



Reply to
Attention of:

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
4101 JEFFERSON PLAZA, NE
ALBUQUERQUE, NEW MEXICO 87109-3435
FAX (505) 342-3199

July 22, 2002

Contracting Division

SUBJECT: Final Proposal Revisions, Solicitation No. DACA47-02-R-0004, Design/
Build, Telescope Atmosphere Compensation Laboratory, KAFB, New Mexico

Dear Competitive Range Offerors:

This is official notification that oral discussions have concluded. You now have the opportunity to revise or modify your price and technical proposals and submit a final proposal revision. During the week of July 8, 2002, we discussed in detail with you, your price proposal and the specific areas of your technical proposal that were perceived to be deficient or in need of clarification. We further provided information to you regarding cost-cutting measures for your consideration in revising your proposals. The attached Amendment No. 0005 addresses the cost-cutting measures that have been incorporated into the solicitation.

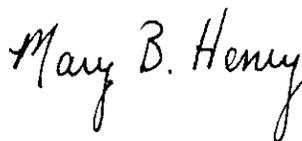
Your response to this request for Final Proposal Revision is due at our office, as indicated in Block 13 of the attached Standard Form 1442, by 3:00 p.m., local time, August 9, 2002. The technical and price proposals shall be submitted in separately sealed envelopes. As a part of your final proposal revision, you will need to submit, in original only, the new Standard Form 1442, acknowledging all five amendments, and complete the attached price proposal schedule. Additionally, if you are a large business, your subcontracting plan must be revised to reflect any changes made to your price proposal and should be included in original and one copy with your price proposal package.

As we previously indicated, do not submit a completely revised technical proposal. Only revised, or new pages (in color, except for drawings) to the technical proposal in original and five copies are required. As an alternative to replacement pages, you may state, word-for-word, the technical evaluation comment being addressed for a particular factor, and refer to a specific page number(s) and paragraph(s) in your technical proposal that is being replaced. Regardless of the method used, it is your responsibility to ensure that there is no confusion as to what area of your proposal is being changed. The page limit restriction in Section 00110 is no longer applicable; however, the number of pages submitted should be reasonable. For drawings, only submit those that have changes; and in lieu of submitting revised drawings, you may narratively explain drawing changes if it can be done clearly, without confusion as to what has in fact been changed. Evaluation and award criteria remain as stated in the solicitation.

The Government intends to make contract award without obtaining further revisions. To be considered, your final proposal revision must be in writing and timely received, and is subject to FAR 52.215-1, Instructions to Offerors—Competitive Acquisition, as detailed in Section 00100 of the solicitation.

Thank you for the interest you have shown in this project. If you have any questions regarding this requirement, please contact me at (505) 342-3454.

Sincerely,

A handwritten signature in black ink that reads "Mary B. Henry". The signature is written in a cursive style with a large, looped "M" and "H".

Mary B. Henry
Contracting Officer

Enclosures

SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO. DACA47-02-R-0004	2. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 05-Feb-2002	PAGE OF PAGES 1 OF 174
	IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.			

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. W81G69-1347-2107	6. PROJECT NO.
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7. ISSUED BY US ARMY ENGINEER DISTRICT, ALBUQUERQUE ATTN: CONTRACTING DIVISION 4101 JEFFERSON PLAZA NE ALBUQUERQUE NM 87109-3435 TEL: FAX: 505-342-3496	CODE DACA47	8. ADDRESS OFFER TO <i>(If Other Than Item 7)</i> See Item 7 TEL: FAX:	CODE
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9. FOR INFORMATION CALL:	A. NAME MARY B HENRY	B. TELEPHONE NO. <i>(Include area code) (NO COLLECT CALLS)</i> 505-342-3454
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SOLICITATION

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

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

Two-Phase Design/Build, Telescope Atmosphere Compensation (TAC) Lab, Kirtland Air Force Base, Bernalillo County, New Mexico. This acquisition is unrestricted advertising, open to both large and small business concerns. The acquisition process will consist of two phases. Phase One requires the submission of relevant qualifications and overall technical approach. No more than 3 of the most highly qualified offerors from Phase One will be selected to participate in Phase Two. The price proposal schedule will not be required until Phase Two. A pre-proposal conference and site visit will be conducted for Phase-Two offerors. Offerors are advised that this requirement may be delayed, cancelled, or revised at any time during the solicitation, or final award process, and is subject to the availability of funds. This is not a sealed bid; therefore, offers will not be opened publicly. For technical questions, call Kent Heyne 505-342-3207. Please allow sufficient time for turning in your proposals as Offerors are required to sign-in upon entry to the building, which could cause a delay. This award is being issued pursuant to the Small Business Competitiveness Demonstration Program.

"The pre-proposal conference and site visit for Phase Two will be held at 9:00 a.m. on April 17, 2002, in the main auditorium of Building 20604. Contractors are required to provide a list of personnel who will be attending the conference to the PM, Kent Heyne, at e-mail kent.s.heyne@spa02.usace.army.mil, by close of business April 12, 2002. **No foreign nationals will be allowed to attend the site visit.** Contractors are to enter the Wyoming gate only and will be escorted to the conference. Contractors are required to have proof of auto insurance with picture identification to enter the Base."

11. The Contractor shall begin performance within 10 calendar days and complete it within _____ calendar days after receiving award, notice to proceed. This performance period is mandatory, negotiable. (See *Section 00800 _____.)

