be provided for

each item of mechanical equipment. Furnished typical equipment schedules shall be used whenever possible and shall be revised and completed as necessary to suit the project requirements. In addition to the equipment schedules, damper and control valve schedules shall also be provided.

d. HVAC Control Drawings: One-line type control diagram showing all DDC interface points, a detailed sequence of operation, and a DDC control points list shall be provided for all mechanical equipment and systems. Sequence of operation for each item of equipment and system shall be sub-sectioned into paragraphs describing discreet operational requirements.

HVAC Control Diagrams: A Control Diagrams shall be provided for each system or item of equipment. Systems diagrams shall include every major component installed in or connected to the system, and only one system shall be shown on each diagram. Control Diagrams shall schematically show all sensors, controllers, actuators, indicators, and operator interface devices that are required for the complete automatic control and monitoring of the system. All sensing, controlling, activating, indicating and interfacing devices shall be shown with all functional interconnections to inputs and outputs. All associated thermometers and pressure gauges, located in their correct mechanical locations, shall also be shown on the diagrams.

Sequence of Operations: Sequence of Operations shall be provided for each item of equipment or system and shall fully describe the intended operation of the equipment or system in all different operating modes. Sequences shall include a description of all indication instrumentation, alarm conditions, and automatic actions to be taken upon occurrence of alarm conditions. Design setpoints shall be specified and indicated as being adjustable.

Control Points Lists: Provide DDC control points lists for all items of equipment and systems. The following drawings shall be provided:

HVAC Control Plan: This sheet shall show location of all thermostats and equipment controlled, variable frequency drives and equipment controlled, and DDC panel locations.

HVAC Controls Legend: This sheet shall include all control abbreviations and symbols that will be used on the drawings. Furnished Controls Legend sheet shall be used as a basis for all abbreviations and symbols used on the Final Control Drawings.

Misc Systems: These sheets shall include all miscellaneous equipment items such as supply/exhaust fans, unit heaters, fan-coils, fintube, controls air compressor, etc. that are not interlocked to the main heatingHW, CW, condenser water, or air handling unit systems. Provide one-line control diagram, sequence of operation, and DDC control points list for each item of equipment on the same sheet.

Heating Water System: Provide a heating water system control diagram, sequence of operation, and DDC control points list.

Condensing Units: For each condensing unit, provide a system control diagram, sequence of operation, and DDC control points list.

Air Handling Systems: For each air handling system, provide an air handling system control diagram, sequence of operation, and DDC control points list.

3.6.8.2 Technical Specifications

Submit specification sections to specify the quality, characteristics, installation procedures, commissioning and testing requirements of all items of the proposed mechanical design.

3.6.8.3 Design Analysis Narrative

The narrative portion of the design analysis shall contain a narrative description and analysis for each of the mechanical portions of the design. The basis and reasons for specific engineering decisions, special features, unusual requirements, etc., shall be explained or summarized as applicable. If it is necessary to deviate from criteria or standard practice, reasons shall also be included. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear picture and understanding of all included work so that acceptance will be granted. Narrative shall be complete relative to scope and intended design approaches. The total scope projected to final design shall be outlined in a form that will be conveniently adapted, expanded, and detailed at the final design stage. If alternatives are to be evaluated and selected by the designer, findings (pros and cons) and conclusions shall be included. The design analysis shall carry a complete narrative for every item and system covered in the design, and shall include, but not be limited to, the following:

a. Index: Provide a design analysis index identifying all main and sub-paragraph headings.

b. Project Summary: Provide a brief description of the mechanical design objectives.

c. Applicable Criteria: A list of all applicable criteria used for basis of design.

d. Technical Specifications: A list of Technical Guide Specifications that will be used for the project.

e. Design Conditions: A list of Mechanical HVAC design conditions including elevation, latitude, heating/cooling degree days, winter and summer outside design temperatures, inside design temperatures for all spaces, ventilation rates, etc. shall be provided.

f. System Descriptions: Provide a complete description of all building systems; include the designer's reasons for selecting specific materials, systems, etc. in which the reason for selection is not obvious. System descriptions for proposed mechanical systems shall be include, but not limited to, the

following:

Plumbing System
Hot Water Heating System
Condensing Unit Refrigeration System
Condenser Water System
Air Supply and Distribution Systems
Ventilation and Exhaust Systems
Direct Digital Control System (DDC)
Power Outage Start-Up Sequence

g. HVAC Zone Descriptions: A tabulated summary of the heating and cooling load shall be provided. The data shall be broken down by air handling systems, zones, and rooms shall include, the heating and cooling load; the supply, return and ventilation CFM; and heating water GPM for each zone.

3.6.8.4 Design Analysis Calculations

The Design Analysis calculations shall provide an estimate of the heating, cooling, and ventilation loads to determine a preliminary selection of the type and size of mechanical equipment to be used. Design calculations shall be provided in sufficient detail to enable the reviewer to get a clear understanding of all work to allow acceptance. Backup data shall be furnished to support basic design decisions related to sizing of major equipment and materials, and performance of specific systems or equipment. Manufacturer's catalog data sheets shall be provided for each item of equipment selected. Heating and cooling load calculations shall be performed by computerized procedures. Charts, curves, tables, and graphs used in support of calculations shall be provided. Such data must be from a recognized source. Design calculations and computations shall be provided for all systems and shall include, but not be limited to, the following:

a. Index: Provide a design analysis index identifying all calculation items.

b. Design Conditions: A list of Mechanical HVAC design conditions including elevation, latitude, heating/cooling degree days, winter and summer outside design temperatures, inside design temperatures for all spaces, ventilation rates, etc. shall be provided.

c. Zone Air-Conditioning Loads: Preliminary heating and cooling calculations shall be prepared using computer software based on the transfer function method (TETD/TA) as described in the ASHRAE Handbook Fundamentals. As a minimum, separate cooling calculations shall be provided for each temperature control zone.

d. Psychometric Charts: A psychometric chart, corrected for site elevation, shall be plotted for each air handling system. All points in the conditioning process (e.g., space condition, return air, outside air, mixed air, fan temperature rise, coil leaving condition) shall be clearly identified on the psychometric chart and verification of both sensible, latent, and total capacity shall be shown using the appropriate data from the chart.

e. Equipment Selection Data: Provide computerized selection data where manufacturer's selection software is available. Provide catalog selection data if manufacturers selection software is not available.

f. Catalog Cut Sheets: Catalog cut sheets for each equipment item shall include where relevant, but shall not be limited to, all relevant curves and graphs, input and output capacities, component description and configuration, electrical requirements, accessories, dimensional and weight data, sequence of operation, and manufacturers specifications.

g. Mechanical Ventilation: CFM calculations for each area requiring mechanical ventilation for cooling.

h. Ventilation: Ventilation CFM calculations and criteria for provide all areasbreak rooms, toilets, restrooms, and janitors closets,ect.

i. Domestic Water Demand: Calculations for determining the size of the domestic cold water supply line to the building shall be provided.

j. Domestic Hot Water Demand: Calculations for domestic hot water demand.

k. Electrical Load Summary: A summary of all mechanical equipment and the associated electrical load requirements shall be provided.

3.6.9 Electrical

Determine compliance with the design requirements for the building electrical systems by a review of the Contract RFP requirements, design analysis, and specifications. Conflicts in the design requirements or lack of thorough understanding of the nature and scope of work shall be identified and resolved before submittal of the 50 percent design.

3.6.9.1 Design Drawings

Fully coordinate the 50 percent design drawings with the design analysis. Provide sufficient plans, single-line diagrams, riser diagrams, details, and schedules as necessary to define the required design intent. Floor plans shall use the architectural floor plans as a basis with the building outline half-toned. Unless otherwise indicated, all floor plans shall be drawn at a minimum 1:50 scale and shall show room names and numbers. Sheet reference number sequencing shall be in accordance with the Ft. Worth District CADD Standards Manual. Submittal drawings shall include, but not be limited to the following:

a. Electrical Legend: Describe and define the electrical and communications symbols used on the plans.

b. Electrical Abbreviations: Define abbreviations used on electrical

plans. This information may be included on the electrical legend.

c. Drawing Notes: Identify drawing notes by a numerical label to further clarify or describe the design engineer's intent.

d. One-Line Diagram: Detail the complete electrical system with a simplified one-line diagram. Include circuit breaker ratings; transformer ratings (including K-ratings) and connection configuration; switchboard ratings (including metering); panelboard current and ampere interrupting current (AIC) ratings; raceway and conduit sizes motor starter ratings; and conductor and ground size.

e. Riser Diagram: Illustrate the electrical equipment locations.

f. Power Plan: Detail the electrical wiring for equipment other than lighting.

g. Lighting Plan: Detail the electrical wiring and switching for lighting.

h. Lighting Fixture Schedule: Detail the lighting fixture types to be provided.

i. Panelboard Schedules: Detail the circuits and circuit breakers or fuse locations in all panelboard known at this design level.

j. Emergency Systems: Detail the electrical requirements for emergency systems such as emergency lighting and fire alarm system (coordinate with fire protection plans).

k. Site Plan: Detail the extension of the over head electrical systems and detail underground electrical and communications ducts.

l. Communications System: Detail the communications systems including data and telephone. Typical details are provided in the U. S. Army Installation Information Infrastructure Architecture (I3A) Design and Implementation Guide, Pages 14-21 and 36-40. These drawings show the U.S. Army interpretation of the EIA/TIA standards and shall be used in designing the communications systems. Drawings may be modified with U.S. Army COE approval to reflect specific needs of this project.

m. Security System: Detail the security camera, alarm requirements and riser diagram.

n. Cathodic Protection System: Detail test point construction and locations, sacrificial anode systems, impressed current systems, etc.

o. Miscellaneous Details: Provide communications manhole details, electric vault details, special light fixture details, etc.

3.6.9.2 Technical Specifications

Submit specification sections to specify the quality, characteristics, installation procedures and testing requirements for all items of the proposed electrical design.

3.6.9.3 Design Analysis Narrative

The narrative portion of the design analysis shall contain a narrative description and analysis for the following portions of the electrical design:

a. Project Summary: Provide a brief description of the electrical design objectives.

b. Applicable Criteria: A list of all applicable criteria used for the basis of design.

c. Technical Specifications: A list of Technical Guide Specifications that will be used for the project.

d. Design Conditions: A list of electrical design conditions.

e. System Descriptions: Provide a complete description of all electrical and communication systems. Include the designers reasoning for selecting specific materials and systems for which the reason is not obvious. System descriptions shall include, but not be limited to the following:

Overhead and Underground Exterior Electrical Distribution
Exterior Communications Distribution
Interior Electrical Distribution
Interior Communications Distribution
Interior and Exterior Lighting
Grounding
Emergency Power
Cathodic Protection

The basis and reasons for specific engineering decisions, special features, unusual requirements, etc., shall be explained or summarized as applicable. Reasons shall be provided if it is necessary to deviate from criteria or standard practice. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear understanding of all included work so that acceptance will be granted. Narrative shall be completed relative to scope and intended design approaches. The total scope projected to final design shall be outlined in a form that will be conveniently adapted, explained, and detailed at the final design stage. If alternatives were to be evaluated and selected, pro and con findings and conclusions shall be included.

3.6.9.4 Design Analysis Calculations

The design analysis calculations shall provide an estimate of electrical loads to determine a preliminary selection of the type and size of electrical equipment to be utilized. Design calculations shall be provided

in sufficient detail to enable the reviewer to get a clear understanding of all work to allow acceptance. Backup data shall be furnished to support basic design decisions related to sizing of major equipment, material selection, and performance of specific systems or equipment. Manufacturer's catalog data sheets shall be provided for each item of equipment selected. Calculations may be performed by manual or computerized procedures. Use of standardized charts, curve, tables, and graphs will generally be acceptable for portions of required calculations in lieu of specific calculation procedures. Such data must be from a recognized source that is identified in the design analysis and shall be included with the calculations. Design calculations and computations shall be provided for all systems and shall include, but not be limited to the following:

a. Service: Sizing of building electrical services based on estimated maximum demand.

b. Transformers: Sizing of exterior and interior transformers.

c. Electrical Conduit: Sizing of conduit for the interior electrical distribution system.

d. Feeders: Sizing of main feeders, including motor circuits. Calculate voltage drops.

e. Branch Circuits: Sizing of branch circuits, including motor circuits. Calculate voltage drops.

f. Panelboards: Sizing of panelboards including circuit protection.

g. Illumination Calculations: Calculations for interior and exterior lighting. Calculations shall be adjusted to compensate for special applications: irregularly shaped rooms, open sides, ceiling obstructions, corridors, etc.

h. Short Circuit Evaluation: The maximum possible fault current at the building service, each panelboard, and distribution panel shall be calculated.

i. Cathodic Protection: Size the cathodic protection system components.

3.6.10 Fire Protection

Compliance with the Contract RFP design requirements for the building fire protection systems will be reviewed at the submitted 50 percent drawings, design analysis, and specifications. Any conflicts in the design requirements or lack of thorough understanding of the nature and scope of work shall be identified and resolved prior to submittal of the 100 percent design.

3.6.10.1 Design Drawings

The 50 percent design drawings shall be fully coordinated with the design analysis. Sufficient plans, diagrams, sections, and details shall be

provided as necessary to define the required design intent. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. Unless otherwise indicated, all floor plans shall be drawn at a minimum 1:100 scale and shall show room names and numbers. Sheet reference number sequencing shall be in accordance with the Tri-Service Standards. Submittal drawings shall include, but not limited to, the following:

3.6.10.2 Fire Protection Plans

Show on fire protection plan drawings:

- fire service entry and size to a point 1525 mm (5 feet) outside of building;
- system riser and size;
- zone risers, fire department connection, alarm bell, detectors, zones, room by room occupancy hazards and ceiling types per zone in tabular format, general description of system, applicable NFPA codes listing, sprinkler type per ceiling and application;
- water demand data, including design density, hose allowance, and design area for each applicable occupancy hazard; and
- a note stating that system shall be hydraulically designed.

Plans shall not show sprinkler piping or heads, unless it is necessary for coordination or system definition in special applications.

3.6.10.3 Fire Protection Detail Drawings

Show on fire protection detail drawings:

- mechanical riser diagram,
- electrical riser diagram;
- any necessary sections to show routing of piping or sprinkler head locations, fire service entrance detail, exterior wall and slab penetration details, hydraulic design data from flow test provided by Government, hydrant designations from flow test, and fire protection symbols list.

3.6.10.4 Site Plan

Site plan shall include:

- underground fire service main routing and size, from point of connection at existing water main, to building entry point;
- and fire hydrant locations used in flow test.

Fire hydrants shall be labeled to match flow test designations shown on drawings and described in design analysis.

3.6.10.5 Life Safety Plan

Show on Life Safety Drawing:

- location of fire separation walls, column, floor and roof protection,

- path of travel for emergency egress and panic exits,
- access to building for fire fighting,
- rated doors and windows,
- requirement for mechanical and electrical penetrations through fire separation walls and floors,
- placement of fire extinguishers, and
- occupancy types.

3.6.10.6 Technical Specifications

Submit specification sections to specify the quality, characteristics, installation procedures, commissioning and testing requirements of all items of the proposed fire protection design.

3.6.10.7 Design Analysis Narrative

The narrative portion of the design analysis shall contain a narrative description and analysis for each of the fire protection portions of the design. The basis and reasons for specific engineering decisions, special features, unusual requirements, etc., shall be explained or summarized as applicable. If it is necessary to deviate from criteria or standard practice, reasons shall also be included. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear picture and understanding of all included work so that acceptance will be granted. Narrative shall be complete relative to scope and intended design approaches. The total scope projected to final design shall be outlined in a form that will be conveniently adapted, expanded, and detailed at the final design stage. The design analysis shall carry a complete narrative for every item and system covered in the design, and shall include, but not be limited to, the following:

a. Index: Provide a design analysis index identifying all main and sub-paragraph headings.

b. Project Summary: Provide a brief description of the fire protection design objectives.

c. Applicable Criteria: A list of all applicable criteria used for basis of design.

3.6.10.8 System Descriptions

Provide a complete description of all fire protection systems; include the designer's reasons for selecting specific materials, systems, etc. in which the reason for selection is not obvious. System descriptions for proposed fire protection systems shall include, but not limited to, the following:

Pre Action Sprinkler Systems for the Warehouse Building 4195

Wet Pipe Sprinkler System for the Administration Building 4199

Dry Pipe Sprinkler System for the Precious Metal Building 4234

Fire Alarm and Detection System for Buildings 4195, 4199, and 4234

Fire Pump for the Warehouse Building 4195

Life Safety Systems and Configurations

3.6.10.9 Fire Protection Zone Descriptions

A description of zones served by each zone riser. A description of fire alarm system zones.

3.6.10.10 Design Analysis Calculations

The Design analysis calculations shall provide an estimate of hydraulic feasibility based on, water flow demand criteria shown on drawings and in design analysis, system configuration, and hydraulic data from flow test provided by Government. Hydraulic calculation must be based on sound engineering judgement and shall indicate conclusive proof that the sprinkler system can be constructed and hydraulically designed to perform in accordance with NFPA 13, using reasonable sprinkler pipe sizes. Although design drawings shall be performance based, underground fire service and system riser sizes shall be shown on drawings, therefore, must be incorporated into calculations. Calculations, shall include, but shall not be limited to; pressure required at most remote sprinkler head; pressure drop in equivalent length of sprinkler piping from system riser to most hydraulically remote location; pressure drop through preaction, check and isolation valve; pressure drop from friction and dynamic losses in system riser and underground fire service to point of connection to water main, and pressure drop through reduced pressure principal backflow preventer. Pressure loss in meters per 100 meters of equivalent length of sprinkler piping allowed shall be provided as a part of calculations to determine if sprinkler pipe sizes required for system to hydraulically perform are within reason. Provide a hydraulic graph showing curve generated from flow test data and system demand curve. System demand curve shall show demand required for sprinkler system, and shall show hose allowance for occupancy hazard of hydraulically most remote area used for hydraulic calculation estimate. Provide appropriate safety factor multiplier for estimated demand in most hydraulically remote area. Safety factor multiplier shall take into account excess sprinkler heads due to room configurations, and increased flow from upstream sprinkler heads. System riser, reduced pressure principal backflow preventer, and underground fire service will be sized, based upon this estimated demand.

a. Hydraulic Calculations: If hydraulic calculation, based on estimated demand and equivalent length of sprinkler piping to hydraulically most remote area, is borderline; and therefore inconclusive, a detailed hydraulic calculation and analysis, including sprinkler piping and head layout, must be provided.

3.6.11 Environmental

The following items shall be developed and provided by the Contractor for the 50% submittal:

3.6.11.1 Environmental Survey Sampling Plan

Am#1

A environmental survey of Building 4195 has been completed. The facility was sampled for asbestos and were found to be positive via laboratory analysis and painted surfaces in Building 4195 contain lead-based paint. The specific results of the environmental survey are included in this RFP as an attachment for the Contractor's review. The Contractor shall complete all additional sampling and testing necessary to prepare plans and specifications and develop strategies for removing all hazardous material **as identified in the bid schedule** from Building 4195 before renovations. Prior to this sampling and testing, the Contractor shall be required to prepare an environmental survey sampling plan for Government review and approval. As a minimum, the sampling plan shall contain the following:

The Environmental survey sampling plan shall adequately describe the survey tasks required of the sampling team. Prior to developing the Environmental survey, the Contractor shall review the existing environmental survey provided in this RFP and obtain from the installation and review all as-built floor plans, shop drawings, remodeling records, etc. that describes Building 4195.

Contractor shall develop single line CADD drawings consisting of floor plans of Building 4195 to show areas surveyed and sampling locations. A north arrow indicator shall be provided on the drawing. These drawings shall be used to record field data during the sampling event.

The sampling plan shall denote what items are to be surveyed and quantified, number of tests required, and sampling locations. The sampling plan shall describe inspection and sampling procedures required, guidance for LBP survey, fluorescent lighting fixtures and ballasts survey, transformers, ozone depleting compounds (ODC) Containing Equipment survey, Thermostats survey, and asbestos containing building material survey. The sampling plan shall also reflect field data recordation and photography required, sampling, packaging, and handling of samples to be shipped for testing. The Contractor shall also determine level of safety protection for the survey technicians. An example of a government approved environmental survey sampling plan is included in this RFP for the Contractor's review.