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS?
(If "YES," indicate within how many calendar days after award in Item 12B.)
 YES NO

12B. CALENDAR DAYS
10

13. ADDITIONAL SOLICITATION REQUIREMENTS.

A. Sealed offers in original and 5 copies to perform the work required are due at the place specified in Item 8 by 15:00:00 (hour) local time 8/9/02 (date). If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee is, is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 90 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER (Must be fully completed by offeror)

14. NAME AND ADDRESS OF OFFEROR <i>(Include ZIP Code)</i>		15. TELEPHONE NO. <i>(Include area code)</i>	
CODE		16. REMITTANCE ADDRESS <i>(Include only if different than Item 14)</i>	
		See Item 14	
FACILITY CODE			

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES
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18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)

AMENDMENT NO.									
DATE									

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER <i>(Type or print)</i>	20B. SIGNATURE	20C. OFFER DATE
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AWARD (To be completed by Government)

21. ITEMS ACCEPTED:
SEE SCHEDULE

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA
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24. SUBMIT INVOICES TO ADDRESS SHOWN IN <i>(4 copies unless otherwise specified)</i>	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO <input type="checkbox"/> 10 U.S.C. 2304(c) <input type="checkbox"/> 41 U.S.C. 253(c)
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26. ADMINISTERED BY CODE	27. PAYMENT WILL BE MADE BY CODE
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CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

<input type="checkbox"/> 28. NEGOTIATED AGREEMENT <i>(Contractor is required to sign this document and return _____ copies to issuing office.)</i> Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.	<input type="checkbox"/> 29. AWARD <i>(Contractor is not required to sign this document.)</i> Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.
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30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN <i>(Type or print)</i>	31A. NAME OF CONTRACTING OFFICER <i>(Type or print)</i>
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30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE
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AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE J	PAGE OF PAGES 1 3
2. AMENDMENT/MODIFICATION NO. 0005		3. EFFECTIVE DATE 22 July 2002	4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. <i>(If applicable)</i>
6. ISSUED BY U.S. ARMY ENGINEER DISTRICT, ALBUQUERQUE CORPS OF ENGINEERS 4101 JEFFERSON PLAZA, N.E. ALBUQUERQUE, NEW MEXICO 87109-3435		CODE	7. ADMINISTERED BY <i>(If other than Item 6)</i>		CODE
8. NAME AND ADDRESS OF CONTRACTOR <i>(No., street, county, State and ZIP Code)</i>				<input checked="" type="checkbox"/> 9A. AMENDMENT OF SOLICITATION NO. DACA47-02-R-0004	<input checked="" type="checkbox"/> 9B. DATED <i>(SEE ITEM 11)</i> 05 February 2002
				10A. MODIFICATION OF CONTRACTS/ORDER NO.	
				10B. DATED <i>(SEE ITEM 13)</i>	
CODE		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

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

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

(a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you 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 APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS,
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

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

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.)*

PROJECT: TWO PHASE DESIGN/BUILD, TELESCOPE ATMOSPHERE COMPENSATION LABORATORY, KIRTLAND AIR FORCE BASE, NEW MEXICO

1. This is Amendment No. 5 to Solicitation No. DACA47-02-R-0004; 05 February 2002. The following revisions shall be incorporated into the specifications. All other provisions shall remain unchanged.

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

2. SOLICITATION, OFFER, AND AWARD, Standard Form 1442: In Block 13A, change the date for receipt of proposal from "5/20/02" to "8/9/02".
3. SECTION 00100, INSTRUCTIONS TO BIDDERS:
 - a. On page 7 of 174, paragraph entitled "FUNDS AVAILABLE", change the amount in the first sentence from "\$11,700,000.00" to "\$12,200,000.00".
 - b. On page 17 of 174, delete the paragraph entitled "52.225-12 NOTICE OF BUY AMERICAN ACT REQUIREMENT—CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (FEB 2000)" in its entirety and replace with the paragraph entitled "52.225-12 NOTICE OF BUY AMERICAN ACT REQUIREMENT—CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (May 2002)", attached hereto.
4. SECTION 00110, SUBMISSION REQUIREMENTS AND INSTRUCTIONS: Delete pages 34 and 35 of 174 in their entirety and replace with pages 34 and 35 of 174, attached hereto.
5. SECTION 00650, WAGE RATES: Delete General Decision Number NM020001, Modification Number 1, in its entirety and replace with General Decision Number NM020001, Modification Number 3, attached hereto.
6. SECTION 00700, CONTRACT CLAUSES: On page 118 of 174, delete the paragraph entitled "52.225-11 BUY AMERICAN ACT—BALANCE OF PAYMENTS PROGRAM—CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (FEB 2002)" in its entirety and replace with the paragraph entitled "52.225-11 BUY AMERICAN ACT—CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (MAY 2002)", attached hereto.
7. SPECIFICATIONS: Delete the following listed pages and substitute the pages attached hereto. On the revised pages, for convenience, changes are emphasized by the amendment number in parentheses before and after changes from the previous issue. All portions of the revised (or new) pages shall apply whether or not changes have been indicated.

Delete Page

Insert Page

Volume 1 of 3

00010-3 thru 00010-5	00010-3 thru 00010-4
00800-1 thru 00800-1a	00800-1
01010-3	01010-3
01010-6 thru 01010-9	01010-6 thru 01010-9
01010-11	01010-11
01010-17	01010-17
01010-28 thru 01010-35	01010-28 thru 01010-35
01010-39	01010-39
01010-47 thru 01010-49	01010-47 thru 01010-49a

7. SPECIFICATIONS: (Cont'd)

Delete Page

Insert Page

Volume 1 of 3

01010-60 thru 01010-63	01010-60 thru 01010-63
01010-65 thru 01010-68	01010-65 thru 01010-68
01010-70	01010-70
01010-72 thru 01010-74	01010-72 thru 01010-74
01010-90 thru 01010-91	01010-90 thru 01010-91a
01010-93 thru 01010-96	01010-93 thru 01010-96b
01010-101	01010-101
01012, Table of Contents	01012, Table of Contents
01012-2 thru 01012-3	01012-2 thru 01012-3

//////////LAST ITEM//////////

52.225-12 NOTICE OF BUY AMERICAN ACT REQUIREMENT-CONSTRUCTION MATERIALS
UNDER TRADE AGREEMENTS (May 2002)

(a) *Definitions.* "Construction material," "designated country construction material," "domestic construction material," "foreign construction material," and "NAFTA country construction material," as used in this provision, are defined in the clause of this solicitation entitled "Buy American Act-Construction Materials under Trade Agreements" (Federal Acquisition Regulation (FAR) clause 52.225-11).