3.6.11.2 Basic Stormwater Pollution Prevention Plan

The Contractor shall submit for Government review and approval a basic stormwater pollution prevention plan developed in accordance with Section 01420 - STORMWATER NPDES PERMIT REQUIREMENTS, and Section 01421 - OUTLINE OF A BASIC STORM WATER POLLUTION PREVENTION PLAN.

3.6.11.3 Plans for Storm Water Controls and Implementation of PPP

The Contractor shall also provide drawings that describe stormwater control details to be used and denote where these stormwater controls will be implemented during the various phases of construction of the new dining facility and demolition of the old facility. Drawings shall meet the format requirements described earlier in this section and be 100 percent complete.

3.6.11.4 Design Analysis

The Contractor shall prepare a Chapter in the Design Analysis entitled: "Environmental Protection Compliance". This Chapter shall summarize how the project complies with all environmental laws and regulations. As a minimum, the Chapter shall include the following:

a. The Permitting and/or Approving Authority(ies).

b. Construction/Operating Permits, Notices, Reviews and/or Approvals required. If, when checking with the agencies, a permit, notice or approval is not required, include a copy of the telephone conversation memorandum or letter from the agency.

c. Time required by the permitting agency(ides) to process the application(s) and issue the permits.

d. Fee schedule including filing/application fees, review fees, emissions fees, certification testing, etc.

e. Monitoring and/or compliance testing requirements.

f. Actual Environmental regulations governing the applications, exemptions, variances, etc. or at a minimum a brief summary of the regulation and title.

3.7 100 PERCENT DESIGN REQUIREMENTS

3.7.1 Submittal Register

Prepare a complete a Submittal Register using ENG Form 4288 "Submittal Register" as specified in Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES, listing submittals for all specification sections that require submittals.

Fill in columns "c" through "o" and submit with the 100 percent design submittal. In columns (p) and (q), insert "GA" for Government approved items and "FIO" for Information Only (Contractor Approved) items.

3.7.2 Civil

3.7.2.1 Civil Drawings

The drawings shall be complete, include all necessary and required details, thoroughly checked, and fully coordinated with the technical Specifications and all other Construction Documents. Previous comments and applicable criteria changes shall have been incorporated into the design.

3.7.2.2 Technical Specifications

The technical specifications shall be complete, fully coordinated with the drawings, and include all civil work.

3.7.3 Architectural

The drawings shall be complete, include all necessary and required details,

thoroughly checked, and fully coordinated with the technical Specifications and all other Construction Documents. Previous comments and applicable criteria changes shall have been incorporated into the design. Removal work and details should be shown on separate drawings. The contract drawings shall fully describe the type and the scope of work required. The layout of individual sheets and the organization of the assembled set shall follow and communicate a logical sequence. General information shall be presented first, progressing to more detailed information. When assembling details, begin in the upper left-hand corner of the sheet with letters progressing to the right and down. When dimensioning, use arrowheads, not dots or slashes. Where major structural elements are included as parts of architectural detailing, do not indicate sizes. These elements must be fully defined in the structural design documents. See 50% Architectural drawing submittal requirements for drawing scales of remaining drawings to be submitted. Include all drawings from the 50% submittal plus any additional detail drawings required for complete 100% design. These include but not be limited to the following:

Interior Elevations and Details
Door Details
Window Details
Louver Details
Roof Details
Stair Details
Casework Plans, Elevations, and Details
Wall Plan Details and Plan Details
Fire Wall Details and Penetration Conditions
Sound Wall Details and Penetration Conditions
Sealant Details
Ceramic Tile Details
Ceiling Details
Control/Expansion Joint Details
All Miscellaneous Details

3.7.3.1 Technical Specifications

The technical specifications shall be complete and fully coordinated with the drawings. Special sections shall be prepared to cover those subjects for which no pattern guide specification is available. Notes to the Designer that accompany specifications shall be used in editing technical guide specifications. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the guide.

3.7.3.2 Design Analysis Narrative

The Design Analysis shall include the basic information presented in the previous submittal, corrected to reflect changes in content made in response to review comments. Outline specifications shall be omitted from the Final Design Analysis as the information is included on the final drawings and project specifications. The design analysis shall be written in the present tense.

3.7.3.3 Design Analysis Calculations

The Design Analysis calculations shall include the basic information presented in the previous submittal, corrected to reflect changes in content made in response to review comments.

3.7.4 Interiors

3.7.4.1 Drawings

Updates required as a result of the 50 percent review indicating proposed furniture layout shall be incorporated into the drawings by the use of dashed lines.

3.7.4.2 Technical Specifications

Technical specifications shall be in final form for construction and shall include all changes requested during the 50 percent review stage. All specifications shall be completely edited and fully coordinated with the drawings to accurately and clearly identify the product, installation requirements, and testing methods of this facility.

3.7.4.3 Design Analysis

Updates as a result of the 50% review conference shall be made to the design analysis.

3.7.4.4 Building Related Interior Design (SID)

Updates as a result of the 50% review conference shall be made to the SID Notebooks.

3.7.5 Structural

3.7.5.1 Drawings

Final drawings shall be complete, thoroughly checked, and fully coordinated with the other disciplines, specifications and all other construction documents. Previous comments and applicable criteria changes shall have been incorporated into the design. The drawings shall be complete with all plan views, sections, details, schedules, diagrams, and notes necessary for the construction of the project. For structural steel framing, the drawings shall meet the requirements for design drawings set forth in the AISC Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings. All structural steel members and connections shall be fully detailed. For structural concrete, the drawings shall conform to the standards for engineering (design) drawings set forth in the ACI SP-66, ACI Detailing Manual. For precast concrete, the drawings shall comply with the requirements set forth in the PCI Mnl-120, PCI Design Handbook. Additionally, those items described below which are applicable to the design shall be incorporated into the drawings.

a. Grid Systems, Dimensions, and Floor Elevations: Each foundation and slab plan and roof framing plan shall have an alpha-numeric

grid system aligned with any in-wall columns or pilasters, or with load bearing and non-load bearing walls, as applicable. The same grid system shall be used for all plan views. Each plan view shown shall have all necessary dimensions. On plan views, the dimensions shall define the location of grid lines, offsets, and all structural elements, as well as the overall sizes of the structure. The finish elevation of the floor slab shall be indicated as 100 000 mm, and elevations for foundations, walls and roof members shall be referenced to this basic elevation.

b. Foundation and Slab Plans: Foundation and slab plans shall show the size and location of all foundation elements, such as foundation walls, grade beams and footings. Elevations for footings shall be indicated on the plan. Plans for slabs-on-grade and exterior stoop slabs at building entrances shall show location and type of joints, slab thicknesses and reinforcing, elevation of slab surfaces, and any other design features, such as equipment bases, heavy Lab equipments, isolated foundations and the in-slab electrical raceway, which affect the slab design.

c. Roof Framing Plans: Roof framing plans shall be provided for all parts of the structure. Plans shall show the size, spacing, and location of all roof framing members, their supporting in-wall columns, pilasters or walls, all auxiliary members such as bracing and bridging, and the size and location of all major openings through the roof. Plans shall show support system for satellite dishes.

d. Elevation Views, Sections and Details Sheets: Elevation views, sections and details necessary to illustrate fully the design shall be provided. Some requirements peculiar to the various structural materials are described below.

e. Concrete: Include elevation views as necessary, plus sections and details to show the outlines of concrete cross-sections, reinforcing bar arrangements, concrete cover for rebar, installation of embedded items, and joint construction. All lap splice and embedment lengths for reinforcing bars shall be clearly indicated on the drawings. A sill detail for each foundation condition at exterior and interior doors shall be provided.

f. Masonry: Wall reinforcing shall be located and identified on plans, in section cuts, elevation views or in schedules. Structural elevations when needed shall be included to clarify the construction requirements for masonry reinforcement, especially the reinforcement around wall openings. Details applicable to the project shall be shown on the structural drawings. Listed below are some frequently required masonry details, most of which are shown in ICBO-01, Uniform Building Code, and on the Typical Masonry Sheets. The Typical Masonry Sheets will be provided to the successful offeror upon request and may be edited and incorporated into the final drawings as needed. Additional details as required shall be extracted from other sources and incorporated into the final drawings. All details shall be fully

edited to reflect the specific requirements of this project. Supplemental details shall be added as necessary to complete the design.

Masonry Details Frequently Used

- Masonry Control Joint (MCJ).
- Control Joint at Bond Beam.
- Bond Beam Corner Reinforcement.
- Seismic Reinforcement Around Wall Openings.
- Wall Reinforcement Details for l and/or 2 bar-per-cell stiffeners.
- Doweled or Other Connection of Masonry to Foundation, Floor, Roof or Bond Beam.
- Bond Beam (or Steel) Lintels and Bearing Details
- Lateral Support Detail for Top of Masonry Partition Walls. (lateral support locations must be shown on framing plan sheets.)
- Steel Joist Bearing

g. Structural Steel, Steel Joists, and Steel Decking: Structural steel connections shall be fully detailed and shown on the drawings. The anchorage of beams, trusses, joists, and steel deck to walls or other bearings, and the extra framing or reinforcement required at deck openings shall also be detailed. Notes, details, or schedules on the drawings shall indicate the steel deck attachment method to be used, and shall give the size and spacing for perimeter, side lap, intermediate supports and end lap attachments. Welded connections shall be detailed using standard weld symbols illustrated in AWS D1.1. All applicable weld sizes, spacing, types, contours and finishes shall be shown.

h. Cold-Formed Steel Studs: Cold-formed steel connections shall be fully detailed and shown on the drawings. The anchorage of studs to top and bottom runners, of top and bottom runners to supporting members, and the extra framing at openings shall also be detailed. Notes, details, or schedules on the drawings shall indicate the steel stud and runner dimensions, spacing, and attachments.

3.7.5.2 Schedules

a. Foundation Schedules: Foundation schedules for footings or grade beams shall be included, as applicable. The schedule shall include all pertinent information required for the foundation system being used.

b. Framing Schedules: For concrete framing, beam and column schedules shall conform to the requirements of the ACI Detailing Manual. For structural steel framing, provide a column schedule complete with design loads at splices, if any, and at column bases, plus a tabulation of the loads, shears, moments and/or axial loads to be resisted by the beams and their connections.

3.7.5.3 Equipment Loads

All equipment loads which exceed 80 kg and are not supported by concrete slab-on-grade, shall be identified on the drawings by showing equipment locations, total weights, and reaction loads at support points.

3.7.5.4 Notes

a. Design Notes: Under the heading "Designer's Notes," the structural drawings shall contain notes which begin:

b. "The structural design was prepared using the following data:" The data then listed shall include the structural loading criteria used for design, such as roof and floor live loads, snow load design parameters, wind speed and wind load design parameters, seismic design parameters (Zone Z, I, Rw, C, and S values), allowable soil bearing pressures (as recommended by the foundation analysis), foundation design depth, design wind uplift pressures for steel joists and other data pertinent to future alterations. Also, to be listed are the ASTM designations and stress grades of the applicable structural materials: steel, masonry, concrete for each usage, reinforcing bars, and bolts.

c. General Notes: Other notes, which direct the work to be performed, the materials to be used, etc., shall be grouped under the heading of "General Notes." Included in these notes should be a description of the building's structural system, if necessary.

3.7.5.5 Specifications

Technical specifications for final design shall be prepared in accordance with the instructions provided in this and Section 01015 DESIGN REQUIREMENTS AFTER AWARD and in paragraph "TECHNICAL SPECIFICATIONS." The technical specifications shall be complete and fully coordinated with the drawings. Special sections shall be prepared to cover those items for which no pattern guide specification is available. The "Notes to the Designer" that accompany the guide specifications shall be used in editing the technical specifications. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the technical specification.

3.7.5.6 Design Analysis

The final design analysis narrative shall repeat and expand upon the basic information presented in the 50% design analysis narrative, and shall be corrected to reflect revisions made for the final design.

a. Design Analysis Calculations: Calculations shall be prepared by a registered professional structural engineer and shall include an investigation of loading, (gravity, wind, seismic, and allowance for future loads, etc.) shear, moment, stress analysis diagram, uplift, stability and deflection calculations. The computations are to be systematic and accurate. Similar beams, columns, or connections may be grouped by designing the largest member or

connection in the group, but every individual slab, beam, column, footing, connection or other structural member or structural consideration indicated by the plans shall be accounted for by pertinent calculations, statement or reasoning, or reference to source. Design formulas shall be written out in symbols the first time each is used, before the numerical values are supplied. All answers shall be identified by dimensional units. Basic assumptions of loads, working stresses, and methods of analysis must appear in the calculations; these assumptions must be applied consistently to a given problem. The calculations shall be presented in a clear and legible form, incorporating a title page, table of contents, and a tabulation showing all design loads and conditions. Pages shall be numbered consecutively and identified in the table of contents. Cross referencing shall be clear. The source of loading conditions, formulas, and references will be identified. Assumptions and conclusions will be explained. Superseded areas of computations must be ruled out. All computations shall be given a complete numerical and theoretical check within the Contractor's office. Calculation sheets shall carry the names or initials of the developer and the checker, and the dates of calculations and checking. No portion of the design calculations shall be developed and checked by the same individual.

3.7.5.7 Computer Calculation Submittals

All applicable input and output data shall be included in readable printed form as part of the design calculations. Continuous paper such as that used in computer terminals or printers shall be cut into individual pages and shall not be submitted in a continuous roll form. All input and output data shall include a brief synopsis of the computer program(s) stating required input, method of solution, approximations used, codes and specifications used, output generated, extent of previous usage or certification of the program(s), and program author(s). Generalized flow chart(s) may be used to supplement description of solution process, if desired. All computer generated and long-hand calculation sheets shall be identified by sheet number, indexing and cross-referencing. Each member or structure being analyzed shall be identified, dimensioned and shown in a loading diagram. A separate diagram shall be provided for each load case, such as dead plus live, dead plus wind, etc. Input and output values including intermediate values shall clearly be identified if such values are necessary for evaluation of the submittal.

3.7.6 Mechanical

The 100 percent final design submittal shall include all the information presented in the 50 percent submittal, updated to final design status, corrected to reflect any changes made in response to review comments, and shall include the additional requirements specified hereinafter. Any concerns in developing the final design documents shall be resolved prior to starting the final design stage.

3.7.6.1 Design Drawings

The final design drawings shall be fully coordinated with the design

analysis and specifications. Provide sufficient plans, piping diagrams and isometrics, mechanical room sections, air flow diagrams, details, schedules, control diagrams, sequences of operation, etc., as necessary to define the design requirements. Large-scale plans of congested areas shall be provided. Coordinate with architectural design for provision of access panels for all concealed valves, traps and air vents, etc. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. The final design drawings shall include all the requirements and drawings defined for the 50 percent submittal. In addition, the following new drawing requirements and drawings shall be provided:

a. Mechanical Abbreviation, Legend, and General Notes Sheet: On this sheet, include any mechanical general installation notes that may be required to clarify the construction intent that may not be readily apparent in the specifications or on the drawings. General notes may be provided on a separate sheet if space does not exist on the Abbreviation and Legend sheet.

b. Plumbing Drawings:

   Enlarged Toilet Room Plans: Enlarged toilet room plans showing all fixtures, water, waste, and vent piping shall be provided for each toilet area. Enlarged plans shall be drawn at a minimum 1:25 scale.

   Plumbing Riser Diagrams: Plumbing water and Waste/Vent riser diagrams shall be provided for each toilet area. Riser diagrams shall be located on the same sheet as the respective enlarged toilet room plans.

c. Mechanical HVAC Drawings:

   Mechanical Room Sections: For each air handling unit within the mechanical room, a mechanical room section view shall be provided showing, but not limited to, all AHU components, ductwork connections/routing, and relationship to adjacent structural features.

3.7.6.2 Technical Specifications

The submitted 50 percent technical guide specifications shall be updated, completely edited, and fully coordinated with the drawings to accurately and clearly identify the final product and installation requirements for the facility.

3.7.6.3 Design Analysis

The Final Design Analysis Narrative shall include the information presented in the 50 percent submittal, shall be corrected to reflect changes in content made in response to review comments, and shall be expanded to reflect the completed design.

3.7.6.4 Design Analysis Calculations

The Final Design Analysis calculations shall be performed by a registered professional mechanical engineer, and shall include all the information presented in the 50 percent submittal, shall be corrected to reflect changes in content made in response to review comments, and shall be expanded to reflect the completed design. In addition, the following new calculations shall be provided:

a. Individual Air-Conditioning Loads for each room.

b. Pipe sizing calculations for the hot water, condensing unit systems.

c. Hot water, calculations.

d. Hot water expansion tank sizing.

e. Static pressure drop calculations for all duct systems.

3.7.7 Electrical

The 100 percent final design submittal shall include all the information presented in the 50 percent submittal, updated to final design status, corrected to reflect any changes made in response to review comments. It shall include the additional requirements specified hereinafter. Any concerns in developing the final design documents shall be resolved prior to starting the final design stage.

3.7.7.1 Design Drawings

The final design drawings shall be fully coordinated with the design analysis and specifications. Provide sufficient plans, single-line diagrams, details, schedules, etc., as necessary to define the design requirements. Coordinate the electrical and communications design with the design for other disciplines. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. The final design drawings shall include all the requirements and drawings defined for the 50 percent submittal. Drawing scale shall match architectural drawing requirements. Plans shall be legible at full-size. Drawings shall include the following:

a. Electrical Legend: Describe and define the electrical and communications symbols used on the plans.

b. Electrical Abbreviations: Define abbreviations used on the electrical plans (may be included in the electrical legend).

c. Drawing Notes: Identify drawing notes by a numerical label to further clarify or describe the design engineer's intent.

d. One-Line Diagram: Detail the complete electrical system with a simplified one-line diagram. The diagram shall show ratings of major equipment including short circuit ratings.

e. Riser Diagram: Illustrate the electrical equipment locations.

f. Power Plan: Detail the electrical wiring for equipment other than lighting. Identify rooms by name and number.

g. Lighting Plan: Detail the electrical wiring and switching for lighting. Identify rooms by name and number.

h. Lighting Fixture Schedule: Detail the lighting fixture types to be provided.

i. Panelboard Schedules: Detail the circuits and circuit breakers or fuse locations in panelboards. Panelboard schedules shall include the designation, location, mounting (flush or surface), number of phases and wires, voltage, capacity and total connected and demand load. Indicate the trip rating, frame size, interrupting rating and number of poles for each circuit breaker in the panelboards. List the circuit number, circuit description and load for each branch circuit. Include estimated maximum demand for each panel and for entire building.

j. Emergency Systems: Detail electrical requirements for emergency systems such as emergency lighting, and fire alarm systems.

k. Site Plan: Detail the electric and communications routes.

l. Communications System: Detail the communications systems including data and telephone. Typical details are provided in the U.S. Army Installation Information Infrastructure Architecture (I3A) Design and Implementation Guide, Pages 14-21 and 36-40. These drawings show the U.S. Army interpretation of the EIA/TIA standards and shall be used in designing the communications systems. Drawings may be modified with U.S. Army COE approval to reflect specific needs of this project.

m. Security System: Detail security camera, alarm requirements and riser diagram.

n. Cathodic Protection System: Detail test points, sacrificial anode systems, impressed current systems, etc.

o. Miscellaneous Details: Provide communications manhole details, electric vault details, special light fixture details, etc.

3.7.7.2 Technical Specifications

All 50 percent specifications shall be completely edited and fully coordinated with the drawings to accurately and clearly identify the product, installation requirements, and testing methods for this facility.

3.7.7.3 Design Analysis Narrative

The text of the preliminary design analysis shall be expanded to reflect the completed design. Calculations used to develop the design shall be

included. The document in its final form should conform in all applicable respects to the requirements of Division 16 technical requirements.

3.7.7.4 Design Analysis Calculations

Backup data shall be furnished to support basic design decisions related to sizing of major equipment and materials, selection of economic alternatives, performance of specific systems or equipment. Calculations may be performed by manual or computerized procedures. Use of standardized charts, curves, tables, graphs will generally be acceptable for portions of required calculations or in lieu of specific calculation procedures. Such data must be from a recognized source which is identified in the design analysis. If possible, a copy of applicable sheets or pages should be included with the calculations. For given equipment, the calculations must conform to requirements identified under subsequent paragraphs herein pertaining to the equipment.