(b) *Requests for determination of inapplicability.* An offeror requesting a determination regarding the inapplicability of the Buy American Act should submit the request to the Contracting Officer in time to allow a determination before submission of offers. The offeror shall include the information and applicable supporting data required by paragraphs (c) and (d) of FAR clause 52.225-11 in the request. If an offeror has not requested a determination regarding the inapplicability of the Buy American Act before submitting its offer, or has not received a response to a previous request, the offeror shall include the information and supporting data in the offer.

(c) *Evaluation of offers.*

(1) The Government will evaluate an offer requesting exception to the requirements of the Buy American Act, based on claimed unreasonable cost of domestic construction materials, by adding to the offered price the appropriate percentage of the cost of such foreign construction material, as specified in paragraph (b)(4)(i) of FAR clause 52.225-11.

(2) If evaluation results in a tie between an offeror that requested the substitution of foreign construction material based on unreasonable cost and an offeror that did not request an exception, the Contracting Officer will award to the offeror that did not request an exception based on unreasonable cost.

(d) *Alternate offers.*

(1) When an offer includes foreign construction material, other than designated country or NAFTA country construction material, that is not listed by the Government in this solicitation in paragraph (b)(3) of FAR clause 52.225-11, the offeror also may submit an alternate offer based on use of equivalent domestic, designated country, or NAFTA country construction material.

(2) If an alternate offer is submitted, the offeror shall submit a separate Standard Form 1442 for the alternate offer, and a separate price comparison table prepared in accordance with paragraphs (c) and (d) of FAR clause 52.225-11 for the offer that is based on the use of any foreign construction material for which the Government has not yet determined an exception applies.

(3) If the Government determines that a particular exception requested in accordance with paragraph (c) of FAR clause 52.225-11 does not apply, the Government will evaluate only those offers based on use of the equivalent domestic, designated country, or NAFTA country construction material, and the offeror shall be required to furnish such domestic, designated country, or NAFTA country construction material. An offer based on use of the foreign construction material for which an exception was requested-

(i) Will be rejected as nonresponsive if this acquisition is conducted by sealed bidding; or

(ii) May be accepted if revised during negotiations.

(End of provision)

SUBCONTRACTING PLAN FORMAT

**SUBCONTRACTING GOALS FY 2002
for Albuquerque District Contracts**

Small Business (SB)	61.4%
Small Disadvantaged Business (SDB)	9.1%
Woman-Owned Small Business (WOSB)	5.0%
HUBZone Small Business (HUBZone SB)	1.5%
Service-Disabled Veteran-Owned Small Business (Service-Disabled Veteran-Owned SB)	3.0%

(5)

(5)

1. SUBMIT YOUR PLAN IN THE ATTACHED FORMAT

2. Subcontracting Plans will be evaluated in accordance with FAR Clause 52.219-9 and AFARS Appendix DD.

**SUBCONTRACTING PLAN
SOLICITATION NO. DACA47-02-R-0004
TWO PHASE DESIGN/BUILD TELESCOPE ATMOSPHERE COMPENSATION (TAC) LAB,
KIRTLAND AFB, NEW MEXICO**

FIRM _____

I. Dollar Amounts (If possible, DO NOT include indirect costs):

- a. Total amount of contract \$ _____
- b. Total estimated amount of planned subcontracting dollars \$ _____
- c. Total dollars planned to be subcontracted to small business concerns (including d, e, f, and g, below) \$ _____
- d. Total dollars planned to be subcontracted to small disadvantaged business concerns \$ _____
- e. Total dollars planned to be subcontracted to women-owned small business concerns \$ _____
- f. Total dollars planned to be subcontracted to HUBZone small business concerns \$ _____
- g. Total dollars planned to be subcontracted to service-disabled veteran-owned small business concerns \$ _____

(5)

(5)

II. Percentage goals (expressed in terms of percentage of total planned subcontracting dollars): (If contract has options, the basic contract and each option must have separate goals and be listed separately.)

- a. Percentage of contract to be subcontracted (Ib divided by Ia) _____ %
- b. Percentage of subcontracting dollars to be subcontracted to small business concerns (Ic divided by Ib) _____ %
- c. Percentage of subcontracting dollars to be subcontracted to small disadvantaged business concerns (Id divided by Ib) _____ %
- d. Percentage of subcontracting dollars to be subcontracted to women-owned small business concerns (Ie divided by Ib) _____ %
- e. Percentage of subcontracting dollars to be subcontracted to HUBZone small business concerns (If divided by Ib) _____ %
- f. Percentage of subcontracting dollars to be subcontracted to service-disabled veteran-owned small business concerns (Ig divided by Ib) _____ %

(5)

(5)

SECTION 00650

WAGE RATES

General Decision Number **NM020001**
Superseded General Decision No. NM010001
State: **New Mexico**