Contractor shall verify and coordinate all electrical equipment ratings to be used in the new project (new or existing) for compatibility as to amps interrupting capacity (AIC) and short-circuit current available for a complete and operational system. As a minimum the following shall be submitted:

a. Service: Sizing of building service.

b. Transformers: Sizing of general purpose dry type transformers. (Generally 1 or 2 samples of detailed calculations to identify the method are sufficient, if input data for remaining units can be derived from panel or feeder sizing data.)

c. Feeders and Branch Circuits: Sizing of feeders and branch circuits (including motor circuits). (One detailed sample calculation is sufficient to establish the procedure, remaining data can be in schedules, tables, etc.).

d. Panelboards: Sizing and loading of panelboards and distribution equipment.

e. Voltage drop determination: Provide voltage drop calculations in accordance with IEEE 241 to demonstrate that the voltage drop requirements of NFPA 70 are satisfied.

f. Illumination calculations: Data shall identify target and calculated illumination levels for all rooms and areas. Calculations shall be adjusted to compensate for special applications -- irregularly shaped rooms, open sides, ceiling obstructions (beams, ductwork), corridors, etc.

g. Short Circuit Evaluation: Calculate the fault current in accordance with IEEE 242 for each node in the electrical distribution system.

h. Specialized Applications: Additional engineering backup shall be included to address special requirements such as cathodic

protection, cable tray sizing, etc.

3.7.8 Fire Protection

The 100 percent final design submittal shall include all the information presented in the 50 percent submittal, updated to final design status, corrected to reflect any changes made in response to review comments, and shall include the additional requirements specified hereinafter. Any concerns in developing the final design documents shall be resolved prior to starting the final design stage.

3.7.8.1 Design Drawings

The final design drawings shall be fully coordinated with the design analysis and specifications. Provide sufficient plans, diagrams, sections, details etc., as necessary to define the design requirements. The final design drawings shall include all the requirements and drawings defined for the 50 percent submittal.

3.7.8.2 Technical Specifications

The submitted 50 percent technical guide specifications shall be updated, completely edited, and fully coordinated with the drawings to accurately and clearly identify the final product and installation requirements for the facility.

3.7.8.3 Design Analysis

The Final Design Analysis Narrative shall include the information presented in the 50 percent submittal, shall be corrected to reflect changes in content made in response to review comments, and shall be expanded to reflect the completed design.

3.7.8.4 Design Analysis Calculations

The Final Design Analysis calculations shall include all the information presented in the 50 percent submittal, shall be corrected to reflect changes in content made in response to review comments, and shall be expanded to reflect the completed design. Calculations shall be performed by a registered mechanical engineer.

3.7.9 Environmental

The following items shall be developed and provided by the Contractor for the 100% submittal:

3.7.9.1 Results of Environmental Survey Data

Contractor shall complete and provide environmental survey data collected in accordance with the approved environmental survey sampling plan for Government review. Contractor shall perform survey in accordance with Section: 01550 - ENVIRONMENTAL SURVEY REQUIREMENTS.

3.7.9.2 Plans and Specifications for removal of hazardous material in

Building 4195

Contractor shall develop drawings for removal of hazardous material from Building 4195 prior to demolition. The drawings shall show floorplans of the building and note locations where all samples were taken. Samples shown on drawing shall be labeled as outlined in the environmental survey sampling plan. Laboratory results of samples taken shall also be located on the drawings. In addition, drawings shall reflect quantities of hazardous materials to be removed. Drawings shall meet the format requirements described earlier in this section and be 100 percent complete.

Both plans and specifications shall be 100 percent complete to be used as final contract documents in demolition of building 4195 and will become part of the as-built package to be developed by the Contractor.

3.7.9.3 Design Analysis

The Contractor shall prepare a Chapter in the Design Analysis entitled: "Environmental Protection Compliance". Include revisions, as required, from the 50 percent design submittal.

3.8 ATTACHMENTS

Attachments A, B, and C follow this page.

3.8.1 **ATTACHMENT A**

CODE ANALYSIS

UNIFORM BUILDING CODE (UBC) AND NFPA "LIFE SAFETY CODE" ANALYSIS

LIFE SAFETY AND FIRE PROTECTION IS AN INTEGRAL PART OF EVERY FACILITY DESIGN. RECOGNIZED CODES AND ACCEPTED SAFETY STANDARDS SHALL BE FOLLOWED IN THE DESIGN OF ALL FACILITIES. OF THE VARIOUS CODES AND SAFETY STANDARDS THE NATIONAL FIRE PROTECTION ASSOC. (NFPA) "LIFE SAFETY CODE" SHALL TAKE PRECEDENCE. ALL APPLICABLE REQUIREMENTS OF THE LIFE SAFETY CODE SHALL BE INCORPORATED INTO EACH DESIGN. FOR TYPE OF CONSTRUCTION, FIRE AREA LIMITATIONS, AND ALLOWABLE BUILDING HEIGHTS THE DESIGN SHALL FOLLOW THE UNIFORM BUILDING CODE (UBC).

CHECK LIST

PROJECT NAME _____ DATE_____

LOCATION _____

3.8.1.1 UNIFORM BUILDING CODE ANALYSIS

3.8.1.1.# OCCUPANCY CLASSIFICATION (See Table 5A):

Area:	Classification:
(GROUP: _____):	Div. _____
(GROUP: _____):	Div. _____
(GROUP: _____):	Div. _____

PRINCIPAL OCCUPANCY _____

OTHERS (SPECIFY) _____
_____
_____
_____

3.8.1.1.# TYPE OF CONSTRUCTION :

_____

3.8.1.1.# OCCUPANCY SEPERATION REQUIRED (SEE TABLE 5-B):

_____ TO _____ = _____ HRS
_____ TO _____ = _____ HRS
_____ TO _____ = _____ HRS
_____ TO _____ = _____ HRS
_____ TO _____ = _____ HRS

3.8.1.1.# FIRE RESISTANCE OF EXTERIOR WALLS: (SEE TABLE 5-A)

NORTH _____
SOUTH _____
EAST _____
WEST _____
OTHER _____

3.8.1.1.# OPENINGS IN EXTERIOR WALLS: (SEE TABLE 5-A)

NORTH _____
SOUTH _____
EAST _____
WEST _____
OTHER _____

3.8.1.1.# MAX. ALLOWABLE FLOOR AREA (SEE TABLE 5-C):

ALLOWABLE:

IF SPRINKLERED: _____

ALLOW. AREA INCREASES _____
_____
_____
_____
_____

CALCULATED ACTUAL FLOOR AREA:

Floor	Square Footage
Totals:	

3.8.1.1.# MAX. ALLOWABLE HEIGHT (SEE TABLE 5-D):

METERS (FEET): _____
STORIES: _____

Proposed Height of Building: _____

Actual No. of Stories: _____

3.8.1.1.# COMMENTS:

_____
_____
_____
_____
_____

DESIGNER:_____

3.8.1.2 NFPA 101 "LIFE SAFETY CODE"

3.8.1.2.# CLASSIFICATION OF OCCUPANCY:

_____

_____

HAZARD OF CONTENTS:

LOW _____
_____
_____

ORDINARY _____
_____
_____

HIGH _____
_____
_____

3.8.1.2.# FIRE RESISTIVE REQUIREMENTS:

EXTERIOR WALLS: _____ HRS ____

INTERIOR WALLS: _____ HRS ____

STRUCTURAL FRAME: _____ HRS ____

VERTICAL OPENINGS: _____ HRS ____

FLOORS: _____ HRS ____

ROOFS: _____ HRS ____

EXTERIOR DOORS: _____ HRS ____

EXTERIOR WINDOWS: _____ HRS ____

BOILER ROOM ENCLOSURE _____ HRS ____

OTHER (LIST) _____ HRS ____

_____ HRS ____

_____ HRS ____

_____ HRS ____

3.8.1.2.# MEANS OF EGRESS:

OCCUPANCY LOAD FACTOR: _____

OCCUPANCY	FACTOR	ACTUAL AREA	ACTUAL LOAD

3.8.1.2.# NUMBER OF EXITS REQUIRED:

_____
_____

_____
_____
_____

3.8.1.2.# MINIMUM WIDTH OF EXITS:

CALCULATED: _____
_____
_____
ACTUAL: _____
_____

3.8.1.2.# MAXIMUM ALLOWABLE TRAVEL DISTANCE TO EXIT:
_____

WITH SPRINKLERS: _____
_____

3.8.1.2.# EXIT DOORS:

MINIMUM WIDTH ALLOWED:_____
MAXIMUM LEAF WIDTH ALLOWED: _____
WIDTH REQUIRED FOR NO.OF OCCUPANTS: _____
_____

3.8.1.2.# EXIT CORRIDORS:

MAX. COMMON PATH OF TRAVEL: _____
MINIMUM ALLOWABLE WIDTH: _____

REQUIRED TO HAVE EXIT AT EACH END OF CORRIDOR?
_____
DEAD END CORRIDORS ALLOWED? _____
MAXIMUM LENGTH: _____
WALL FIRE RESISTANCE REQUIRED: _____
_____
_____
DOORS & FRAME FIRE RESISTANCE REQUIRED:
_____
_____

3.8.1.2.# STAIRS:

MINIMUM WIDTH _____ FOR OCCUP. LOAD OF _____
MINIMUM WIDTH _____ FOR OCCUP. LOAD OF _____
MINIMUM WIDTH _____ FOR OCCUP. LOAD OF _____
MINIMUM WIDTH _____ FOR OCCUP. LOAD OF _____
MAX. RISER ALLOWED: _____
MINIMUM TREAD ALLOWED: _____

LANDINGS:

MIN. SIZE: _____
MAX. VERTICAL DIST. BETWEEN LANDINGS: _____
_____
_____
REQUIRED HEIGHT OF RAILINGS:
_____
_____
HANDRAILS:

REQUIRED AT EACH SIDE? _____
INTERMEDIATE RAIL REQUIRED? _____

HEIGHT ABOVE NOSING _____
INTERMEDIATE RAIL REQUIRED? _____
MAX. SPACE ALLOWED BETWEEN RAILS: _____
_____

STAIR ENCLOSURE REQUIRED?_____

STAIR TO ROOF REQUIRED?_____

STAIR TO BASEMENT REQUIRED? _____

3.8.1.2.# HATCHWAY ACCESS TO ROOF REQUIRED? _____

3.8.1.2.# LADDER ACCESS TO ROOF REQUIRED?

_____

3.8.1.2.# HORIZONTAL EXIT REQUIREMENTS:
_____

_____
_____

3.8.1.2.# PROTECTION OF OPENINGS NEAR EXTERIOR STAIR EXIT DOORS:

_____
_____

3.8.1.2.# SMOKEPROOF ENCLOSURE REQUIRED:
_____

_____

3.8.1.2.# RAMPS:

MAX. SLOPE TO USE AS EXIT _____
HANDRAILS REQUIRED? _____

3.8.1.2.# COMMENTS:
_____
_____
_____
_____
_____
_____

DESIGNER: _____

FOLLOWING IS A LIST OF ADDITIONAL "NFPA" CODES THAT ARE COMMONLY USED. INDICATE WHICH OF THESE CODES ARE USED AND ADD THOSE REQUIREMENTS TO THIS ANALYSIS.

MIL HDBK-1008C	FIRE PROTECTION FOR FACILITIES, ENGR, DESIGN, AND CONSTRUCTION.
NFPA 10	FIRE EXTINGUISHERS, PORTABLE
NFPA 75	COMPUTER/DATA PROCESSING FACILITIES
NFPA 80	FIRE DOORS AND WINDOWS
NFPA 88A	PARKING STRUCTURES
NFPA 409	AIRCRAFT HANGARS
AFM 88-4	DATA PROCESSING FAC. DESIGN AND CONST.
AF ETL 89-3	FIRE PROTECTION CRITERIA FOR ELECTRONIC

Typed Name and Signature of the
Licensed Architect/Engineer of Record
Professional Seal of the Licensed Architect/Engineer of Record

3.8.2 **ATTACHMENT B**

ADA ARCHITECTURAL DESIGN CHECKLIST

Project Name:_____
Project Location:_____
Design Phase:_____

ITEM NO.		INCORP	N/A	LATER
1.	Established with the Base/owner of the facility the requirements for handicap accessibility.	_____	_____	_____
2.	Received a waiver for no handicap accessibility requirements on the facility.	_____	_____	_____
3.	Facility is designed utilizing:			
	New Construction Criteria	_____	_____	_____
	Building Alteration Criteria	_____	_____	_____
	Historic Building Preservation Criteria:	_____	_____	_____
4.	Accessible Route (egress/corridors/halls/aisles).			
	- Provided minimum fire egress routes.	_____	_____	_____
	- Provided minimum site accessible routes.	_____	_____	_____
	- Provided proper clearance widths.	_____	_____	_____
	- Provided proper floor level changes.	_____	_____	_____
	- Provided proper floor materials.	_____	_____	_____
	- Provided protection from protruding objects.	_____	_____	_____
5.	Ramps:			
	- Maximum slopes less than 1:12	_____	_____	_____
	- Maximum run less than 30 feet for 1:12 slopes 40 feet for 1:16 slopes	_____	_____	_____
	- Minimum clear width exceeds 36-inches.	_____	_____	_____
	- Provided proper edge protection.	_____	_____	_____
	- Provided handrails of proper configuration and diameter.	_____	_____	_____
	- Provided proper handrail extensions at top and bottom of ramp.	_____	_____	_____
	- Provided handrails at proper mounting heights.	_____	_____	_____
	- Provided proper landings.	_____	_____	_____

- Provided proper cross slope on ramp surface. _____ _____ _____

ITEM
INCORP
N/A
LATER
NO.

6. Stairs:
- Protected the space below stairs from access by the blind. _____ _____ _____
- Provided handrails of proper configuration and diameter. _____ _____ _____
- Provided proper handrail extensions at top and bottom of stairs. _____ _____ _____
- Provided handrails at proper mounting heights. _____ _____ _____
- Provided treads greater than 11-inches in width. _____ _____ _____
- Provided Proper nosings. _____ _____ _____

7. Elevators:
- Provided buttons and lanterns at the proper mounting height. _____ _____ _____
- Provided Braille characters. _____ _____ _____
- Provided proper door widths. _____ _____ _____
- Provided proper clearance inside elevator car. _____ _____ _____

8. Doors And Hardware:
- Provided proper door widths. _____ _____ _____
- Provided proper clearance on both sides of jambs. _____ _____ _____
- Entrance vestibules provided with adequate clearances. _____ _____ _____
- Provided levers on locksets and exit hardware. _____ _____ _____
- Provided closers with mechanical adjustments. _____ _____ _____
- Provided accessible thresholds. _____ _____ _____
- Provided protection plates on doors heavily used by wheel chair bound people. _____ _____ _____

ITEM NO.		INCORP	N/A	LATER
9.	Toilet Facilities:			
	- Provided proper floor clearance through out the toilet rooms.	_____	_____	_____
	- Provided minimum number of required accessible fixtures.	_____	_____	_____
	- Provided accessible toilet stalls.	_____	_____	_____
	- Provided stall doors with correct direction of swing.	_____	_____	_____
	- Provided accessible water closets.	_____	_____	_____
	- Provided grab bars at accessible water closets.	_____	_____	_____
	- Provided grab bars with correct configuration and dimension.	_____	_____	_____
	- Provided accessible sinks/lavatories.	_____	_____	_____
	- Provided accessible urinals.	_____	_____	_____
	- Provided accessible water coolers and fountains.	_____	_____	_____
	- Provided accessible mirrors.	_____	_____	_____
	- Provided accessible toilet accessories at required locations.	_____	_____	_____
	- Provided all fixtures and accessories at proper mounting heights and clearances.	_____	_____	_____
	- Provided insulated or protected exposed pipes at lavatories.	_____	_____	_____
10.	Shower/Tub Facilities:			
	- Provided the minimum number of accessible showers/tubs.	_____	_____	_____
	- Provided showers/tubs with grab bars.	_____	_____	_____
	- Provided showers/tubs with seats as required.	_____	_____	_____
	- Provided controls mounted at the proper height and location.	_____	_____	_____
	- Provided proper clearances and dimensions in showers/tubs.	_____	_____	_____
	- Provided proper floor clearance through out shower/tubs rooms.	_____	_____	_____
	- Provided doors with correct direction of swing and clearance.	_____	_____	_____

ITEM NO.		INCORP	N/A	LATER
11.	Storage:			
	- Provided accessible cabinets, shelves, closets, and drawers as required.	_____	_____	_____
	- Provided proper clearance, mounting heights, and reach provisions.	_____	_____	_____
12.	Telephones and Vending:			
	- Provided the minimum number of required accessible public telephones.	_____	_____	_____
	- Provided proper floor clearance around telephone.	_____	_____	_____
	- Phone and controls mounted at proper heights and within reach.	_____	_____	_____
	- Provided vending machines on an accessible route.	_____	_____	_____
	- Provided vending machines with accessible clearances and protruding object safe guards.	_____	_____	_____
13.	Fixed Or Built-in Seating And Tables:			
	- Provided the minimum number of accommodations for accessibility in areas which required fixed furniture.	_____	_____	_____
	- Provided proper floor clearance around furniture.	_____	_____	_____
	- Provide proper knee space at tables.	_____	_____	_____
	- Provided tables and counters with proper top surface heights.	_____	_____	_____
14.	Assembly Areas:			
	- Provided the minimum number of accessible seating spaces.	_____	_____	_____
	- Provided seating which is easily accessible to emergency egress.	_____	_____	_____
	- Provided companion seating.	_____	_____	_____
	- Integrated and dispersed accessible seating with the rest of the seating.	_____	_____	_____
	- Provided accessible dressing rooms.	_____	_____	_____
	- Provided level floor surface at accessible seat locations.	_____	_____	_____
	- Provided clear ground or floor space at accessible seat locations	_____	_____	_____
	- Provided access to all performing areas and associated spaces.	_____	_____	_____

ITEM NO.		INCORP	N/A	LATER
15.	Dining Halls And Cafeterias:			
	- Provided the minimum number of accessible dining spaces.	_____	_____	_____
	- Provided accessible counters and bars.	_____	_____	_____
	- Provided accessible aisles between tables or walls.	_____	_____	_____
	- Provided clear floor space at accessible dining locations.	_____	_____	_____
	- Provided accessible food service lines meeting minimum clearances and reaches.	_____	_____	_____
	- Provided accessible tableware and condiment areas.	_____	_____	_____
	- Provided raised speaker platform with protected edges.	_____	_____	_____
16.	Medical Care Facilities:			
	- At least 10% of the general patient rooms are accessible.	_____	_____	_____
	- Provided the number of accessible patient rooms as required for specialized treatment,long term care, or alterations of existing patient rooms.	_____	_____	_____
	- Provided at least one accessible entrance with weather protecting canopy or roof overhang.	_____	_____	_____
	- Provided minimum clearances within the patient rooms and around the beds.	_____	_____	_____
	- Provided accessible patient toilet/bath rooms.	_____	_____	_____
17.	Business And Mercantile:			
	- Provided at least one accessible sales counter, services counter, teller, information window, etc.	_____	_____	_____
	- Security bollards when provided, do not prevent access or egress to people in wheel chairs.	_____	_____	_____
18.	Libraries:			
	- Provided access to all reading and stack areas, reference reference rooms, reserve areas, and special facilities or collections.	_____	_____	_____
	- Provided at least 5% or a minimum of one of each element or fixed seating, tables, or study carrels as accessible	_____	_____	_____
	- Provided at least one lane of check out areas as accessible.	_____	_____	_____
	- Provided adequate clearance and reach distances at card catalogs and magazine displays.	_____	_____	_____

- Provide stacks with minimum clear aisle width. _____ _____ _____

ITEM NO.		INCORP	N/A	LATER
19.	Temporary Lodging:			
	- All common and public use areas are accessible.	_____	_____	_____
	- Provided accessible units, sleeping rooms, and suites.	_____	_____	_____
	- Provided sleeping accommodations for persons with hearing impairments.	_____	_____	_____
	- Provided a dispersed class and a range of room options.	_____	_____	_____
	- Provided accessible rooms in ADAL projects.	_____	_____	_____
	- Provided an accessible route to accessible sleeping rooms.	_____	_____	_____
	- Provided accessible clearance widths within sleeping rooms and around beds.	_____	_____	_____
	- Provided accessible doors within accessible sleeping rooms.	_____	_____	_____
	- Provided accessible fixed or built-in furniture and storage units.	_____	_____	_____
	- Provided accessible controls throughout accessible units.	_____	_____	_____
	- Where provided as part of an accessible unit each of the following were provided as accessible: living area, dining area, at least one sleeping area, patio/terrace, balcony, toilet/bath, and carport/garage/ parking.	_____	_____	_____
	- Where provided as apart of an accessible unit, the kitchen, kitchenettes, wet bars, or similar amenities were also provided with accessible features.	_____	_____	_____
	- Provided visual alarms, notification devices, and accessible telephones.	_____	_____	_____
	- Provided accessible doors and doorways designed to allow passage into and within all sleeping units or other covered units.	_____	_____	_____

20. Transportation Facilities:

(This section covers Air, Rail, and Bus public transportation facilities. See Section 10 of the ADA Guide for specific requirements for these facilities)

3.8.3 **ATTACHMENT C**

MECHANICAL ROOM SIZE FORM

****

NOTE: Mechanical Systems Design Documents and Guides - Mechanical Room Size Form

At the final design stage, the mechanical designer shall fill out this Mechanical Room Size Form and include it in the final design calculations.