Construction Type:
BUILDING
HEAVY

County(ies):
STATEWIDE

STATEWIDE - EXCLUDING EDDY AND LEA COUNTIES FOR BUILDING CONSTR
GENERAL BUILDING AND HEAVY ENGINEERING CONSTRUCTION shall
include the construction, alteration, repair and demolition of
buildings, including office buildings, warehouses, industrial an
commercial buildings, institutional and public buildings, and al
air conditioning, conduit, heating and other mechanical and
electrical works and site preparation for building or heavy
engineering projects under this classification, stadia; and shall
include electrical, gas, water, sewer lines, and other such
utility construction which are part of projects under this
classification and include within the property line or less than
five (5) feet from the building or heavy engineering structure,
whichever is closer, provided, however, regard to electrical
utilities such construction shall include construction from the
first attachment of incoming power source without regard to the
property line or proximity to the building or the heavy
engineering structure; and include construction, alteration,
repair and demolition of heavy engineering work such as power
generating plants, pump stations, natural gas compressing
stations; covered reservoirs and covered sewage and water
treatment facilities concrete linings for canals, ditches and
channels; concrete dams; earth dams of one million (1,000,000)
cubic yards or over; radio towers, ovens, furnaces, kilins,
silos, shafts and tunnels (other than highway shafts and
tunnels), hydro-electric projects; and well drilling, telephone
and electrical transmission lines which are part of GENERAL
BUILDING AND HEAVY ENGINEERING PROJECTS: mining appurtenances
such as tripples, washeries and loading and discharging chutes,
and specialized structures for testing, launching and recovering
space and other rocket-type missiles.

Modification Number	Publication Date
0	03/01/2002
1	04/05/2002
2	06/21/2002
3	07/05/2002

COUNTY(ies):

STATEWIDE
ASBE0066D 03/01/2002

Rates

Fringes

CURRY, HARDING, LEA, QUAY, ROOSEVELT, UNION COUNTIES

ASBESTOS WORKERS/INSULATORS

(Includes application of all insulating materials, protective coverings, coatings and finishings to all ltypes of mechanical systems and asbestos removal

17.05 4.96

ASBE0076B 01/01/2002

Rates Fringes

STATEWIDE, EXCLUDING CURRY, HARDING, LEA, QUAY, ROOSEVELT & UNION COUNTIES

ASBESTOS WORKERS/INSULATORS

(Includes application of all insulating materials, protective coverings, coatings and finishings to all types of mechanical systems and asbestos removal)

21.72 5.67

LOS ALAMOS COUNTY 23.44 5.67

BOIL0627A 01/01/2001

Rates Fringes

STATEWIDE, EXCLUDING BERNALILLO, CIBOLA, MCKINLEY, RIO ARRIBA, SANDOVAL AND SOCORRO COUNTIES

BOILERMAKERS 19.28 10.89

BRNM0001A 04/01/2002

Rates Fringes

BRICKLAYERS; MARBLE MASONS; STONEMASONS; TILE LAYERS & TERRAZZO WORKERS:

DONA ANA COUNTY 17.20 3.39

GRANT, LUNE, OTERO & SIERRA COS. 19.70 3.39

HIDALGO COUNTY 21.70 3.39

BRNM0001B 04/01/2002

Rates Fringes

BERNALILLO, CATRON, CIBOLA, CHAVES, COLFAX, CURRY, DEBACA, GUADALUPE, HARDING, LINCOLN, LOS ALAMOS, MCKINLEY, MORA, RIO ARRIBA, ROOSEVELT, QUAY, SANDOVAL, SAN JUAN, SAN MIGUEL, SANTA FE, SOCORRO, TAOS, TORRENCE, UNION & VALENCIA COUNTIES

BRICKLAYERS-STONEMASONS 21.53 3.51

MARBLE MASONS, TILE LAYERS & TERRAZZO WORKERS 18.35 3.51

CARP0092A 10/01/2001

Rates Fringes

CARPENTERS, LATHERS, & PILEDRIVERMEN 19.32 4.29

LIGHT COMMERCIAL CONSTRUCTION** 16.46 2.20

**SEE DEFINITION AT THE END OF TRUCK DRIVERS

MILLWRIGHTS:

ZONE I 21.75 4.29

ZONE II 24.00 4.29

BASING POINTS FOR MILLWRIGHTS ONLY FROM ALBUQUERQUE CITY HALL

ZONE I 0 TO 15 ROAD MILES
 ZONE II 15 TO 35 ROAD MILES

 ELEC0583B 06/01/2002

	Rates	Fringes
ELECTRICIANS		
Zone I	17.60	4.25%+4.30
Zone II	19.55	4.25%+4.30
CABLE SPLICERS:		
Zone I	17.85	4.25%+4.30
Zone II	19.80	4.25%+4.30

Zone 1: The area within a 25 mile radius from the downtown Post Office in El Paso, TX. Ft Bliss and Biggs Field proper to be included in this free zone. The area within a 15 mile radius from the Post Office in Las Cruces, **NM** and within a 5 mile radius from the Post Office in Alamogordo, Deming and Lordsburg. The area 10 miles East and 10 miles West of Interstate 10 between El Paso, Texas and Las Cruces, **NM**.

Zone 2: Dona Ana, Otero, Luna and Hidalgo Counties (except that area in Zone 1.

 * ELEC0611B 07/01/2002

	Rates	Fringes
COMMERCIAL LINE WORK (also applies to switching stations and substations adjacent to power plants):		
Bernalillo, Catron, Chaves, Cibola, Colfax, Curry, DeBaca, Grant, Guadalupe, Harding, Lincoln, Los Alamos (USE ZONE 3 RATES), McKinley, Mora, Quay, Rio Arriba, Roosevelt, Sandoval, San Juan, San Miguel, Santa Fe, Sierra, Socorro, Taos, Torrance, Union, Valencia & White Sands Missile Range and that portion of Fort Bliss in New Mexico .		