****

The information submitted on this sheet shall be placed in a data base for future use on similar DoD, COE project. (The data base shall be used to help determine appropriate mechanical room sizes). Include this sheet in the final design calculations.

Project:

Location:

Engineer:

Gross floor area of building:

Gross square footage includes (the entire building) stairs, corridors, etc.

Floor area of mechanical room:

Percent of gross building area is the mechanical room size:

Type of facility:

Sources of energy (E, G, S):

Mechanical equipment:

List of equipment outside the mechanical room and location:

Is the mechanical room too small?

Does the User think the mech room is too small? (Y, N, Don't know)

Additional remarks:

Abbreviations:

AC - air compressor
AHU - air handling unit

B - boiler
CU - air cooled condensing unit
DF - direct fired
DX - direct expansion chilled water heat exchanger
E - electric
FC - fan coil unit
FP - fire protection
G - natural gas or propane
HX - heat exchanger
LC - liquid chiller
MUA - make up air unit
UH - unit heater
ST - domestic hot water storage tank
S - steam

-- End of Section --

Report of:

Asbestos-Containing Materials and Lead-Based Paint Survey

Conducted at:
Warehouse Building 4195
Fort Sam Houston
San Antonio, Texas

Prepared for:
Carter and Burgess, Inc.
3880 Hulen Street
Fort Worth, Texas

Report Date: October 7, 1999

Prepared by:

Industrial Hygiene & Safety Technology, Inc.
2235 Keller Way
Carrollton, Texas 75006
972-478-7415

LEVEL II ASBESTOS SURVEY

Warehouse 4195
Fort Sam Houston
San Antonio, Texas

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1.0 INTRODUCTION

A Level II asbestos inspection was performed at Warehouse 4195 located at Fort Sam Houston in Bexar County, San Antonio, Texas on September 27, 1999. The assessment was performed for Carter & Burgess, Inc. by Industrial Hygiene & Safety Technology, Inc. (IHST). IHST is a Texas Department of Health licensed Asbestos Consulting Agency (TDH License #10-0145).

2.0 PURPOSE AND SCOPE

The purpose of this project was to locate, identify, quantify and assess the condition of asbestos containing materials (ACM) present in Warehouse 4195 prior to building improvements and renovation. In addition, recommendations were develop based on existing and potential asbestos related hazards. The following scope of work was used during the asbestos assessment at the subject property:

A. Collecting and analyzing forty-eight (48) bulk samples of suspected asbestos containing materials. The forty-eight (48) bulk samples were collected supplementary to a previous asbestos survey report dated June 23, 1998, prepared by the ENSR Corporation (Appendix D).

B. Quantification of the asbestos containing materials.

C. Approximate costs of abatement, to include abatement specifications, contractor selection, and on-site management during remediation activities.

D. Provide an approximate time schedule for abatement procedures.

E. Make recommendations based on the survey data considering appropriate abatement procedures prior to building demolition.

F. Preparing a report discussing the findings and remedial recommendations.

3.0 REPORT ORGANIZATION

This report is divided into sections which discuss the review of available documentation, field investigation, laboratory analysis, hazard assessments, and recommendations. Illustrations, such as tables and figures follow the text. Other supporting documentation, such as laboratory reports are also included.

4.0 FIELD INVESTIGATION

Mr. Wayne J. Randall , a certified AHERA inspector representing IHST, conducted the asbestos assessment at Warehouse 4195 located at Fort Sam Houston in San Antonio, Texas. The survey was conducted on September 27, 1999. The survey included a thorough inspection of accessible areas, ceiling plenums, pipe chases and crawl spaces; sampling of suspected asbestos containing building materials (ACBM); photo documentation of the site, sampled material and unusual conditions; and producing computer-aided drawings showing sample and material locations.

The survey was conducted to determine the amount of asbestos containing materials that were present on the site. Bulk samples were collected of suspect materials and analyzed by Polarized Light Microscopy (PLM) with dispersion staining (DS), in accordance with the Environmental Protection Agency's (EPA) Test Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116). Percentage estimates are based on the analyst's best judgment following PLM/DS and examination with a stereoscope. Laboratory reports containing sample locations and results are included with this report.

The survey was designed to identify the presence of both friable and non-friable asbestos containing materials (ACM). Friable means that a material can be pulverized by hand pressure alone. Building materials suspected of containing asbestos were grouped into "Homogeneous" sampling areas. The homogeneous areas were defined based on uniform texture, color, and appearance. Additionally, homogeneous areas were further defined based on building construction date(s). Each of the items sampled were classified into one of three categories: 1.) Surfacing (S); 2.) Thermal System Insulation (TSI); or 3.) Miscellaneous (M).

A surfacing material is a building material which has been applied to a surface (i.e., walls or ceilings) or structural members. Examples of surfacing materials which may contain asbestos are: spray-applied fireproofing, spray-on acoustical ceilings, and textured ceilings and walls.

All types of insulation used on a building's mechanical system are classified into the category of thermal system insulation. Examples of thermal system materials which may contain asbestos are: boilers, related piping, or ducts. All remaining materials which do not fall into

the two above categories are placed in the miscellaneous category. Examples of miscellaneous materials which may contain asbestos are: lay-in ceiling tile, floor tile, mastic adhesives and roofing felt.

An assessment was conducted for each building material sampled. The physical assessment consists of evaluating the condition of the suspect material and the potential for future disturbance. Recommendations made for a building material which contains asbestos are based on the assessments made by the inspector during the survey. The data developed during the asbestos survey is presented in the following sections of this report.

The Summary of Bulk Sample Analysis and Assessment (Table 1) present specific locations, results of additional asbestos analysis and quantities of asbestos in each building. The Cost Estimate Summary (Tables 2) and time schedules (Tables 3) are also presented in this report. These cost estimates are based on IHST's experience and estimates supplied by abatement contractors in the area. However, it should be noted that the cost estimates for abatement are not based on a confirmed scope of work, which ultimately can affect the final contract price.

5.0 SAMPLING

The field investigation included the collection of forty-eight (48) bulk samples of suspected asbestos containing materials. IHST collected the bulk samples when unsampled suspect material was discovered and for verification of asbestos content in previously sampled material at Warehouse 4195. The bulk samples were collected supplementary to a previous asbestos survey report dated June 23, 1998 and prepared by the ENSR Corporation. The June 23, 1998 report documented thirty-five (35) bulk samples collected at Warehouse 4195.

After sample recovery, samples were placed in secure labeled containers and sealed. The sampling vicinity was cleaned and sealed with spray lacquer and/or tape. Appropriate chain-of-custody protocols were initiated at that time to track handling of the bulk samples.

5.1 Laboratory Analysis

As discussed in the previous section, the survey included the collection of forty-eight (48) bulk samples. These samples were transported to and analyzed by Steve Moody Micro Services, Inc. asbestos laboratory, a successful participant in the Department of Commerce, National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP, Lab ID# 102056). The current Certification of Accreditation for Asbestos Fiber Analysis is effective until June 30, 2000. Ten percent (10%) of the bulk samples were re-analyzed independently as part of the quality assurance and quality control programs. Steve Moody Micro Services asbestos laboratory is also licensed by the Texas Department of Health (TDH) as an Asbestos Laboratory (TDH License #30-018)

5.2 Analytical Methods

Bulk samples were analyzed by Polarized Light Microscopy (PLM). This technique characterizes the materials refractive indices, fiber morphology, birefringence, extinction angle, sign of elongation, and dispersion staining colors to detect asbestos. Percentage compositions are based on approximate area compositions under a stereo-microscope.

5.3 Bulk Sample Results

The results of the sample analysis are presented in Table 1 with the original laboratory reports included as Appendix B. **Currently, the presence of asbestos containing material (ACM) in amounts of greater than 1% as defined by the EPA and Texas Department of Health (TDH) were identified in the following materials:**

- Thermal system insulation (TSI) on a domestic water line located in a rest room, above a lay-in ceiling and in an additional riser chase in the break area of Bay A.
- Vinyl asbestos 9" x 9" floor tile and black mastic adhesive located underneath carpet in two small storage rooms and an adjacent bath room in Bay A.

NOTE: Remnant cement asbestos (transite) exhaust flue piping is suspected to exist on the roof exterior where interior suspended gas heaters existed in the warehouse. This was not thoroughly confirmed, because the roof could not be safely accessed during the inspection. Interior suspended exhaust flue piping was identified to be stainless steel at the time of this inspection.

Asbestos was not detected in samples of the following materials (pursuant to EPA and TDH definition):

- Plaster lathe ceiling and wall material.
- Acoustical 2' x 2' and 2' x 4' ceiling tile in the warehouse.
- Fiberglass TSI and white mastic sealant on domestic water lines located in risers and above the ceiling in Bay C, Bay D and the rest rooms at the east loading dock area.
- Cement plaster/stucco material furrings around steel columns along the interior warehouse fire walls.
- Four-inch thick gypsum sheathing located along the warehouse roof deck.
- Sheetrock and joint compound sampled throughout the warehouse.
- Window putty and caulking material.
- Door frame caulking material.
- Expansion joint sealant compound in the warehouse.
- Roofing tar, asphalt roof composition material and roof felt (tar paper) material on the roof of the warehouse.
- Covebase (base board mastic) material in the warehouse.
- Cream 12" x 12" floor tile and yellow mastic in the offices and optical storage area of Bay G.
- Cream and light gray linoleum flooring located offices, closets and storage areas of Bay C.
- Cream/tan 12" x 12" floor tile and yellow mastic in the office adjacent to the east loading dock area.
- Tan 12" x 12" floor tile and yellow mastic in the office area of Bay F.
- White 12" x 12" floor tile and yellow mastic in the rest room area of Bay F.
- Black carpet mastic in the office and break room area of Bay A.
- Marbled cream 12" x 12" floor tile and yellow mastic in the women's rest room adjacent to the east loading dock area.
- Exterior concrete/stucco material on the exterior walls of the warehouse.

6.0 HAZARD ASSESSMENT

Asbestos is an airborne hazard. A hazard assessment refers to the process by which we evaluate a material's potential to release fibers into the air. Fibers may be released

spontaneously as part of the aging process, or as a result of sudden impact, vibration, air movement, or localized deterioration. Assessing a material's potential for fiber release, and hence its associated hazard, is based upon evaluating the material's condition and potential for further disturbance, damage, or deterioration.

6.1 Hazard Assessment Ratings

Any material identified as asbestos containing (ACM) that exhibits damage, should be considered a hazard to anyone who works in the area. Typically, damage is classified as minor or significant. Minor damage is characterized by small cuts, tears, scuffs, small openings, or other limited disturbance to asbestos containing materials. Areas with minor damage represent varying degrees of hazards from slight to high depending on:

- The nature of the damage;
- Proximity to disturbers, such as airstreams;
- Location with respect to building occupants;
- Activity in the immediate area; and
- Frequency of maintenance in the area.

Significant damage is characterized by large openings, visible flaking, loose particles, and debris on surfaces below the material. Asbestos containing materials which exhibit significant damage are either high or critical hazards, depending upon accessibility. High hazards exist where significantly damaged materials are generally inaccessible. Where significant damage is accessible, or in the vicinity of building occupants, there is a critical hazard. The recommended action for addressing asbestos related hazards depends upon the degree of hazard. For example:

- An **immediate hazard** or **critical** assessment describes a situation in which the material is exposed and friable, accessible to personnel, and is disturbed releasing fibers in the air. In this situation, immediate action should be taken. At a minimum, the area should be isolated and access restricted.
- A **high** assessment describes a situation in which the material is in poor condition, exposed and friable, with a potential for disturbance. In this case, interim controls should

be instituted, and the material should be removed when practical. Repairs should be made to the ACM if abatement is not scheduled.

- A **medium** or **moderate** assessment describes a situation in which a combination of the determining factors vary, such as a material that is in good condition but has a high asbestos content and is generally accessible. In situations like this, abatement can be scheduled with future building renovation or maintenance.
- A **low** or **slight** assessment describes a situation in which the material is in good condition and has a low potential for disturbance, damage, or deterioration. In this situation, an Operations and Maintenance (O&M) program is usually all that is needed.

In general, those areas that are classified as critical or high damage should be abated. These are areas where a high probability of exposure could occur. Moderately damaged areas would require an Operations and Maintenance Program to be instituted. In addition, these areas should be abated or at the very least repaired.

6.2 Asbestos Containing Material Assessments

As a result of the survey, the presence of asbestos was documented in multiple types of non-friable materials and in domestic water line pipe fittings. Hazard assessments for these materials are presented below.

Warehouse 4195 consists of a single-story structure of approximately 124,433 square feet believed to be originally constructed in the early 1940's. Warehouse 4195 is currently occupied, and contains a series of seven bays (Bay A through Bay G) used by both military and civilian personnel. The primary construction of the building consists of a steel frame built on a raised reinforced concrete foundation. The exterior walls consist of concrete/stucco applied over brick and masonry block. The roof was surfaced with built-up felt, tar and gravel composition supported by steel columns, beams and truss members. The roof was gabled with a central, split-level roof section raised along the entire length of the warehouse. Framed glass, skylight windows existed along each side of the central roof section. The interior was primarily open warehouse area with offices, rest rooms and storage rooms located along the east side of the building. The interior offices, rest rooms and storage rooms were finished with sheetrock, masonry block, lay-in acoustical ceiling tiles, plaster lath, vinyl composition tile and carpet.

Heating, ventilation and air conditioning (HVAC) was provided to the finished office area from wall mounted air condenser units and package heater units. The open warehouse area was heated with suspended gas heater units. No hot or chilled water supplied HVAC systems were identified in the warehouse. The following areas were determined to contain asbestos:

6.2.1 Thermal System Insulation (TSI):

ACM was detected in TSI on a domestic water line located in a rest room, above a lay-in ceiling and in an additional riser chase in the break area of Bay A (Appendix A: Drawing 1). Approximately 88 linear feet of asbestos domestic water line TSI was identified in Bay A. The domestic water line insulation contained 20% amosite asbestos. The asbestos TSI was friable and in damaged condition at the time of the survey. The asbestos TSI presents an **high** potential hazard to building occupants due to the exposed and damaged condition of the ACM. Prior to demolition or renovation, the ACM should be removed by a qualified, licensed asbestos abatement contractor. In the interim, the pipe insulation should be isolated from unauthorized access and monitored until removal can be scheduled.

6.2.2 Floor Tile and Mastic:

Asbestos was detected in 9" x 9" floor tile and black mastic adhesive located underneath carpet in two small storage rooms and an adjacent bath room in Bay A. Approximately 172 square feet of the asbestos 9" x 9" floor tile and black mastic adhesive was identified in Bay A. The 9" x 9" floor tile and black mastic adhesive contained 5% chrysotile asbestos. The floor tile and mastic were observed to be non-friable, in good condition and presents a **low** health hazard to building occupants due to its binding matrix and low potential for fiber release. In the event of total building demolition, TDH and NESHAP regulations allow Category I non-friable material such as floor tile and mastic to be left in place when in good condition. However, the floor tile and mastic would have to be removed prior to building renovation or interior work activities that would otherwise disturb the ACM. In the interim, the condition of the floor tile and mastic should be monitored until removal is planned.

6.2.3 Suspect Cement Asbestos Exhaust Flues (Transite Pipe):

Remnant cement asbestos (transite) exhaust flue piping is suspected to exist on the roof exterior where interior suspended gas heaters existed in the warehouse. This was not thoroughly confirmed, because the roof could not be safely accessed during the inspection. At the time of this inspection, the interior suspended exhaust flue piping was identified to be stainless steel. Generally, transite pipe contains 25% to 45% chrysotile asbestos. In accordance with EPA and state regulations, the ACM is considered a Category II non-friable material and presents a **low** potential hazard to building occupants when left intact and undamaged. Prior to building demolition or renovation the asbestos piping should be removed as intact components by a properly trained and licensed asbestos abatement contractor. In the interim, no work activities such as drilling, abrading or sanding of the ACM should be performed.

7.0 HAZARD ASSESSMENT SUMMARY

The assessments given above for the various materials are general, based upon the overall conditions observed during the survey. Some specific instances, such as areas with localized damage, were identified and rated accordingly. However, because of the various limiting factors in performing the survey, these assessments do not attempt to inventory and rate every hazardous circumstance throughout the survey area. Additionally, the hazard associated with any material may become more severe over time. Buildings are dynamic, constantly changing facilities. Any change has the potential to contribute to an increased health hazard.

8.0 RESPONSE ACTION RECOMMENDATIONS

The recommendations include interim controls and abatement alternatives. These recommendations have been formulated from the assessment of the risks associated with the previously described asbestos containing materials.

8.1 Interim Controls

After the detection of an asbestos hazard and prior to its abatement, it is necessary to institute interim controls. The interim controls or an Operations and Maintenance (O&M) program should include good housekeeping and maintenance programs; training of building managers and maintenance personnel; updating building records to indicate the presence of asbestos containing materials; posting of asbestos warning signs; notification of occupants; and periodic reassessments to detect changes in material condition.

8.2 Abatement Alternatives

There are four recognized abatement alternatives: enclosure, encapsulation, encasement, and removal. In addition, an Operations and Maintenance Program may serve as a passive abatement alternative for asbestos containing materials presenting a slight to moderate hazard.

8.2.1 Enclosure:

Enclosure involves the construction of airtight barriers around asbestos containing materials, typically with impact-resistant materials such as gypsum board or plywood. The applicability of enclosure is limited, as costs for extensive enclosures may be quite high. Another

disadvantage is that the asbestos remains in the building and removal may become necessary during subsequent maintenance or renovation.

8.2.2 Encapsulation:

Encapsulation involves spraying asbestos containing materials with a sealant (called an encapsulant) to inhibit fiber release. Encapsulation may be a practical abatement alternative for cementitious materials that can support the added weight of the encapsulation without delaminating. As with enclosure, the asbestos remains in the building and removal may become necessary during subsequent maintenance or renovation or as the material condition changes.

8.2.3 Encasement:

Encasement is a recently developed abatement technology, involving the spray application of a one or two layer structural shell, which may be mechanically fastened to prevent delamination. In a sense, it is a spray-applied enclosure. Typically, an encasement ranges from 1/16-inch to two inches in thickness. Encasement is more resistant to abrasion and other damage than encapsulation and is typically less expensive than enclosure. However, as with enclosure and encapsulation, the asbestos remains in the building and removal may become necessary in the future.

8.2.4 Removal:

Removal of asbestos containing materials is the only permanent abatement method. By removing asbestos containing materials, the building owner is removing the risk of potential exposure. Removal costs are generally higher initially than encapsulation, encasement, and small-scale enclosure. Because of their complexity, removal activities require appropriate regulatory and engineering controls to be completed safely and effectively.

8.3 Recommendations

Based on the site inspection, supplemental report review and analytical results, the following response actions are recommended:

- Interim controls should be instituted in order to monitor the condition of the ACM as previously described in Section 8.1.
- Prior to renovation, the asbestos containing TSI, floor tile and black mastic should be removed in accordance with TDH Regulations, 25 TAC Section 295 and EPA NESHAP, 40 CFR Part 61 regulations. Removal of the ACM should be performed by a qualified, licensed asbestos abatement contractor in accordance with all federal, state, and local regulations.
- In addition, Category II non-friable transite piping or Category I non-friable mastics encountered during roof removal and repair work must be conducted in accordance asbestos NESHAP 40 CFR Part 61. A competent person must supervise the work during non-friable asbestos removal activities and be trained in the provisions of NESHAP requirements 40 CFR 61.145 (c)(8) regarding the control of visible emissions and wet demolition practices.

8.4 Response Actions

Table 1 includes a response rating based on factors such as asbestos content, friability, accessibility, potential for disturbance, etc. Definitions for the response ratings are listed below:

0 = Material does not contain detectable amounts of asbestos and requires no asbestos-related abatement action.

1 = Material contains asbestos, was non-friable, and requires no abatement action unless sanded, abraded, drilled or otherwise disturbed.

2 = Material contains asbestos and was friable. Damage was not observed; no immediate abatement action is required.

3 = Material contains asbestos, was friable, and shows signs of localized damage with a potential for disturbance.

4 = Material contains friable asbestos and was significantly damaged.

9.0 QUALIFICATIONS

Industrial Hygiene & Safety Technology, Inc. has attempted to observe the existing conditions within the aforementioned building utilizing generally accepted procedures. Regardless of the thoroughness of a survey, the possibility exists in which some areas containing asbestos were overlooked, inaccessible, or different from those at specific locations. Furthermore, renovation and/or construction may reveal altered conditions.

This report describes only the conditions present at the time of the survey, in the areas surveyed. The recommendations presented only apply to the conditions that were observed during the survey. Other conditions may exist in unsurveyed or inaccessible areas such as behind walls and above permanent ceilings. In addition, the conditions of asbestos containing materials may change gradually or suddenly depending upon use, maintenance, or accident. As a result, the recommendations presented should be periodically reviewed and updated.

The quantity estimates presented in this report were based upon observations during the survey as well as information from building plans provided by the contracting officer. While it is believed that the estimated quantities are reasonable, unanticipated conditions could be present in inaccessible or unsurveyed areas. Industrial Hygiene & Safety Technology, Inc. does not warrant or guarantee the quantity estimates, and the use of such estimates shall be at the user's own risk and shall constitute a release and agreement to defend and indemnify

Industrial Hygiene & Safety Technology, Inc. from and against any liability. If you have any questions or comments regarding the content of this report, I would be glad to discuss them at your convenience.

Sincerely,

Wayne J. Randall	Tracy K. Bramlett, CIH, CSP
TDH Asbestos Consultant License #10-5466	President

TABLE 1

SUMMARY OF BULK SAMPLE ANALYSIS FOR ASBESTOS IDENTIFICATION

Warehouse 4195
Fort Sam Houston
San Antonio, Texas

Sample ID #	Sample Description	Material Location	% & Type of Asbestos Detected[a]	Estimated Quantity	Type of ACM[b]	Friability[c]	Physical Condition[d]	Potential for Disturbance[e]	Response Rating
SH01	Cream 12" x 12" floor tile and mastic	Bay G: Optical storage area and offices	NAD	2,140 SF	M	NF	U	L	0
SH02	Cream 12" x 12" floor tile and mastic	Bay G: Optical storage area and offices	NAD	See SH01	M	NF	U	L	0
SH03	Cream 12" x 12" floor tile and mastic	Bay G: Optical storage area and offices	NAD	See SH01	M	NF	U	L	0
SH04	Sheetrock and joint compound (interior walls)	Bay G: Optical storage area and offices	NAD	4,195 SF	M	NF	U	L	0
SH05	Sheetrock and joint compound (interior walls)	Bay G: Optical storage area and offices	NAD	See SH04	M	NF	U	L	0
SH06	Sheetrock and joint compound (interior walls)	Bay G: Optical storage area and offices	NAD	See SH04	M	NF	U	L	0
SH07	Baseboard mastic	Bay G: Office area perimeter walls	NAD	351 LF	M	NF	U	L	0
SH08	Acoustic 2' x 2' lay-in ceiling tile	Bay C: Office areas	NAD	2,140 SF	M	F	U	L	0
SH09	Acoustic 2' x 2' lay-in ceiling tile	Bay C: Office areas	NAD	See SH08	M	F	U	L	0
SH10	Acoustic 2' x 2' lay-in ceiling tile	Bay C: Office areas	NAD	See SH08	M	F	U	L	0
SH11	Cream and light gray linoleum flooring	Bay C: Office areas	NAD	1,644 SF	M	NF	U	L	0
SH12	Cream and light gray linoleum flooring	Bay C: Office areas	NAD	See SH11	M	NF	U	L	0
SH13	Cream and light gray linoleum flooring	Bay C: Office areas	NAD	See SH11	M	NF	U	L	0
SH14	Baseboard mastic	Bay C: Office areas	NAD	411 LF	M	NF	U	L	0
SH15	Sheetrock and joint compound	Bay C: Office areas	NAD	3,415 SF	M	NF	U	L	0
SH16	Cream 12" x 12" floor tile and mastic	Office adjacent to east loading dock	NAD	380 SF	M	NF	U	L	0
SH17	Cream 12" x 12" floor tile and mastic	Office adjacent to east loading dock	NAD	See SH16	M	NF	U	L	0
SH18	Cream 12" x 12" floor tile and mastic	Office adjacent to east loading dock	NAD	See SH16	M	NF	U	L	0
SH19	Tan 12" x 12" floor tile and mastic	Bay F: Office area	NAD	480 SF	M	NF	U	L	0
SH20	Tan 12" x 12" floor tile and mastic	Bay F: Office area	NAD	See SH19	M	NF	U	L	0

Sample ID #	Sample Description	Material Location	% & Type of Asbestos Detected[a]	Estimated Quantity	Type of ACM[b]	Friability[c]	Physical Condition[d]	Potential for Disturbance[e]	Response Rating
SH21	Tan 12" x 12" floor tile and mastic	Bay F: Office area	NAD	See SH19	M	NF	U	L	0
SH22	Acoustic lay-in 2' x 2' ceiling tile	Bay F: Office area	NAD	480 SF	M	NF	U	L	0
SH23	Acoustic lay-in 2' x 2' ceiling tile	Bay F: Office area	NAD	See SH22	M	NF	U	L	0
SH24	Acoustic lay-in 2' x 2' ceiling tile	Bay F: Office area	NAD	See SH22	M	NF	U	L	0
SH25	White 12" x 12" floor tile and mastic	Bay F: Restrooms	NAD	230 SF	M	NF	U	L	0
SH26	Built up felt, tar and gravel material	Warehouse roof	NAD	136,000 SF	M	NF	U	L	0
SH27	Black mastic	Bay A: Office area (east)	NAD	1,400 SF	M	NF	U	L	0
SH28	9" x 9" floor tile and mastic	Bay A: Office area (east)	Floor tile - 5% CH Black mastic - 5% CH	172 SF	M	NF	U	L	1
SH29	9" x 9" floor tile and mastic	Bay A: Office area (east)	Not analyzed - positive stop	See SH28	M	NF	U	L	1
SH30	9" x 9" floor tile and mastic	Bay A: Office area (east)	Not analyzed - positive stop	See SH28	M	NF	U	L	1
SH31	Acoustic 2' x 2' lay-in ceiling tile	Bay A: Office area	NAD	1,145 SF	M	F	U	L	0
SH32	Acoustic 2' x 2' lay-in ceiling tile	Bay A: Office area	NAD	See SH31	M	F	U	L	0
SH33	Acoustic 2' x 2' lay-in ceiling tile	Bay A: Office area	NAD	See SH31	M	F	U	L	0
SH34	Acoustic 2' x 4' lay-in ceiling tile pinhole pattern	Bay A: Office area	NAD	955 SF	M	F	SD	H	0
SH35	Acoustic 2' x 4' lay-in ceiling tile pinhole pattern	Bay A: Office area	NAD	See SH34	M	F	SD	H	0
SH36	Acoustic 2' x 4' lay-in ceiling tile pinhole pattern	Bay A: Office area	NAD	See SH34	M	F	SD	H	0
SH37	TSI on domestic water line	Bay A: Restroom and above ceiling or office area	20% AM	88 LF	TSI	F	D	H	3
SH38	Gypsum sheathing on ceiling deck below roof	Warehouse ceiling interior	NAD	136,000 SF	M	NF	LD	M	0
SH39	White mastic sealant on fiberglass	Bay C & D: Domestic water lines, restrooms, break room and east loading dock	NAD	348 LF	M	NF	U	L	0
SH40	Plaster surfacing on lathe	Bay A: Interior ceilings of restroom	NAD	720 SF	M	NF	U	L	0
SH41	Plaster surfacing	Bay A: Restroom ceilings	NAD	See SH40	S	NF	D	L	0

Sample ID #	Sample Description	Material Location	% & Type of Asbestos Detected[a]	Estimated Quantity	Type of ACM[b]	Friability[c]	Physical Condition[d]	Potential for Disturbance[e]	Response Rating
SH42	Plaster surfacing	Bay A: Restroom ceilings	NAD	See SH40	S	NF	D	L	0
SH43	Stucco exterior	Warehouse wall exterior along loading docks	NAD	48,176 SF	S	NF	U	L	0
SH44	Stucco exterior	Warehouse wall exterior along loading docks	NAD	See SH43	S	NF	U	L	0
SH45	Stucco exterior	Warehouse wall exterior along loading docks	NAD	See SH43	S	NF	U	L	0
SH46	Marbled cream 12" x 12" floor tile and mastic	Bay D: East loading dock women's restroom	NAD	145 SF	M	NF	U	L	0
SH47	Marbled cream 12" x 12" floor tile and mastic	Bay D: East loading dock women's restroom	NAD	See SH46	M	NF	U	L	0
SH48	Marbled cream 12" x 12" floor tile and mastic	Bay D: East loading dock women's restroom	NAD	See SH46	M	NF	U	L	0

KEY TO TABLE 1

[a]CH = Chrysotile; AM= Amosite; CR = Crocidolite; AN = Anthophyllite; TR = Tremolite; AC = Actinolite; NAD = No Asbestos Detected
[b]M = Miscellaneous; S = Surfacing; TSI = Thermal System Insulation
[c]F = Friable; NF = Non-friable
[d]U = Undamaged; D = Damaged; SD = Significantly damaged
[e]H = High; M = Moderate; L = Low

TABLE 2

APPROXIMATE COST TO REMOVE ASBESTOS

Warehouse 4195
Fort Sam Houston
San Antonio, Texas

MATERIAL TYPE	LOCATION	APPROXIMATE QUANTITY	UNIT PRICE	REMOVAL COSTS	AIR MONITORING	TOTAL
Thermal System Insulation on domestic water line	Warehouse 4195: Bay A	88 Linear Feet	$16.50/LF	$1,452.00	$500.00	$1,952.00
9" x 9" Floor tile and black mastic	Warehouse 4195: Bay A	172 Square Feet	$5.75/SF	$989.00	$500.00	$1,489.00
Transite exhaust Flue Pipe	Suspected to be on warehouse roof where suspended heaters existed	Suspected less than 20 Linear Feet	Minimum Rate	$650.00	$250.00	$900.00
	TDH Asbestos Regulated Units	2 ARUs	Federal Facility Fee			$50.00
			GRAND TOTAL	**$3, 091.00**	**$1,250.00**	**$4,391.00**

1. The price estimates were derived from current estimates from asbestos abatement contractors.
2. Price does not include replacement costs with non-asbestos materials.
3. Air monitoring costs do not include final air clearance by Transmission Electron Microscopy.
4. Price estimates listed above are intended as a guide for budget estimating only. To determine the total abatement costs for the project, asbestos removal scope of work should be prepared and the project bid by professional asbestos abatement contractors.
5. Prices could be reduced if all abatement activities are performed at one time.
6. Prices may be slightly higher for small abatement projects due to mobilization costs.
7. Price includes TDH Fee issued to federal facilities for a 10-day notification of asbestos abatement.

TABLE 3

TIME SCHEDULE FOR ABATEMENT

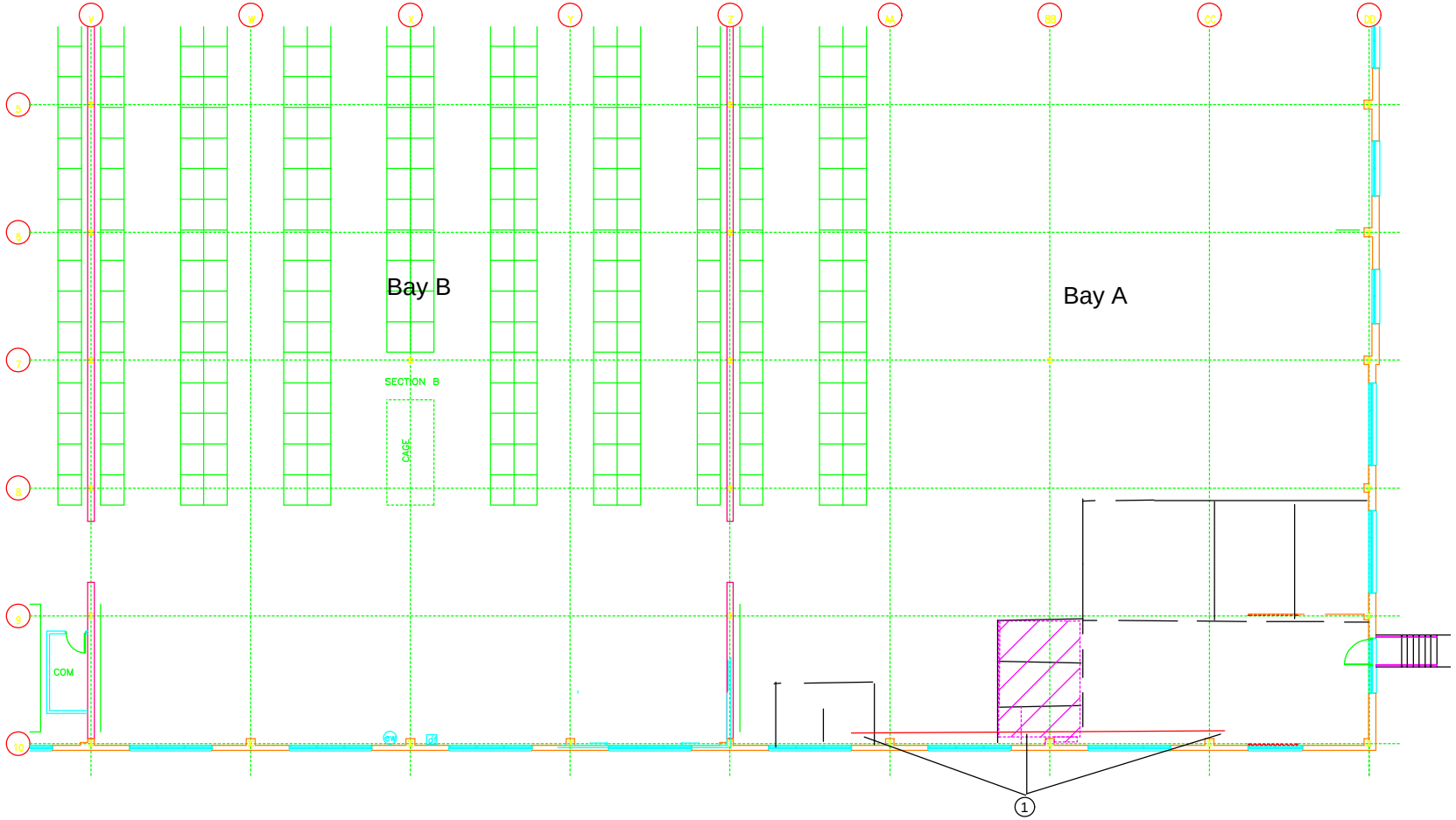
Warehouse 4195
Fort Sam Houston
San Antonio, Texas

MATERIAL	LOCATION	APPROXIMATE QUANTITY	# OF DAYS FOR ABATEMENT
Thermal System Insulation on domestic water line	Warehouse 4195: Bay A	88 Linear Feet	1 Day
9" x 9" Floor tile and black mastic	Warehouse 4195: Bay A	172 Square Feet	1 Day
Transite exhaust Flue Pipe	Suspected to be on warehouse roof where suspended heaters existed	Suspected less than 20 Linear Feet	1 Day

Note: Time schedule includes Phase Contrast Microscopy (PCM) air monitoring on site. Time schedule for abatement will vary depending on the size of the contractor's work force, logistical planning and proper work preparation.

APPENDIX A

Schematic Drawings



ASBESTOS ABATEMENT NOTES

1 - Remove asbestos pipe insulation prior to renovation work.

- Remove asbestos floor tile and black mastic prior to renovation work.

WAREHOUSE 4195
FLOOR PLAN
SCALE: 1:100

US Army Corps of Engineers
Fort Worth District

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

ENGINEERING DIVISION
MILITARY DESIGN BRANCH

FORT SAM HOUSTON
SAN ANTONIO, TEXAS
DRMO COMPLEX

WAREHOUSE 4195
ASBESTOS CONTAINING MATERIALS

SEQUENCE NO.
H1. 1
Sheet of

DESIGN FILE

Contr No. 561470059

APPENDIX B

Site Photographs

PHOTO 1

Description: Facing South-Southeast: Photograph of warehouse 4195 located at Fort Sam Houston in San Antonio, Texas.

PHOTO 2

Description: Bay A: Photograph of asbestos containing domestic water pipe insulation (identified by the red arrow) located in the rest room and above the lay-in ceiling in Bay A. The domestic water pipe insulation contained 20% amosite asbestos.

PHOTO 3: Sample SH28

Description: Bay A - Northeast Office Area: Photograph of asbestos containing 9" x 9" floor tile and black mastic identified underneath carpet in the two small storage rooms and an adjacent bath room . The floor tile and black mastic contains 5% chrysotile asbestos

PHOTO 4: Sample SH27

Description: Bay A - Northeast Office Area: Photograph of black mastic identified underneath carpet in the three office areas and an adjacent break room. No asbestos was detected in the black carpet mastic.

APPENDIX C

Laboratory Report

PLM REPORT

Steve Moody Micro Services, Inc.
1510 Randolph, Suite 602
Carrollton, Texas 75006 (972) 446-9482

NVLAP Lab No. 102056
TDH License No. 30-0084
PAT ID # 102577

Client : Industrial Hygiene & Safety Technology, Inc.