Lineman - Technicians:

Zone I	23.05	3.5%+5.95
Zone II	25.12	3.5%+5.95
Zone III	26.51	3.5%+5.95
Zone IV	29.04	3.5%+5.95

Cable Splicers:

Zone I	25.36	3.5%+5.95
Zone II	27.43	3.5%+5.95
Zone III	28.82	3.5%+5.95
Zone IV	31.35	3.5%+5.95

Equipment Op. (includes helicopter op.) and

Equipment Mechanic (includes helicopter mechanic):

Zone I	21.88	3.5%+5.95
Zone II	23.95	3.5%+5.95
Zone III	25.34	3.5%+5.95
Zone IV	27.87	3.5%+5.95

Powderman:

Zone I	20.07	3.5%+5.95
Zone II	22.14	3.5%+5.95
Zone III	23.53	3.5%+5.95
Zone IV	26.06	3.5%+5.95

Groundman - Jackhammer Op.:

Zone I	16.35	3.5%+5.95
Zone II	18.42	3.5%+5.95

Zone III	19.81	3.5%+5.95
Zone IV	22.34	3.5%+5.95
Zone 1	Basic Wage Rates	

City	Miles From Main Post Office
*Albuquerque	25 miles
Santa Fe	10 miles
Las Vegas	8 miles
Farmington	6 miles
Raton	6 miles
Tucumcari	6 miles
Gallup	10 miles
Roswell	12 miles
Ruidoso	12 miles
Portales	12 miles
Carrizozo	12 miles
Clovis	12 miles
Belen	12 miles
Los Lunas	12 miles
Espanola	14 miles

*The eastern edge of the Albuquerque Zone extends no further than the western boundary of the Village of Tjieras.

Zone 2 extending up to twenty (20) miles beyond Zone 1, EXCEPT ALBUQUERQUE.

Zone 3 extending up to thirty (30) miles beyond Zone 1, EXCEPT ALBUQUERQUE.

Zone 4 anything beyond thirty (30) miles from Zone 1, EXCEPT ALBUQUERQUE.

ELEC0611C 06/02/2002

	Rates	Fringes
ELECTRICIANS:		
Bernalillo, Santa Fe, Torrance, DeBaca, Guadalupe, Quay, San Miguel, Mora, Harding, Union, Colfax, Taos, Rio Arriba, Grant, Sandoval, Valencia, Socorro, Catron, McKinley, Sierra, San Juan, Chaves, Curry, Lincoln, Cibola & Roosevelt Counties		

Zone 1		
Electricians	23.05	7.07
Cable Splicers	25.36	7.07
Zone 2		
Electricians	25.12	7.07
Cable Splicers	27.43	7.07
Zone 3		
Electricians	26.51	7.07
Cable Splicers	28.82	7.07
Zone 4		
Electricians	29.04	7.07
Cable Splicers	31.35	7.07

City	Miles From Main Post Office
Albuquerque	40 miles
Belen	12 miles
Carrizozo	12 miles
Clovis	12 miles
Espanola	14 miles
Farmington	6 miles

Gallup	10 miles
Las Vegas	8 miles
Los Lunas	12 miles
Portales	12 miles
Raton	6 miles
Roswell	12 miles
Ruidoso	12 miles
Santa Fe	10 miles
Tucumcari	6 miles

Zone 2 extending up to twenty (20) miles beyond Zone 1, EXCEPT ALBUQUERQUE.

Zone 3 extending up to thirty (30) miles beyond Zone 1, EXCEPT ALBUQUERQUE.

Zone 4 anything beyond thirty (30) miles from Zone 1, EXCEPT ALBUQUERQUE.

FOR ESTABLISHING THE OUTLYING ZONES FROM THE ALBUQUERQUE FREE ZONE ONLY, ZONE 2 SHALL EXTEND UP TO TEN (10) MILES BEYOND ZONE 1, ZONE 3 SHALL EXTEND UP TO TWENTY (20) MILES BEYOND ZONE 1, AND ZONE 4 ANYTHING BEYOND TWENTY (20) MILES FROM ZONE 1.

ELEC0611D 06/02/2002

	Rates	Fringes
LOS ALAMOS CO.		
ELECTRICIANS	26.51	7.07
CABLE SPLICERS	28.82	7.07

ELEC0611E 06/02/2002

	Rates	Fringes
EDDY AND LEA COUNTIES:		
ZONE A		
ELECTRICIANS	21.50	7.07
CABLE SPLICERS	22.58	7.07
ZONE B		
ELECTRICIANS	21.95	7.07
CABLE SPLICERS	23.03	7.07
ZONE C		
ELECTRICIANS	22.10	7.07
CABLE SPLICERS	23.18	7.07
ZONE D		
ELECTRICIANS	22.35	7.07
CABLE SPLICERS	23.43	7.07

ZONE A DISPATCH POINTS

- Artesia - 12 miles
- Carlsbad - 12 miles
- Hobbs - 12 miles
- Lovington - 12 miles

Zone A shall be designated from the Main Post Office of Artesia, Carlsbad, Hobbs and Lovington, **New Mexico**.

Zone B extending up to ten (10) miles beyond Zone A.

Zone C extending up to twenty eight (28) miles beyond Zone A.

Zone D anything beyond twenty-eight (28) miles beyond Zone A.