Lab Job No. : 9B-3539

Project : Warehouse 4195, Fort Sam Houston, San Antonio, TX

Report Date : 10/6/99

Project # : 12397 Sample Date : 9/27/99

Identification : Asbestos, Bulk Sample Analysis

Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A

On 10/ 6/99, forty-eight (48) bulk material samples were submitted by Wayne Randall of Industrial Hygiene & Safety Technology, Inc. for asbestos analysis by PLM/DS.
Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
SH01	12" x 12" Floor Tile (Cream) & Mastic, Bay G, Optical Storage Area & Offices	None Detected - Floor Tile None Detected - Yellow Mastic
SH02	12" x 12" Floor Tile (Cream) & Mastic, Bay G, Optical Storage Area & Offices	None Detected - Floor Tile None Detected - Yellow Mastic
SH03	12" x 12" Floor Tile (Cream) & Mastic, Bay G, Optical Storage Area & Offices	None Detected - Floor Tile None Detected - Yellow Mastic
SH04	Sheetrock & Joint Compound, Interior Walls, Bay G, Optical Storage Area & Offices	None Detected - Drywall Material None Detected - Joint Compound
SH05	Sheetrock & Joint Compound, Interior Walls, Bay G, Optical Storage Area & Offices	None Detected - Drywall Material None Detected - Joint Compound
SH06	Sheetrock & Joint Compound, Interior Walls, Bay G, Optical Storage Area & Offices	None Detected - Drywall Material None Detected - Joint Compound
SH07	Baseboard Mastic, Bay G, Office Area, Perimeter Walls	None Detected - Cream Mastic
SH08	2' x 2' Acoustic Lay-in Ceiling Tile, Bay C, Office Areas	None Detected - Ceiling Tile
SH09	2' x 2' Acoustic Lay-in Ceiling Tile, Bay C, Office Areas	None Detected - Ceiling Tile
SH10	2' x 2' Acoustic Lay-in Ceiling Tile, Bay C, Office Areas	None Detected - Ceiling Tile
SH11	Linoleum Flooring (Cream & Light Gray), Bay C, Office Areas	None Detected - Sheet Flooring None Detected - Fiber Backing None Detected - Yellow Mastic
SH12	Linoleum Flooring (Cream & Light Gray), Bay C, Office Areas	None Detected - Sheet Flooring None Detected - Fiber Backing None Detected - Yellow Mastic

PLM REPORT

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Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
SH13	Linoleum Flooring (Cream & Light Gray), Bay C, Office Areas	None Detected - Sheet Flooring None Detected - Fiber Backing None Detected - Yellow Mastic
SH14	Baseboard Mastic, Bay C, Office Areas	None Detected - Cream Mastic
SH15	Sheetrock & Joint Compound, Bay C, Office Areas	None Detected - Drywall Material None Detected - Joint Compound
SH16	12" x 12" Floor Tile (Cream) & Mastic, Office adjacent East Loading Dock	None Detected - Floor Tile None Detected - Yellow Mastic
SH17	12" x 12" Floor Tile (Cream) & Mastic, Office adjacent East Loading Dock	None Detected - Floor Tile None Detected - Yellow Mastic
SH18	12" x 12" Floor Tile (Cream) & Mastic, Office adjacent East Loading Dock	None Detected - Floor Tile None Detected - Yellow Mastic
SH19	12" x 12" Floor Tile (Tan) & Mastic, Bay F, Office Area	None Detected - Floor Tile None Detected - Yellow Mastic None Detected - Black Mastic
SH20	12" x 12" Floor Tile (Tan) & Mastic, Bay F, Office Area	None Detected - Floor Tile None Detected - Yellow Mastic None Detected - Black Mastic
SH21	12" x 12" Floor Tile (Tan) & Mastic, Bay F, Office Area	None Detected - Floor Tile None Detected - Yellow Mastic None Detected - Black Mastic
SH22	2' x 2' Acoustic Lay-in Ceiling Tile, Bay F, Office Area	None Detected - Ceiling Tile
SH23	2' x 2' Acoustic Lay-in Ceiling Tile, Bay F, Office Area	None Detected - Ceiling Tile

PLM REPORT

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On 10/ 6/99, forty-eight (48) bulk material samples were submitted by Wayne Randall of Industrial Hygiene & Safety Technology, Inc. for asbestos analysis by PLM/DS.
Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
SH24	2' x 2' Acoustic Lay-in Ceiling Tile, Bay F, Office Area	None Detected - Ceiling Tile
SH25	12" x 12" Floor Tile (White) & Mastic, Bay F, Restrooms	None Detected - Floor Tile None Detected - Yellow Mastic
SH26	Built-up Felt, Tar & Gravel Material, Warehouse Roof	None Detected - Roofing Shingles None Detected - Roofing Tar None Detected - Tar Paper
SH27	Black Mastic, Bay A, Office Area, East	None Detected - Black Mastic
SH28	9" x 9" Floor Tile & Mastic, Bay A, Office Area, East	5% Chrysotile - Floor Tile 5% Chrysotile - Black Mastic
SH29	9" x 9" Floor Tile & Mastic, Bay A, Office Area, East	Not Analyzed - Positive Stop
SH30	9" x 9" Floor Tile & Mastic, Bay A, Office Area, East	Not Analyzed - Positive Stop
SH31	2' x 2' Acoustic Lay-in Ceiling Tile, Bay A, Office Area	None Detected - Ceiling Tile
SH32	2' x 2' Acoustic Lay-in Ceiling Tile, Bay A, Office Area	None Detected - Ceiling Tile
SH33	2' x 2' Acoustic Lay-in Ceiling Tile, Bay A, Office Area	None Detected - Ceiling Tile
SH34	2' x 4' Acoustic Lay-in Ceiling Tile (Pinhole Pattern), Bay A, Office Area	None Detected - Ceiling Tile
SH35	2' x 4' Acoustic Lay-in Ceiling Tile (Pinhole Pattern), Bay A, Office Area	None Detected - Ceiling Tile
SH36	2' x 4' Acoustic Lay-in Ceiling Tile (Pinhole Pattern), Bay A, Office Area	None Detected - Ceiling Tile

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Steve Moody Micro Services, Inc.
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EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A

On 10/ 6/99, forty-eight (48) bulk material samples were submitted by Wayne Randall of Industrial Hygiene & Safety Technology, Inc. for asbestos analysis by PLM/DS.
Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
SH37	Thermal System Insulation on Domestic Water Line, Bay A, Restroom & above Ceiling of Office Area	20% Amosite - Thermal Insulation
SH38	Gypsum Sheathing on Ceiling Deck below Roof, Warehouse Ceiling, Interior	None Detected - Drywall Material
SH39	White Mastic Sealant on Fiberglass, Bay C & D, Domestic Water Lines, Restrooms, Break Room & East Loading Dock	None Detected - Yellow Thermal None Detected - White Mastic
SH40	Plaster Surfacing on Lathe, Bay A, Ceiling, Restroom	None Detected - Plaster
SH41	Plaster Surfacing, Bay A, Restroom Ceilings	None Detected - Plaster
SH42	Plaster Surfacing, Bay A, Restroom Ceilings	None Detected - Plaster
SH43	Stucco Exterior, Warehouse Wall Exterior along Loading Docks	None Detected - Stucco
SH44	Stucco Exterior, Warehouse Wall Exterior along Loading Docks	None Detected - Stucco
SH45	Stucco Exterior, Warehouse Wall Exterior along Loading Docks	None Detected - Stucco
SH46	12" x 12" Floor Tile (Marbled Cream) & Mastic, Bay D Area, East Loading Dock, Women's Restrooms	None Detected - Floor Tile None Detected - Yellow Mastic
SH47	12" x 12" Floor Tile (Marbled Cream) & Mastic, Bay D Area, East Loading Dock, Women's Restrooms	None Detected - Floor Tile None Detected - Yellow Mastic
SH48	12" x 12" Floor Tile (Marbled Cream) & Mastic, Bay D Area, East Loading Dock, Women's Restrooms	None Detected - Floor Tile None Detected - Yellow Mastic

PLM REPORT

Steve Moody Micro Services, Inc.
1510 Randolph, Suite 602
Carrollton, Texas 75006 (972) 446-9482

NVLAP Lab No. 102056
TDH License No. 30-0084
PAT ID # 102577

Client : Industrial Hygiene & Safety Technology, Inc.

Lab Job No. : 9B-3539

Project : Warehouse 4195, Fort Sam Houston, San Antonio, TX

Report Date : 10/6/99

Project # : 12397 Sample Date : 9/27/99

Identification : Asbestos, Bulk Sample Analysis

Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A

On 10/ 6/99, forty-eight (48) bulk material samples were submitted by Wayne Randall of Industrial Hygiene & Safety Technology, Inc. for asbestos analysis by PLM/DS.
Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content

These samples were analyzed by layers. The first percentage is the overall asbestos content for the sample. Specific layer or component asbestos content is indicated when relevant. These asbestos contents should be considered when establishing policy regarding these bulk materials. Quantification, unless otherwise noted, is performed by calibrated visual estimate. Results may not be reproduced except in full. This test report relates only to the samples tested.
These test results do not imply endorsement by NVLAP or any agency of the U.S. Government.

Analyst : Heather Deines

Lab Director : Steve Moody

Approved Signatory :

Thank you for choosing Steve Moody Micro Services

Steve Moody Micro Services, Inc. Summary Sheet
TDH License# 30-008 EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A NVLAP Lab# 102056

Client : **Industrial Hygiene & Safety Technology, Inc.** Lab Job # : **9B-3539**

Project : **Warehouse 4195, Fort Sam Houston, San Antonio, TX**

Project # : **12397**

Analyst Initials : AD

Sample #	Layer	Components
SH01	1 Floor Tile (Cream)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
SH02	1 Floor Tile (Cream)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
SH03	1 Floor Tile (Cream)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
SH04	1 Drywall Material (White)	3% Cellulose Fibers 2% Glass Wool Fibers 95% Gypsum / Binders
	2 DW Paper Facing (Tan)	100% Cellulose Fibers
	3 Joint Compound (White)	100% Calcite / Talc / Binders
SH05	1 Drywall Material (White)	3% Cellulose Fibers 2% Glass Wool Fibers 95% Gypsum / Binders
	2 DW Paper Facing (Tan)	100% Cellulose Fibers
	3 Joint Compound (White)	100% Calcite / Talc / Binders
SH06	1 Drywall Material (White)	3% Cellulose Fibers 2% Glass Wool Fibers 95% Gypsum / Binders
	2 DW Paper Facing (Tan)	100% Cellulose Fibers
	3 Joint Compound (White)	100% Calcite / Talc / Binders
SH07	1 Cream Mastic (Cream)	60% Calcite 40% Glue Binders
SH08	1 Ceiling Tile (Light Grey)	45% Mineral Wool Fibers 35% Cellulose Fibers 20% Perlite
SH09	1 Ceiling Tile (Light Grey)	45% Mineral Wool Fibers 35% Cellulose Fibers

Steve Moody Micro Services, Inc. Summary Sheet
TDH License# 30-008 EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A NVLAP Lab# 102056

Client : **Industrial Hygiene & Safety Technology, Inc.** Lab Job # : **9B-3539**

Project : **Warehouse 4195, Fort Sam Houston, San Antonio, TX**

Project # : **12397**

Analyst Initials :

Sample #	Layer	Components
SH09	1 Ceiling Tile (Light Grey)	20% Perlite
SH10	1 Ceiling Tile (Light Grey)	45% Mineral Wool Fibers 35% Cellulose Fibers 20% Perlite
SH11	1 Sheet Flooring (Cream)	100% Calcite / Vinyl Binders
	2 Fiber Backing (Light Grey)	55% Cellulose Fibers 5% Synthetic Fibers 5% Glass Wool Fibers 35% Binders / Fillers
	3 Yellow Mastic (Yellow)	100% Glue Binders
SH12	1 Sheet Flooring (Cream)	100% Calcite / Vinyl Binders
	2 Fiber Backing (Light Grey)	55% Cellulose Fibers 5% Synthetic Fibers 5% Glass Wool Fibers 35% Binders / Fillers
	3 Yellow Mastic (Yellow)	100% Glue Binders
SH13	1 Sheet Flooring (Cream)	100% Calcite / Vinyl Binders
	2 Fiber Backing (Light Grey)	55% Cellulose Fibers 5% Synthetic Fibers 5% Glass Wool Fibers 35% Binders / Fillers
	3 Yellow Mastic (Yellow)	100% Glue Binders
SH14	1 Cream Mastic (Cream)	60% Calcite 40% Glue Binders
SH15	1 Drywall Material (White)	2% Glass Wool Fibers 98% Gypsum / Binders
	2 DW Paper / Tape (Tan / White)	100% Cellulose Fibers
	3 Joint Compound (White)	100% Calcite / Talc / Binders
SH16	1 Floor Tile (Cream)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders

Steve Moody Micro Services, Inc. Summary Sheet
TDH License# 30-008 EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A NVLAP Lab# 102056

Client : **Industrial Hygiene & Safety Technology, Inc.** Lab Job # : **9B-3539**

Project : **Warehouse 4195, Fort Sam Houston, San Antonio, TX**

Project # : **12397**

Analyst Initials : AD

Sample #	Layer	Components
SH17	1 Floor Tile (Cream)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
SH18	1 Floor Tile (Cream)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
SH19	1 Floor Tile (Light Tan)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
	3 Black Mastic (Black)	100% Binders / Fillers
SH20	1 Floor Tile (Light Tan)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
	3 Black Mastic (Black)	100% Binders / Fillers
SH21	1 Floor Tile (Light Tan)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
	3 Black Mastic (Black)	100% Binders / Fillers
SH22	1 Ceiling Tile (Light Grey)	50% Cellulose Fibers 30% Mineral Wool Fibers 20% Perlite
SH23	1 Ceiling Tile (Light Grey)	50% Cellulose Fibers 30% Mineral Wool Fibers 20% Perlite
SH24	1 Ceiling Tile (Light Grey)	50% Cellulose Fibers 30% Mineral Wool Fibers 20% Perlite
SH25	1 Floor Tile (Off-White)	100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders

Steve Moody Micro Services, Inc. Summary Sheet
TDH License# 30-008 EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A NVLAP Lab# 102056

Client : **Industrial Hygiene & Safety Technology, Inc.** Lab Job # : **9B-3539**

Project : **Warehouse 4195, Fort Sam Houston, San Antonio, TX**

Project # : **12397**

Analyst Initials : AD

Sample #	Layer	Components
SH26	1 Aggregate (Off-White)	100% Aggregate
	2 Roofing Shingles (Black)	28% Cellulose Fibers 2% Synthetic Fibers 20% Calcite 20% Sand 30% Tar Binders
	3 Roofing Tar (Black)	100% Tar Binders
	4 Tar Paper (Black)	83% Cellulose Fibers 2% Synthetic Fibers 15% Tar Binders
SH27	1 Black Mastic (Black)	100% Tar Binders
SH28	1 Floor Tile (Light Tan)	5% Chrysotile 95% Calcite / Vinyl Binders
	2 Black Mastic (Black)	5% Chrysotile 95% Tar Binders
SH31	1 Ceiling Tile (Light Grey)	50% Cellulose Fibers 30% Mineral Wool Fibers 20% Perlite
SH32	1 Ceiling Tile (Light Grey)	50% Cellulose Fibers 30% Mineral Wool Fibers 20% Perlite
SH33	1 Ceiling Tile (Light Grey)	50% Cellulose Fibers 30% Mineral Wool Fibers 20% Perlite
SH34	1 Ceiling Tile (Light Grey)	45% Mineral Wool Fibers 35% Cellulose Fibers 20% Perlite
SH35	1 Ceiling Tile (Light Grey)	45% Mineral Wool Fibers 35% Cellulose Fibers 20% Perlite
SH36	1 Ceiling Tile (Light Grey)	45% Mineral Wool Fibers 35% Cellulose Fibers

Steve Moody Micro Services, Inc. Summary Sheet
TDH License# 30-008 EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A NVLAP Lab# 102056

Client : **Industrial Hygiene & Safety Technology, Inc.** Lab Job # : **9B-3539**

Project : **Warehouse 4195, Fort Sam Houston, San Antonio, TX**

Project # : **12397**

Analyst Initials :

Sample #	Layer	Components
SH36	1 Ceiling Tile (Light Grey)	20% Perlite
SH37	1 Thermal Insulation (White)	20% Amosite 80% Binders / Fillers
SH38	1 Drywall Material (White)	3% Cellulose Fibers 97% Gypsum / Binders
SH39	1 Yellow Thermal (Yellow)	95% Mineral Wool Fibers 5% Resin Binders
	2 Paper / Foil Wrap (Tan / Silver)	50% Cellulose Fibers 20% Glass Wool Fibers 30% Metal Foil
	3 White Mastic (White)	5% Wollastonite 95% Pigment / Binders
SH40	1 Plaster (Light Beige)	65% Perlite 35% Calcite / Binders
SH41	1 Plaster (Light Beige)	65% Perlite 35% Calcite / Binders
SH42	1 Plaster (Beige)	65% Aggregate 35% Calcite / Binders
SH43	1 Stucco (Light Grey)	60% Aggregate 40% Calcite / Binders
SH44	1 Stucco (Light Grey)	60% Aggregate 40% Calcite / Binders
SH45	1 Stucco (Light Grey)	60% Aggregate 40% Calcite / Binders
SH46	1 Floor Tile (Cream)	<1% Cellulose Fibers 100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders

Steve Moody Micro Services, Inc. Summary Sheet

TDH License# 30-008 EPA Method 40 CFR, Ch. 1, Pt. 763, Subpt. F, App. A NVLAP Lab# 102056

Client : **Industrial Hygiene & Safety Technology, Inc.** Lab Job # : **9B-3539**

Project : **Warehouse 4195, Fort Sam Houston, San Antonio, TX**

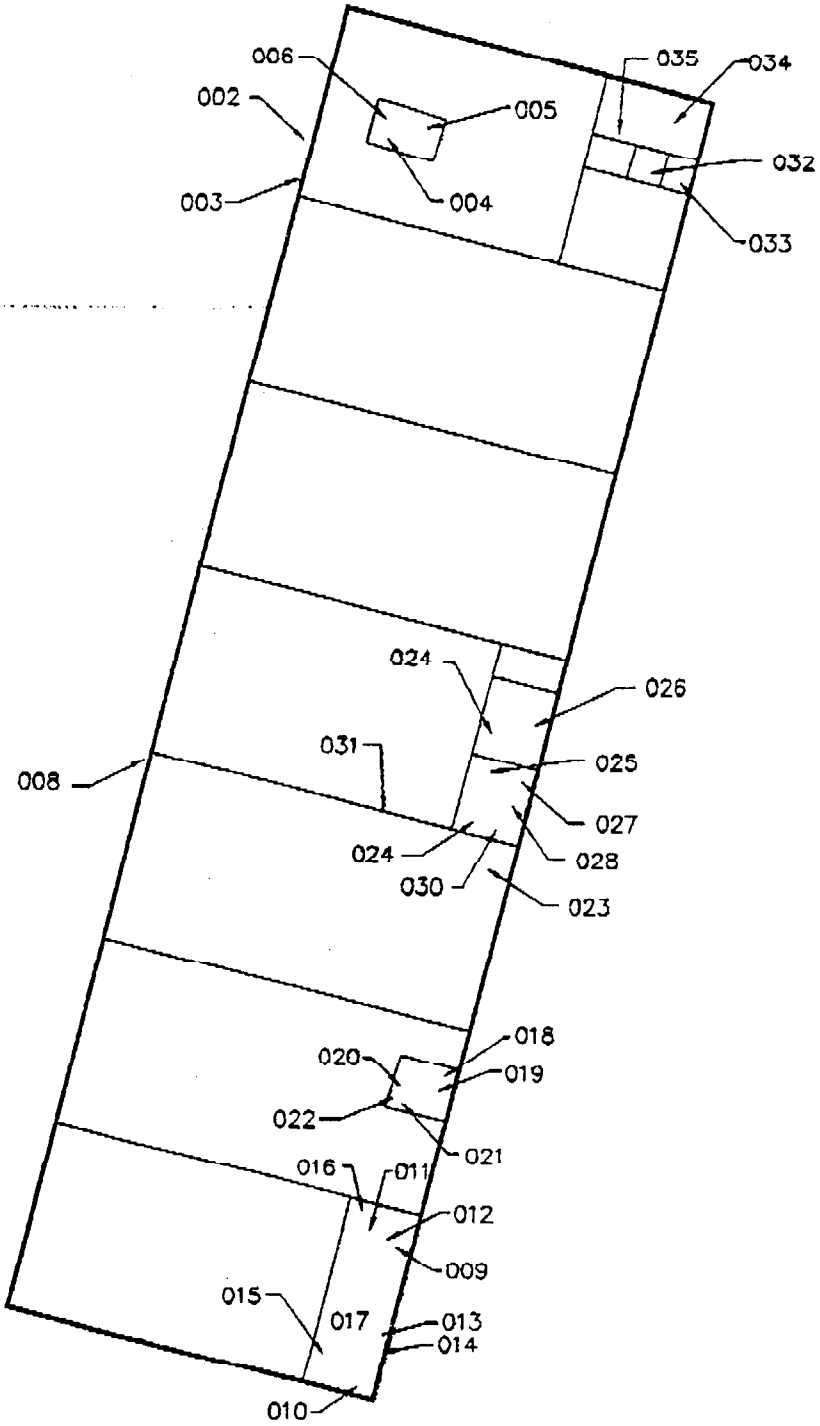
Project # : **12397**

Analyst Initials : JD

Sample #	Layer	Components
SH47	1 Floor Tile (Cream)	<1% Cellulose Fibers 100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders
SH48	1 Floor Tile (Cream)	<1% Cellulose Fibers 100% Calcite / Vinyl Binders
	2 Yellow Mastic (Yellow)	100% Glue Binders

APPENDIX D

Supplemental Report Documentation



ALL LOCATIONS ARE APPROXIMATE

0 100 200

SCALE IN FEET

ENSR.

ENSR CORPORATION

ASBESTOS SAMPLE LOCATION MAP

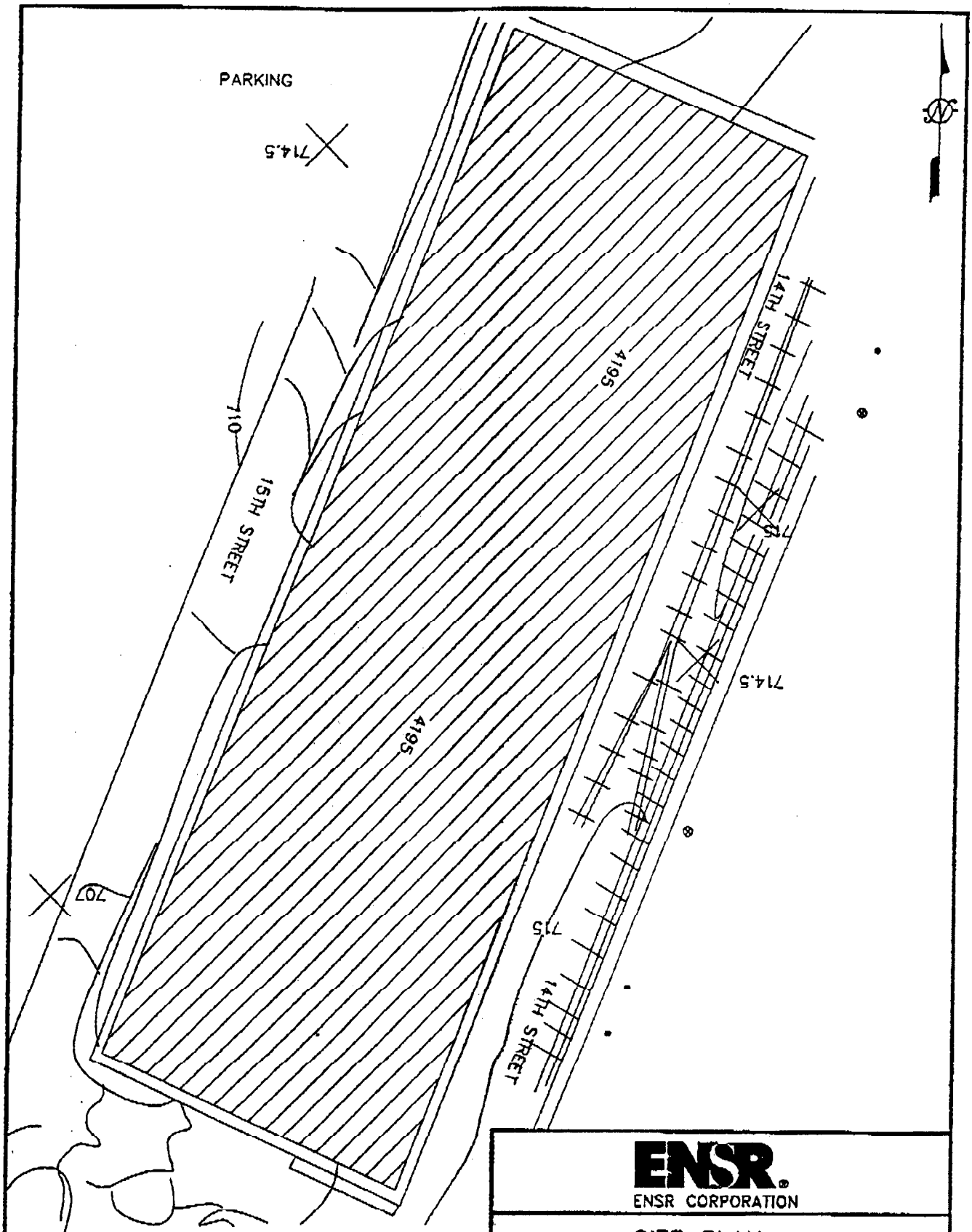
BUILDING 4195

FORT SAM HOUSTON, TEXAS

DACA 63-96-D-0007, D.O. #11

DRAWN: S. CHEN	DATE: 5-21-98	PROJECT NUMBER:	
APPV'D: McGILLOWAY	REVISED:	9000-170-300	

DWG. No. 90000042



LEGEND
•LIGHT OR UTILITY POLE
⊗POLE TRANSFORMER

0 50 100
SCALE IN FEET

ENSR
ENSR CORPORATION

SITE PLAN
FORT SAM HOUSTON
BUILDING 4195
SAN ANTONIO, TEXAS

DRAWN: A HARVEY	DATE: 6-23-98	PROJECT NUMBER:	
APPV'D: T DIDUIT	REVISED:	9000-170-300	

DWG. No. 4195

Report No. 9000-170-300

ENSR CORPORATION - NVLAP #[illegible]
BULK SAMPLE SUMMARY
JOB NUMBER: 9000-170-300 FOR: SAM HOUSTON
NUMBER OF SAMPLES: 35
MAY 7, 1998

SAMPLE NO.	DESCRIPTION/LOCATION	ASBESTOS CONTENT
4195-001	Window putty / North west, bay A	None Detected
4195-002	Exterior plaster / North west, bay A	None Detected
4195-003	Window caulk / North west, bay A	None Detected[1]
4195-004	Yellow carpet glue / North west, bay A-metal building	None Detected
4195-005	2x4 Ceiling tile / North west, bay A-metal building	None Detected
4195-006	Cove base & white mastic / North west, bay A-metal building	None Detected
4195-007	Plaster column texture / North west Bay A-south west column	None Detected
4195-008	Loading dock expansion joint / West, central	None Detected
4195-009	Sheetrock wall texture / South east, "A" company, south east office	None Detected
4195-010	Sheetrock wall texture / Southeast, "A" company, south east office	None Detected
4195-011	Sheetrock wall texture / South east, "A" company, south east office	None Detected
4195-012	Sheetrock & joint compound / South east, "A" company, south east office	None Detected
4195-013	12" Tan floor tile & yellow mastic / South east, "A" company, south east office	None Detected[1]
4195-014	White cove base & mastic / South east, "A" company, south east office	None Detected

Report No. 9000-170-300

ENSR CORPORATION - NVLAP #1148
BULK SAMPLE SUMMARY
JOB NUMBER: 9000-170-300, FORT SAM HOUSTON
NUMBER OF SAMPLES: 35
MAY 7, 1998

SAMPLE NO.	DESCRIPTION/LOCATION	ASBESTOS CONTENT
4195-015	Build out door frame caulk / South east, "A" company, southeast office, door frame	None Detected
4195-016	Plaster column texture / Southeast, "A" company , south east	None Detected
4195-017	2x2 Ceiling tile / South east, "A" company, shipping & receiving office	None Detected
4195-018	12" Tan floor tile & yellow mastic / South east, "A" company, shipping & receiving office	None Detected
4195-019	Sheetrock wall texture / South east, "A" company, shipping & receiving office	None Detected
4195-020	Sheetrock & joint compound / South east, "A" company , shipping & receiving office	None Detected
4195-021	White cove base & mastic / South east, "A" company , shipping & receiving office	None Detected
4195-022	Built-out window caulk / South east, "A" company, shipping & receiving office	None Detected
4195-023	Roof core / East central	None Detected
4195-024	Sheetrock & joint compound / East central, men's restroom, pipe chase	None Detected
4195-025	Door frame caulk / East central, men's restroom, pipe chase	None Detected
4195-026	Window putty / East central, men's restroom, pipe chase	None Detected
4195-027	Sheetrock-block wall caulk / East central, men's restroom, pipe chase	None Detected
4195-028	Pipe insulation mastic / East central, men's restroom, pipe chase	None Detected

Report No. 9000-170-300

ENSR CORPORATION - NVLAP # 1148
BULK SAMPLE SUMMARY
JOB NUMBER: 9000-170-300 FORT SAM HOUSTON
NUMBER OF SAMPLES: 35
MAY 7, 1998

SAMPLE NO.	DESCRIPTION/LOCATION	ASBESTOS CONTENT
4195-029	12" White floor tile & mastic / East central, women's restroom, pipe chase	None Detected
4195-030	Brown cove base mastic / East central, rock drill, Nelson's area	None Detected
4195-031	Plaster column texture / East central rock drill, Nelson's area	None Detected
4195-032	***White floor tile & black mastic / North east corner, bay A closet***	***Chrysotile, 8-12% (tile) Chrysotile, 3-6% (mastic)***
4195-033	***Green floor tile & black mastic / Bay A, north east corner, restroom***	***Chrysotile, 8-12% (tile) Chrysotile, 3-6% (mastic)***
034	2x4 Ceiling tile / Bay A, north east corner	None Detected
035	Black carpet mastic / Bay A, north east corner	None Detected

Lead-Based Paint Survey Report

Warehouse Building 4195
Fort Sam Houston
San Antonio, Texas

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1.0 EXECUTIVE SUMMARY

On September 27, 1999, Industrial Hygiene and Safety Technology, Inc. (IHST) conducted a lead-based paint survey at warehouse 4195 located at Fort Sam Houston in San Antonio, Texas.

The lead-based paint (LBP) survey scope of work included the examination and testing of interior and exterior painted surfaces of Warehouse 4195, and the determination of specific building components found to have lead concentrations in paint or other surface coatings at or above current U.S. Department of Housing and Urban Development (HUD) action levels for LBP. The lead based paint assessment was conducted utilizing paint chip sample analysis to verify lead concentrations on building surfaces for health and safety purposes prior to renovation.

In HUD's Revised Chapter 7, 1997 Guidelines and the July, 1995 document "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing", paint and other surface coatings are defined by statute to be lead-based if the lead content is equal to or greater than 1.0 milligrams per square centimeter (mg/cm^2) when tested by XRF or 0.5 percent (5,000 ppm) lead by dry weight when measured by Atomic Absorption Spectroscopy (AAS) and Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES). Due to the inability to readily separate multi-layered coatings of paint accurately in the field, the 5,000 ppm definition was used in this study for the entire paint thickness. Surface coatings include paint or similarly applied coatings which cover building component surfaces.

The Occupational Safety and Health Administration (OSHA) does not define an action limit for in-place LBP. The OSHA construction industry lead standard, modified in 29 CFR 1926.62, establishes a Permissible Exposure Limit (PEL) and an action level for airborne exposure levels of lead while performing construction activities (demolition, remodel, resurfacing, repair, etc.). The PEL is 50 micrograms of lead per cubic meter ($50ug/m^3$) of air averaged over 8 hours while the action level is $30ug/m^3$ averaged over 8 hours. Disturbances of paint containing lead should be monitored to ensure OSHA regulations are met for worker exposure.

Twenty four (24) paint chip samples were collected for verification and to test specific areas on the interior and exterior of Warehouse 4195. Four (4) painted structural components and testing combinations tested positive for Lead-Based Paint (LBP). The following structural components were determined to be surfaced with lead-based paint coatings:

Structural Components Determined To Be Surfaced with Lead-Based Paint

Warehouse 4195:

Paint Description	Testing Combinations
1. Green Paint	Metal overhead bay door components.
2. Blue Paint	Lower portion of brick interior walls in Office adjacent to east loading dock.
3. Silver/gray Paint	Metal and wood structural components supporting roof.
4. Silver/gray Paint	Metal window frame components along the warehouse perimeter.

Structural Components as Metallic Lead

In addition, to the lead-based paint identified on the site, metallic lead wall panels were identified in a northeast storage room of the existing office area in Bay C.

Paint coatings are characterized as being in good, fair or poor condition. Generally, paint in good condition strongly adheres to the surface and shows no evidence of significant cracking or peeling. Paint in fair condition shows some evidence of significant blistering, slight loss of adhesion, cracking or wear, but is not peeling or flaking. Paint in poor condition exhibits significant loss of adhesion, and is peeling or flaking. Paint coatings in good or fair condition generally pose a less significant health threat than those in poor condition. Children are at special risk from lead based paint in poor condition.

A majority of the painted surfaces observed in the building interior were in good to fair condition with minor evidence of cracking and loss of adhesion primarily noted on the interior fire walls and window frame components. Localized paint damage was also observed on high friction surfaces such as the overhead bay doors in the warehouse.

2.0 PURPOSE AND SCOPE

Industrial Hygiene and Safety Technology, Inc. performed the lead-based paint (LBP) assessment and paint evaluation specific to warehouse 4195 prior to building improvements and renovations. The purpose of the assessment was to locate and document the presence of lead-based paint and potential lead hazards in the building in order to prevent accidental disturbances and/or exposures to lead in the work place and implement appropriate remedial actions when necessary. This survey also incorporates OSHA *(29 CFR 1926.62, Lead)* standards which require compliance during work activities which disturb lead containing paint regardless of the concentration.

The scope of work for the LBP survey included the examination and testing of interior painted surfaces, and the identification of paint coatings found to have lead concentrations at or above current HUD action levels.

2.1 Background on Lead

Lead is one of the most common metals in use today. Lead has been used for over four thousand years for utilitarian and ornamental purposes. It may be found in everything from water pipes to paints. Lead's relative abundance, as well as its ductility, malleability, and other chemical and physical properties, make it a valuable commodity in production and commerce. However, the use and handling of lead often carries a heavy price.

The human body needs no lead whatsoever. Lead is toxic to nearly all living things in high doses. However, lead is everywhere, produced by both natural and artificial sources. Indeed, lead is the most common toxic metal in man's environment. The toxic effects of lead have long been known, but only in the past twenty or so years has the problem begun to be effectively located.

Lead-based paint is of concern as a source of direct exposure through hand to mouth ingestion of paint dust or paint chips, and as a contributor to lead in interior dust and exterior soils. In 1972, the Consumer Product Safety Commission (CPSC) first restricted lead content in paint to 0.5 percent by weight (5,000 ppm). The current level, instituted in 1978, lowered the allowable lead level in new paint to 0.06 percent (600 ppm).

Applicable Guidelines and Regulations

This assessment uses the US. Department of Housing and Urban Development's (HUD) definition for lead-based paint (LBP). In HUD's July 1995 document "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing", the action level for LBP is defined by statute as equal to or greater than 1.0 milligrams per square centimeter (mg/cm^2) when tested by XRF, or 0.5 percent (5,000 ppm) lead by dry weight when measured by Atomic Absorption Spectroscopy (AAS) and Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES). Surface coatings tested in this survey included interior building components with metal, wood, plaster, sheetrock and concrete substrates. A majority of the substrates were observed with two to three layers of paint coatings.

The Occupational Safety and Health Administration (OSHA) does not define an action limit for in-place LBP. However, OSHA's construction industry lead standard modified in 29 CFR 1926.62 establishes Permissible Exposure Limit (PEL) and action level for airborne exposure levels of lead while performing construction activities (demolition, remodel, repair, etc.). The PEL is 50 micrograms of lead per cubic meter ($50ug/m^3$) of air averaged over 8 hours while the action

level is $30ug/m^3$ averaged over 8 hours. The new lead standard imposes a wide range of requirements on employers of workers exposed to lead. Many of these requirements go far beyond what has been required of construction employers in the past. The requirements include work practice, medical, and recordkeeping program development. They also specify extensive pre-assessment of work activities and determination of worker exposures during operations. Disturbances of paint containing lead should be monitored to ensure OSHA regulations are met for worker exposure.

The scope of the OSHA lead standard includes all construction activities involving inorganic lead compounds. No construction activity is left out. OSHA states in the preamble to the standard that construction work is any work involving construction, alteration and/or repair, including painting and decorating.

2.2 Background of Building and Paint History

The assessment of Warehouse 4195 included an inspection of the interior and exterior painted surfaces on structural components prior to building improvements and renovations. The primary construction, building use and paint conditions are summarized as follows:

Warehouse 4195

Warehouse 4195 consists of a single-story structure of approximately 124,433 square feet believed to be originally constructed in the early 1940's. Warehouse 4195 was currently occupied, and contains a series of seven bays (Bay A through G) used by both military and civilian personnel. The primary construction of the building consists of a steel frame built on a raised reinforced concrete foundation. The exterior consists of concrete/stucco applied over brick and masonry block. The roof was surfaced with built-up felt, tar and gravel supported by steel columns, beams and truss members. The roof was gabled with a split-level center raised along the entire length of the warehouse. Framed glass, skylight windows existed along each side of the central roof section. The interior was primarily open warehouse area with offices, rest rooms and storage rooms located along the east side of the building. The interior offices, rest rooms and storage rooms were finished with sheetrock, masonry block, lay-in acoustical ceiling tiles, plaster lath, vinyl composition tile and carpet.

The interior brick fire walls between each warehouse bay was primarily coated with white or cream paint. Metal overhead bay doors were coated with green paint. Interior metal beams, columns and structural roof supporting components were coated with a silver/gray paint throughout the warehouse. In addition, silver/gray paint existed on metal window frame components along the entire warehouse perimeter. Exterior surfaces on the warehouse were coated with a white paint coating. Metal hand railings along the west loading dock area were coated with black paint.

A majority of the painted surfaces in the building interior were observed to be in good to fair condition with minor evidence of cracking and loss of adhesion primarily noted on the interior fire walls and window frame components. Localized paint damage was also observed on high friction surfaces such as the roll-up, overhead doors in the warehouse. The exterior painted surfaces on warehouse 4195 were observed to be in good to fair condition with minor signs of weathering, loss of adhesion, peeling or flaking. Based on the survey inspection and interviews

with on-site personnel, the paint history appeared to be relatively consistent throughout the warehouse.

3.0 MATERIALS AND METHODS

IHST Inspector, Wayne J. Randall conducted the lead-based paint survey inspection of Warehouse 4195 located at the Fort Sam Houston in San Antonio, Texas. Prior to testing, a visual inspection was conducted to identify interior building components and testing combinations. In addition, building component substrates such as wood, metal and concrete were evaluated for structural similarities, paint history and paint condition.

3.1 Paint Chip Samples for Lead

Prior to paint chip sampling, an inventory of painted architectural components was documented and assigned to a testing combination. A testing combination represents a unique architectural component or group of components with a similar substrate and paint history. Surface coatings on each distinct building component and testing combination were evaluated. Testing combinations (i.e. components) for the buildings surveyed at Warehouse 4195 included, but was not limited to doors and door frame components, hand railings, structural beams and columns, interior walls, interior ceilings and window frame components. Paint coatings were examined and tested to determine whether they contained lead. An itemized list of the testing combinations for Warehouse 4195 are listed in Table 1.

4.0 PAINT CHIP SAMPLE ANALYSIS RESULTS

Paint chip samples were submitted to and analyzed by Armstrong Forensic Laboratory, Inc., accredited by the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP) located at 330 Loch'n Green Trail, Arlington, Texas. Samples were prepared and analyzed for total lead as specified by EPA Method 7420. Paint chip sampling was conducted using the cold scrape method and procedures described in both the American Society for Testing and Materials (ASTM) method ES28 and Chapter 7 HUD Guidelines. In this report, paint chip sample results are reported as percent by weight. A copy of the laboratory report and chain of custody forms are included in Appendix C.

Twenty four (24) paint chip samples were collected from interior and exterior building components identified at Warehouse 4195. Table 1 lists the locations and results of the quantitative bulk sample testing.

Table 1: Bulk Paint Analysis Results

Sample Number	Description	Location	Substrate	Condition	Total Lead mg/kg
SP01	Cream paint (flat interior)	Bay G office and storage area sheetrock walls	Sheetrock	Good	15
SP02	Brown paint on metal	Bay C office area on metal door and frames	Metal	Good	<80
SP03	Cream/tan paint	On interior brick fire walls of warehouse	Brick	Good	478
SP04	Green paint	On metal roll-up overhead doors	Metal	Fair	120,000
SP05	Dark blue paint	Bay D on interior lower area of brick walls	Brick	Good	440
SP06	Grean paint on brick	Office adjacent to east loading dock	Brick	Fair	2,500
SP07	Blue paint on brick	Office adjacent to east loading dock	Brick	Fair	6,650
SP08	Green paint on window frame components	Office adjacent to east loading dock	Metal	Poor	2,870
SP09	White paint on brick	Bay F interior warehouse walls	Brick	Fair	15
SP10	White paint on brick	Bay F interior warehouse walls	Brick	Fair	48
SP11	White paint on brick	Bay C interior brick walls	Brick	Fair	1,520
SP12	White paint on brick	Bay E interior brick walls	Brick	Fair	2,990
SP13	Silver paint on metal truss components	Bay F metal structural components supporting roof	Metal	Good-Fair	196,000
SP14	Silver paint on metal truss components	Bay E metal structural components supporting roof	Metal	Good-Fair	251,000
SP15	Silver paint on metal truss components	Bay E metal structural components supporting roof	Metal	Good-Fair	242,000
SP16	Green and black paint on caulking on metal window frame	Upper level roof windows of warehouse	Metal	Poor	1,050
SP17	Silver paint on metal	Exterior window from components	Metal	Fair-Good	11,000
SP18	Green paint	On metal interior surface of overhead doors	Metal	Fair-Good	10,000
SP19	Green paint	On metal interior surface of overhead doors	Metal	Fair-Good	136,000
SP20	Brown paint on lower walls	Bay A on brick interior bay walls	Brick	Good	83
SP21	White paint on exterior stucco walls	Exterior walls of warehouse	Stucco	Good	<9
SP22	White paint on exterior stucco walls	Exterior walls of warehouse	Stucco	Good	<13
SP23	White paint on roof drain pipes	On lower steel pipes of roof drains	Metal	Good	749
SP24	Black paint	Metal stair hand railings	Metal	Fair	384

mg/kg - milligrams per kilogram = ppm - parts per million

After review of the laboratory analysis results of this assessment, four (4) structural component groups were identified to be surfaced with lead-based paint above the HUD Federal Action Level of 5,000 mg/kg at Warehouse 4195. Appendix A includes schematic drawings of Warehouse 4195 and the locations of the lead-based paint surfaces. Table 2 details the architectural component groups which tested positive for lead-based paint and an approximation of each component group quantity.