ELEC0611I 01/01/2000

	Rates	Fringes
COMMERCIAL LINE WORK (also applies to switching stations adjacent to power plants):		
Eddy and Lea Counties:		

Lineman - Technicians:		
Zone I	19.00	3.75%+5.15
Zone II	19.45	3.75%+5.15
Zone III	19.60	3.75%+5.15
Zone IV	19.85	3.75%+5.15
Cable Splicers:		
Zone I	19.35	3.75%+5.15
Zone II	19.80	3.75%+5.15
Zone III	19.95	3.75%+5.15
Zone IV	20.20	3.75%+5.15
Equipment Op. and Mechanics (includes Helicopter Op. & Mechanic):		
Zone I	18.05	3.75%+5.15
Zone II	18.50	3.75%+5.15
Zone III	18.65	3.75%+5.15
Zone IV	18.90	3.75%+5.15
Powderman		
Zone I	16.53	3.75%+5.15
Zone II	16.98	3.75%+5.15
Zone III	17.13	3.75%+5.15
Zone IV	17.38	3.75%+5.15
Groundman - Jackhammer Op.:		
Zone I	13.49	3.75%+5.15
Zone II	13.94	3.75%+5.15
Zone III	14.09	3.75%+5.15
Zone IV	14.34	3.75%+5.15

FROM THE MAIN POST OFFICE OF ARTESIA,
CARLSBAD, HOBBS & LOVINGTON, **NEW MEXICO**

 ZONE I - 0 to 12 miles
 ZONE II - 12 miles to 22 miles
 ZONE III - 22 miles to 40 miles
 ZONE IV - 40 miles and beyond

ELEC0611Z 01/01/2000

	Rates	Fringes
COMMERCIAL LINE WORK (ALSO APPLIES TO SWITCHING STATIONS AND SUBSTATIONS ADJACENT TO POWER PLANTS):		
Dona Ana, Hidalgo, Luna and Otero Cos., exclusive of White Sands Missile Range and that portion of Fort Bliss in New		
Mexico		
Linemen - Technicians		
Zone I	16.85	3.75%+3.30
Zone II	18.80	3.75%+3.30
Cable Splicers		
Zone I	17.19	3.75%+3.30
Zone II	19.18	3.75%+3.30
Equipment Op. (includes Helicopter Op.):		
Zone I	14.66	3.75%+3.30
Zone II	16.36	3.75%+3.30
Equipment Mechanic (includes Helicopter Mech.):		
Zone I	14.66	3.75%+3.30
Zone II	16.36	3.75%+3.30
Powderman:		
Zone I	14.15	3.75%+3.30

Zone II	15.79	3.75%+3.30
Groundman - Jackhammer Op.:		
Zone I	11.96	3.75%+3.30
Zone II	13.35	3.75%+3.30

ZONE I:

a. The area within a 25 mile radius from the Downtown Post Office in El Paso, Texas. Fort Bliss and Biggs Field Property to be included in this Free Zone. Fort Bliss and Biggs Field to be defined by official U.S. Government Map

b. The area within a five mile radius of any city, town, or municipality within which an employer establishes or maintains his permanent place of business.

c. The area within a fifteen mile radius from the Post Office in Las Cruces, **New Mexico**, and within a five mile radius from the Post Office in Alamogordo, Deming, and Lordsburg, **New Mexico**.

d. The area ten miles East and ten miles West of Interstate 10, between El Paso, Texas and Las Cruces, **New Mexico**.

ZONE II: All other areas of the jurisdiction except those specified in Zone I.

* ELEV0131A 07/01/2002

	Rates	Fringes
ELEVATOR CONSTRUCTORS:		
MECHANIC	23.775	7.455+a

FOOTNOTE: a. Under 5 years service 6%; over 5 years service 8%.
7-Paid Holidays New Years Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, Christmas Day.

ENGI0953C 04/01/2002

	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
HEAVY CONSTRUCTION:		
ZONE 1:		
GROUP I	15.57	3.15
GROUP II	16.96	3.15
GROUP III	17.11	3.15
GROUP IV	17.32	3.15
GROUP V	17.38	3.15
GROUP VI	17.52	3.15
GROUP VII	17.64	3.15
GROUP VIII	19.08	3.15
ZONE 2:		
GROUP I	18.07	3.15
GROUP II	19.46	3.15
GROUP III	19.61	3.15
GROUP IV	19.82	3.15
GROUP V	19.88	3.15
GROUP VI	20.02	3.15
GROUP VII	20.14	3.15
GROUP VIII	21.58	3.15
ZONE 3:		
GROUP I	19.57	3.15
GROUP II	20.96	3.15
GROUP III	21.11	3.15
GROUP IV	21.32	3.15
GROUP V	21.38	3.15

GROUP VI	21.52	3.15
GROUP VII	21.64	3.15
GROUP VIII	22.08	3.15

SHAFT AND TUNNEL WORK - \$.15 per hour above regular rate.

HAZARDOUS PAY - The following pay shall be applicable for every hour an operating engineer is required by governmental regulations and does wear special equipment for hazardous work at the designated levels. This is applicable in all three zones

LEVEL C - 10% above regular hourly wage

LEVEL B - 10% above regular hourly wage

LEVEL A - 15% above regular hourly wage

ZONE PAY

The reference point for determining zone pay shall be from the intersection of Interstate Highway 25 and Interstate Highway 40 (the Big "I") in Albuquerque.

ZONE I - Albuquerque - 0 to 50 mile radius from the Big "I" shall be a Free Zone

- Farmington - 0 to 15 mile radius of Farmington City Hall shall be a Free Zone

Zone II - Shall be \$2.50 per hour above base pay. Will apply outside of above parameters up to 35 miles

Zone III - Shall be \$1.50 cents per hour above Zone II for a total of \$4.00 per hour and will apply after 35 miles of Zone I's parameters.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP I

Fireman, Oiler Screeedman, Scale Operators, Rubber Tired farm type tractor, tractors under 50 hp w/o attachments, Breakman, Concrete Paving Curbing Machine (Bridge-Type).

GROUP II

Rollers, Sheepsfoot or Pneumatic Self-Propelled w/o Dozer, Concrete Conveyor, Service Truck operator, Air compressor (315 CFM & Over), Pumps (6" & Over), Screening plants, Concrete Mixers (Under 1 CY), Concrete Saw or grinder-span type, 1 Drum Hoist (tugger), Air Tugger, Elevating Belt Type Loaders, Forklift, Lumber Stacker, Tractor Farm Type (under 50 HP w/Attachments), Motorman and Industrial Locomotive op., Winch Truck, Front End Loaders (under 2 CY), Power Plants which Generate Over 15 KW., Welding Machines.

GROUP III

Bituminous Distributors, Boilers, Retort & Hot Oil Heaters Concrete Mixers, (1 CV & Over), Conc. Paver-Single Drum, Drilling Equip., Motor Grader (rough), Shaft and Tunnel Equipment: (Refrigeration, slusher, jumbo forms), Trenching Machines (all types), Pump crete and gunite machines, Slipform Paver, Mechanical Bullfloats, Concrete Slab Spreading Machine, Concrete Slab Finishing Machine, Space Heaters, Bituminous Finishing Machines, Water Carrier (all types), Concrete Cleaning Decontamination Machine Operator, Horizontal Directional Drill Locator.

GROUP IV

Front End Loaders (2 thru 10 CY), Rollers Steel Wheeled-All Types, Bulldozer, Scrapers (Motor or Towed), Elevating Graders Self-Propelled Rollers - Equipped W/Dozer, Twin-Bowl Scrapers and Quad 8 or 9 pushers (35 cents over basic rate), Three bowl scrapers (60 cents over basic rate), Backhoes up to 3/4

yard bucket, Head Oiler (Service Truck Operator).

GROUP V

Hydraulic Cranes-With less than 50 feet of Boom (20 Tons and Under), Concrete Paver-Double Drum, Cat Cranes, Hysters, 2 Drum Hoist, Auto Fine Grade.

GROUP VI

Mucking Machines-All Types

GROUP VII

Steam Engineers, Loader (Front End Over 10 CV) Concrete Pump (Snorkel Type), Concrete batching plants and Asphalt plants, Crushing plants, Hot plants.

GROUP VIII

All Shovel Type Equipment, Cranes, Draglines, Backhoes over a 3/4 yard bucket, Derricks Guy and Stiff Leg, Pipe mobile (No 2 Operator), Piledriver, Hydraulic Cranes (20 Tons & Over), Mine Hoist, Belt Loader ("C.M.I." Type), Boom and Jibs 150 ft. Through 199 ft.-\$.50 per hour above base pay, 200 ft and over-\$1.00 per hour above base pay. Shovel (Wheel Type), Boring Machine (Tunnel or Shaft Mole), Pipe Mobile, Side and swing-boom cats, Motor grader (finish), Mechanic-Welder, Heavy Equipment Robotics Operator/Mechanic, Ultra High Pressure Waterjet Cutting Tool System Operator/Mechanic, Vacuum Blasting Machine Operator/Mechanic, Mater Environmental Maintenance Mechanic, Horizontal Directoral Drill Operator.

ENGI0953E 11/01/2001

	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
BUILDING CONSTRUCTION:		
GROUP I	15.65	3.00
GROUP II	17.16	3.00
GROUP III	17.28	3.00
GROUP IV	17.56	3.00
GROUP V	17.69	3.00
GROUP VI	17.83	3.00
GROUP VII	17.93	3.00
GROUP VIII	19.93	3.00

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP I

Fireman, Oiler, Screedman, Scale op. such as Bin-a-Batch, Rubber Tired Farm Type Tractor, Tractors under 50 hp w/o Attachments, Brakeman, Concrete Curing Machine(Bridge Type).

GROUP II

Rollers, Sheepsfoot or Pneumatic Self-Propelled w/o Dozer, Concrete Conveyor, Service Truck op. (Head Oiler), Air Compressor (600 CFM & Over), Pumps (6" & Over), Screening Plants, Concrete Mixers (Under 1 CY), Concrete Saw or Grinder-Span Type, 1 Drum Hoists, Elevating Belt Type Loaders, Lumber Stacker, Tractor Farm Type (under 50 HP w/Attachments), Winch Trucks, Front End Loader (under 2 CY), Welding Machines, Cat Head Winch, Power Plants which generate over 15 KW, Oiler with CDL, Concrete Curbing Machine.

GROUP III

Bituminous Distributors, Boilers, Retort & Hot Oil Heaters Concrete Mixers, (1 CY & Over), Concrete Paver-Single Drum, Drilling Equip., Shaft and Tunnel Equipment: Refrigeration, Slusher, Jumbo forms, Trenching Machines (all Types), Pump

Crete & Guniting Machines, Slipform Paver, Mechanical Bullfloats, Concrete Slab Spreading Machine, Concrete Slab Finishing Machine, Asphalt Plants, Bituminous Finishing Machines, Crushing Plants, Certified Forklift.

GROUP IV

Front End Loaders (2 thru 19 CY), Rollers Steel Wheeled-All Types, Bulldozer, Scrapers (Motor or Towed), Elevating Graders Concrete Batching Plants, Self-Propelled Rollers - Equipped W/Dozer, Twin-Bowl Scrapers and Quad 8 or 9 Pushers (\$.35 Over Basic Rate), Three Bowl Scrapers (\$.60 Over Basic Rate), Bobcat w/Hydraulic Backhoes with buckets up to one and one quarter cubic yards, Motor Grader (Rough), Small Articulating Trucks.

GROUP V

Concrete Paver, Double Drum, Two Drum Hoist, Auto Fine Grader Hysters, Forklift over 2,000 lbs. Lifting Capacity

GROUP VI

Mucking Machines-All Types, Tractor with Hydraulic Backhoe, Backhoes with Buckets up to one and one quarter cubic yards.