Table 2: Lead-Based Paint Surfaced Components

Architectural Component Group	Paint Description	Approximate Quantity	Lead Concentration mg/kg
Metal roll-up bay door components at east and west loading docks	Green paint	16 roll-up overhead doors and associated frame components	10,000.00 -136,000.00
Lower portion of brick interior walls in Office adjacent to east loading dock	Blue paint	351 SF	6,650.00
Metal and wood structural components supporting roof throughout the warehouse	Silver/gray paint	Steel truss, columns, beams and wood support beams below skylights	196,000.00 -251,000.00
Metal window frame components.	Silver/gray paint	Window frame components along exterior warehouse perimeter including skylight window frames	11,000.00

mg/kg - milligrams per kilogram = ppm - parts per million

5.0 RECOMMENDED PAINT REMOVAL METHODS FOR RENOVATION WORK

- There are essentially four (4) industry methods of removing lead paint from architectural substrates and buildings for renovation purposes: Heat Gun Removal, Mechanical Removal Methods, Chemical Removal Methods and Intact Component Removal.

1. Heat Gun Removal

The removal of lead-based paint using electrical-powered heat guns can be useful in limited areas. Depending on the size of the area and the type of substrate, paint removal by heat gun can be a slow labor intensive process. In addition, heat guns generally are not very effective on metal or masonry substrates. Heat guns must be operated below 1,100 degrees Fahrenheit, and workers should be outfitted with air purifying respirators and organic vapor filter cartridges during use.

2. Mechanical Removal Methods

The removal of lead-based paint can be accomplished effectively using various types of mechanical removal methods such as power tools equipped with a high efficiency particulate air (HEPA) vacuum, wet sanding and wet scraping. HEPA vacuum power tools are very effective on large flat metal and concrete surfaces, while wet scraping methods can be used to remove paint on irregular-shaped substrates such as wood moldings, door casings and trim. As with any work involving the removal of lead paint, engineering controls should instituted to prevent the migration of lead dust or debris, and workers should be outfitted with proper personal protective equipment.

3. Chemical Removal Methods

Chemical removal of lead-based paint usually results in less airborne lead dust exposure. Chemical removal is often used where historic preservation requirements apply to unique architecture. Drawbacks to chemical removal of lead-based paint include the potential high cost for waste paint disposal and personal injury from chemical hazards if not handled properly. Chemical removal of removable architectural components can also be conducted off-site at specialized facilities and returned to the building or facility for repainting. Caustic chemical paint removers will require neutralizing the substrate surface prior to repainting.

4. Intact Component Removal

Architectural building components coated with lead-based paint may be removed as intact construction debris where large scale renovation projects are planned. Intact component removal is a practical approach to eliminating lead paint hazards in a building and usually results in less airborne lead dust exposure to workers involved with the work. Examples of intact removal work include removing components such as doors, door frames, window frames, paneling and in some cases sections of interior walls. Intact component removal can generate excessive paint chip debris for painted surfaces in poor condition, and engineering controls such as wet removal methods and drop cloth barriers should be incorporated to contain lead paint waste for proper disposal. Intact removal of components known to be coated with paint containing high lead concentrations in excess of 5,000 mg/kg should be segregated and characterized for proper waste stream disposal using the Toxicity Characteristic Leaching Procedure (TCLP) analysis.

6.0 RECOMMENDATIONS

ˆ OSHA regulates all personnel potentially exposed to lead dust or fumes released during renovation, resurfacing or demolition of painted surfaces containing lead. Depending on the type of work performed, disturbance of paint containing high lead concentrations may require worker protection and modified removal procedures to meet OSHA requirements. Any disturbances of paint containing lead which would result in personnel exposure to airborne lead particles or fumes (i.e., demolition activities, sanding, resurfacing, cutting torch activity) should be monitored to ensure OSHA regulations are met for worker exposure. In areas affected by building demolition or renovation structural building

components surfaced with lead-based paint can be removed as intact sections which reduce human exposure to airborne lead dust hazards.

- Currently, the EPA and Texas regulations do not require the removal of lead-based paint from structural building components prior to building demolition, and the removed architectural components are allowed to be disposed of as construction debris. However, architectural components with lead-based paint which are segregated and disposed of in a separate waste stream should be tested using the Toxicity Characteristic Leaching Procedure (TCLP) analysis to determine if the building material is characteristically hazardous as lead waste. Lead concentrations at or above the TCLP regulatory level of 5.0 milligrams per liter (mg/L) is classified as hazardous lead waste which requires special disposal requirements. Lead concentrations below the TCLP regulatory level of 5.0 mg/L for characteristically hazardous lead waste and below state municipal landfill disposal limit of 1.5 mg/L may be acceptable as Class II non-hazardous solid waste disposal.

- During resurfacing or paint removal operations, a protective drop cloth should be placed below the removal areas to contain lead-based paint debris and appropriate engineering controls should be implemented to control potential lead dust emissions. Removal and disposal of lead-based paint by chemical stripping, HEPA sanding or wet scraping typically generates a more concentrated hazardous lead waste than leaving the LBP intact on the architectural components. Prior to any disposal of containerized paint waste, generated from stripping, sanding or scraping of lead paint surfaces, a composite TCLP analysis for lead and other hazardous heavy metals associated with paint such as chromium, and cadmium is recommended.

7.0 QUALIFICATIONS

Industrial Hygiene & Safety Technology, Inc. has attempted to observe the existing conditions at the aforementioned buildings utilizing accepted procedures in accordance to HUD's 1997 Chapter 7 Revised Guidelines and the July, 1995 document "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing". Regardless of the thoroughness of a survey, the possibility exists in which some areas containing lead based paint may be

overlooked, inaccessible, or different from those at specific locations. Furthermore, renovation and/or construction may reveal altered conditions.

This report describes only the conditions present at the time of the assessment, in the areas surveyed. The recommendations presented only apply to the conditions that were observed during the survey. Other conditions may exist in unsurveyed or inaccessible areas such as behind walls and above permanent enclosures. In addition, the conditions of lead containing paint may change gradually or suddenly depending upon use, maintenance, or accident. As a result, the recommendations presented should be periodically reviewed and updated.

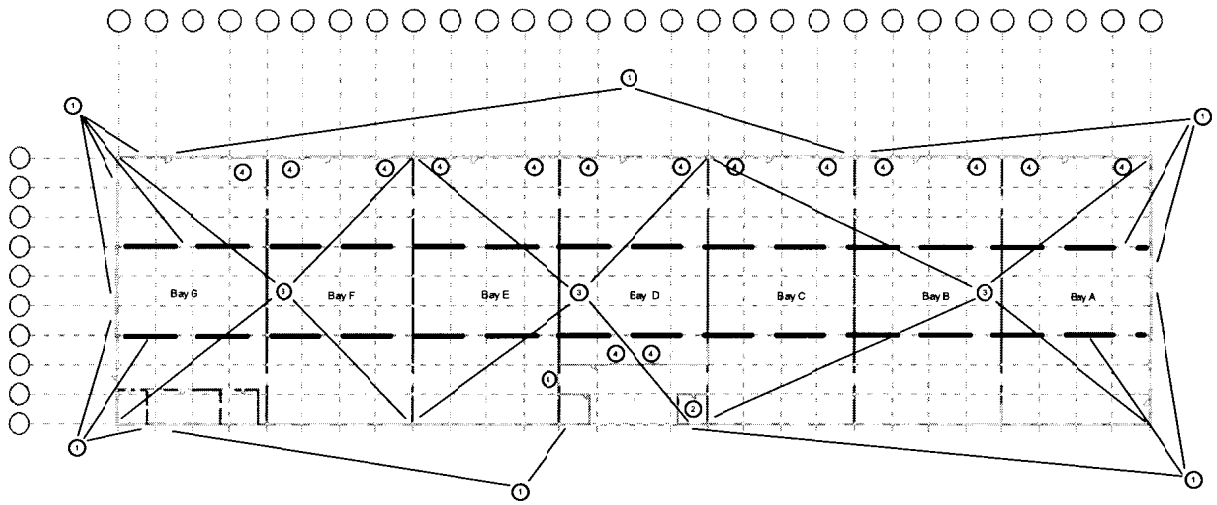
If you have any questions or comments regarding the content of this report, I would be glad to discuss them at your convenience.

Sincerely,

_____
Wayne J. Randall
Certified Lead Inspector and Risk Assessor
TDH Certification #2070112

_____
Tracy K. Bramlett, CIH, CSP
Senior Project Manager

APPENDIX A
SCHEMATIC BUILDING DRAWINGS



LEAD-BASED PAINT NOTES

1 - Silver/gray lead-based paint on metal window frame components and skylight window frame components.

2 - Blue lead-based paint on lower interior brick walls.

3 - Silver/gray lead-based paint metal columns, beams, wood support beams and metal truss structural components.

4 - Green lead-based paint on metal overhead door components.

WAREHOUSE 4195
OVERALL FLOORPLAN
SCALE: 1"=40'

US Army Corps of Engineers Fort Worth District

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

ENGINEERING DIVISION
MILITARY DESIGN BRANCH

FORT SAM HOUSTON
SAN ANTONIO, TEXAS
3RMCCOMPLEX

WAREHOUSE 4195
OVERALL FLOORPLAN
LEAD-BASED PAINT SURVEY

SEQUENCE NO.
H2. 1

Sheet 1 of 1

APPENDIX B
PHOTOGRAPHS

PHOTO 1

Description: Facing South-Southeast: Photograph of warehouse 4195 located at Fort Sam Houston in San Antonio, Texas.

PHOTO 2

Description: Bay G: Representative photograph of the silver/gray lead-based paint on structural metal columns, truss components and beams in warehouse 4195. The silver/gray paint contained lead concentrations which ranged from 196,000.00 mg/kg to 251,000 mg/kg.

PHOTO 3: Sample SP13

Description: Bay E: A closer view of the sampled silver/gray lead-based paint located on the steel beams, columns and steel support trusses located throughout the warehouse structure. Sample SP13 contained a lead concentration of 196,000 mg/kg.

PHOTO 4: Sample SP04

Description: Bay D - East Loading Dock Area: Photograph of green lead-based paint identified on the metal overhead doors in warehouse 4195. The green paint contained a lead concentration of 120,000.00 mg/kg.

PHOTO 5: Sample SP17

Description: West Loading Dock Area: Photograph of silver/gray lead-based paint on metal window frame components identified along the entire perimeter of warehouse 4195. The silver/gray paint on the window frame components contained a lead concentration of 11,000.00 mg/kg.

PHOTO 6: Sample SP07

Description: Office Adjacent to East Loading Dock Area: Photograph of a blue lead-based paint identified on the lower interior brick walls in the office. The blue paint in the office contained a lead concentration of 6,650.00 mg/kg.

APPENDIX C
LABORATORY REPORTS
AND CHAIN OF CUSTODY DOCUMENTS

Armstrong
Forensic Laboratory
330 Loch'n Green Trail · Arlington, Texas 76012
817-275-2691 Fax: 817-275-1883

Andrew T. Armstrong, PhD
John M. Corn, MS, RS
Marion K. Armstrong, MSPH, CIH

October 5, 1999
Revised: October 6, 1999

Mr. Tracy K. Bramlett
Industrial Hygiene & Safety Technology
2235 Keller Way
Carrollton, TX 75006

Site: Fort Sam Houston
Warehouse 4195
San Antonio, TX

Received: October 4, 1999
Submitted: 24 Solid Samples

LABORATORY REPORT: 99IH3342

Lead - EPA Method 7420				
Lab No.	Client Description	Results	Detection Limits	Units
B85203	SP01-Cream paint on interior walls.	15	10	mg/kg
B85204	SP02-Brown paint on metal	<80	80	mg/kg
B85205	SP03-Cream/tan paint	478	92	mg/kg
B85206	SP04-Green paint on back door interior	120,000	9	mg/kg
B85207	SP05-Dark blue paint on lower brick wall	440	16	mg/kg
B85208	SP06-Green paint on brick	2,500	9	mg/kg
B85209	SP07-Blue paint on brick	6,650	9	mg/kg
B85210	SP08-Green paint on window frames	2,870	8	mg/kg
B85211	SP09-White paint on brick	15	10	mg/kg
B85212	SP10-White paint on brick	48	22	mg/kg
B85213	SP11-White paint on brick	1,520	9	mg/kg
B85214	SP12-White paint on brick	2,990	9	mg/kg
B85215	SP13-Silver paint on metal	196,000	11	mg/kg

Lead - EPA Method 7420				
Lab No.	Client Description	Results	Detection Limits	Units
B85216	SP14-Silver paint on metal	251,000	10	mg/kg
B85217	SP15-Silver paint on metal	242,000	10	mg/kg
B85218	SP16-Green paint on upper interior window frame	1,050	10	mg/kg
B85219	SP17-Silver paint on window frames	11,000	9	mg/kg
B85220	SP18-Green paint on metal doors	10,000	10	mg/kg
B85221	SP19-Green paint on metal doors	136,000	10	mg/kg
B85222	SP20-Brown paint on lower interior brick walls	83	9	mg/kg
B85223	SP21-White paint on exterior stucco walls	<9	9	mg/kg
B85224	SP22-White paint on exterior stucco walls	<13	13	mg/kg
B85225	SP23-White paint on roof drain piping	749	8	mg/kg
B85226	SP24-Black on exterior stairwell railings	384	27	mg/kg

Note:
1) HUD defines a Lead-Based Paint as 0.5% lead by weight (5,000 mg/kg).

John M. Corn, MS, Laboratory Director
AIHA Accreditation No: 363
AIHA ELLAP Accredited
//99-3342.doc /ah

Marion Armstrong, MSPH, CIH
Director, Health & Safety Services

Armstrong Forensic Laboratory, Inc.

Received @ AFL
Date:

Chain of Custody

330 Loch'n Green Trail Arlington, Texas 76012-3481 817.275.2691 (voice) 817.275.1883 (fax) www.aflab.com

Industrial Hygiene

Contact: WAYNE RANDAL
Client: IH ST, INC.
Address: 2235 KELLER WAY
CARROLLTON, TX 75006
Phone No.: (972) 478-7615
P.O. No.:

Project: WAREHOUSE 4195
Site: FORT SAM HOUSTON
SAN ANTONIO, TX
Sampler: WAYNE RANDAL
Fax No.: (972) 478-7615
Temp @ Receipt: AMBIENT

AFL Case No. 99IH3342
Date Recv'd: 10/4/99
TAT: Reg Rush Priority

Lab Services Requested

Lab Use Only Lab No.	Field No. and Sample Location	Collection Date	Time On	Time Off	Total Time	Volume (L)	Media Type	TOTAL LEAD ANALYSIS
B85203	SP01 - CREAM PAINT ON INTERIOR WALLS	9/27/99					SOLID	✓
B85204	SP02 - BROWN PAINT ON METAL							✓
B85205	SP03 - CREAM/TAN PAINT							✓
B85206	SP04 - GREEN PAINT ON BARN DOOR INTERIOR							✓
B85207	SP05 - DARK BLUE PAINT ON LOWER BRICK WALL							✓
B85208	SP06 - GREEN PAINT ON BRICK							✓
B85209	SP07 - BLUE PAINT ON BRICK							✓
B85210	SP08 - GREEN PAINT ON WINDOW FRAMES							✓
B85211	SP09 - WHITE PAINT ON BRICK							✓
B85212	SP10 - WHITE PAINT ON BRICK							✓
B85213	SP11 - WHITE PAINT ON BRICK							✓
B85214	SP12 - WHITE PAINT ON BRICK							✓
B85215	SP13 - SILVER PAINT ON METAL							✓
B85216	SP14 - SILVER PAINT ON METAL							✓

Notes: PAINT CHIP SAMPLES SUBMITTED FOR TOTAL LEAD ANALYSIS

Released By: (Signature) Date/Time 10/04/ 0911 Received By: (Signature)

Released By: (Signature) Date/Time 10/4/99 1230 Received at Lab By:

Armstrong Forensic Laboratory, Inc.

330 Loch'n Green Trail Arlington, Texas 76012-3481 817.275.2691 (voice) 817.275.1883 (fax) www.aflab.com

Received @ AFL
Date:

Chain of Custody

Industrial Hygiene

Contact:	Wayne Randall
Client:	IHST, Inc.
Address:	2235 Keller Way Carrollton, TX 75006
Phone No.:	(972) 478-7415
P.O. No.:	

Project:	Warehouse 4195
Site:	Fort Sam Houston San Antonio, TX
Sampler:	Wayne Randall
Fax No.:	(972) 478-7815
Temp @ Receipt:	Ambient

AFL Case No.	99IH3342
Date Recv'd:	10/4/99
TAT:	Reg Rush Priority

Sample Information / Collection Information / Lab Services Requested

Lab Use Only Lab No.	Field No. and Sample Location	Date	Time On	Time Off	Total Time	Volume (L)	Media Type	Total Lead
B85217	SP15 - Silver Paint on Metal	9/27/99					Solid	✓
B85218	SP16 - Green Paint on Upper Interior Window Frame							✓
B85219	SP17 - Silver Paint on Window Frames							✓
B85220	SP18 - Green Paint on Doors Metal							✓
B85221	SP19 - Green Paint on Metal Doors							✓
B85222	SP20 - Brown Paint on Lower Interior Brick Walls							✓
B85223	SP21 - White Paint on Exterior Stucco Walls							✓
B85224	SP22 - " "							✓
B85225	SP23 - White Paint on Roof Drain Piping							✓
B85226	SP24 - Black on Railings Exterior Stairwell							✓
	~~SP25~~							

Notes:

Released By: (Signature) Wayne J. Randall
Date/Time 10/04/0911
Received By: (Signature)

Released By: (Signature)
Date/Time 10/4/99 12:30 pm
Received at Lab By:

APPENDIX D
LEAD CERTIFICATIONS

TEXAS DEPARTMENT OF HEALTH

BE IT KNOWN THAT

INDUSTRIAL HYGIENE AND SAFETY TECHNOLOGY INC

is hereby granted Certification as a

Lead Firm

in the State of Texas within the purview of Vernon's Texas Civil Statutes, Article 9029, as amended, so long as not suspended or revoked, and as long as renewed according to the rules adopted by the Texas Board of Health.

2110068
Certification Number

10/31/1999
Issue Date

10/31/2002
Expiration Date

Keith Alexander, Chief
Environmental Lead Branch
Toxic Substances Control Division

Patti J. Patterson, M.D.
Commissioner of Health

VOID IF ALTERED NON-TRANSFERABLE

01815

TEXAS DEPARTMENT OF HEALTH

BE IT KNOWN THAT

Wayne J. Randall

SSN: 594-14-3924

is hereby granted Certification as a

Lead Risk Assessor

in the State of Texas within the purview of Vernon's Texas Civil Statutes, Article 9029, as amended, so long as not suspended or revoked, and as long as renewed according to the rules adopted by the Texas Board of Health.

2070112
Certification Number

10/31/1996
Issue Date

10/31/1999
Expiration Date

Keith Alexander, Chief
Environmental Lead Branch
Toxic Substances Control Division

Patti J. Patterson, M.D.
Commissioner of Health

VOID IF ALTERED NON-TRANSFERABLE

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