GROUP VII

Hydraulic Cranes with less than 50 feet of boom (20 tons and under), Steam Engineers, Loaders (Front end over 10 cubic yards), Concrete Pump (Snorkel Type), Heavy Equipment Low Boy Driver with CDL, Mining Machine, Roof Bolting Machine, Shuttle Car.

GROUP VIII

All Shovel Type Equipment, Side Boom Cats, Cranes, Draglines, Track or Excavator Backhoe, Backhoes with Buckets over one and one quarter cubic yards, Derricks, Guy and Stiff Leg, Pipemobile (No.2 Operator), Pile Driver, Hydraulic Cranes (20 ton and over), Mine Hoists, Belt Loader (C.M.I. type) Cranes and Draglines with Booms over 150 ft. through 199 feet \$.75 above base rate per hour additional; 200 feet and over \$1.00 above base rate per hour additional, Shovel (Wheel type), Boring Machine (Tunnel or Shaft Mode), Pipe Mobile, Motor Grader (Finish), Mechanic, Welder, Mobile Pipeline Inspection Camera, Operator/Rigger, Crane Inspector, Continuous Mining Machine, VAC Jet Rodder, Equipment Instructor.

IRON0263D 06/01/2002

	Rates	Fringes
CHAVES, CURRY, DONA DNA, EDDY, GRANT, HARDING, HIDALGO, LEA, LUNA, OTERO, QUAY, ROOSEVELT, SIERRA AND UNION COUNTIES IRONWORKERS: Ornamental; Structural and reinforcing	18.79	4.35

IRON0495A 06/01/2002

	Rates	Fringes
BERNALILLO, CATRON, CIBOLA, COLFAX, DeBACA, GUADALUPE, LINCOLN, LOS ALAMOS, TAOS, McKINLEY, MORA, RIO ARRIBA, SAN JUAN, SAN MIGUEL, SANDOVAL, SANTA FE, SOCORRO, TORRANCE, VALENCIA COUNTIES IRONWORKERS: Ornamental; Structural and reinforcing	18.00	7.53

LABO0016A 10/01/2001

	Rates	Fringes
LABORERS:		
BUILDING CONSTRUCTION:		
GROUP I	12.19	2.40
GROUP II	12.78	2.40
GROUP III	13.50	2.40
GROUP IV	14.97	2.40

LABORER CLASSIFICATIONS

GROUP I: Chainmen, Stakedrivers, Stake Hopper, Heater Tenders, Pick and Shovel Work, Window Cleaning and Clean up, Flagman, Landscaping and Planter, Fence Builder, Guardrail Builder, Unloading of Furniture and Fixtures, Shop Helper. (Chainman and Stakedrivers working solely for an engineering firm are not subject to this agreement.)

GROUP II: Carpenter Tenders, Concrete Workers, Concrete Buggy Operators, Industrial and Plant Laborers, Fire Watch, Swinging Scaffolds Tender, Fine Grader, Form Stripper, Gabian Basket Builders, Rip Rap Stoneman, Drywall, Stocking and Handling, Fly Ash Vacuum Operator, Man Hole Builder, Tool Room Person and Checker on Jobsite.

GROUP III: Electric Air and Gas Operated Power Tools, Asphalt Rakers, Chain Saw Operators, Oxy Gasoline Torch Operators, Cutting Torch Operators or Burner Person, Guniting Rebound Men, Fog Machine Operators, Power Buggy Operators, Rodmen, Sandblasters (potmen), Wagon Drill and Diamond Core Driller, Air Track, Drill Operator Hydraulic Core Drill Diamond, Tenders Outside with Pumps under 6", Concrete Burners, Cement Mason Tenders, Plasterers Hodcarriers, Mortar Mixer, Plaster Spreader Operators, Plaster Tenders, Guniting Nozzlemen, Pipelayer, Pumpcrete Nozzlemen, Powdermen Tender Demolition, Grade Checker, Vibrator Operator, Concrete Saw Operators, Stone Mason Tender, Jack Hammer and Chipping Hammer Operator, Green Cutter High Pressure Air and Water on Concrete Blaster, Pipelayer (includes but not limited to water pipe, sewer pipe, drainage pipe, pvc, and all underground tile, pipe), Cast Iron Concrete pipe, unloading, handling, distribution, and installation.

GROUP IV: Asbestos Abatement Laborer, Toxic and Hazardous Waste Removal Laborer, Lead Base Paint Removal Laborer, Laborer/Concrete Specialist, Pest Technician (Licensed by the Bureau of Rodent Management), State Licensed Powder man and, Blaster, Laborers AGC Certified Scaffold Builder Laborer, or Hydromobile Scaffold Builder, Radiation Worker II.

LABO0016C 04/01/2002

	Rates	Fringes
LABORERS:		
HEAVY CONSTRUCTION:		
ZONE 1:		
GROUP I	13.39	2.45
GROUP II	14.14	2.45
ZONE 2:		
GROUP I	15.89	2.45
GROUP II	16.64	2.45
ZONE 3:		
GROUP I	17.39	2.45
GROUP II	18.14	2.45

LABORER CLASSIFICATIONS

GROUP I: Construction and General Laborers, Carpenter Tenders, Concrete Workers, Stakedrivers, Concrete Buggy Operators, Hand Flagman.

GROUP II: Air and Power Tool Operators, Asphalt Rakers, Chain Saw Operators, Cutting Torch Operators, Demolition, Gunite Rebound Men, Rod and Chainmen, Grade Setters, Power Buggy Operators, Sand Blasters (pot men), Nozzleman, Wagon Core and Diamond Drillers Tenders, Outside Scalers, Fog Machine Operators, Air, Gas, Hydraulic Tool and Electrical Tool Operators, Barco Hammers Cutting Torches, Drill, Diamond and Core Drills, Electric Hammers, Jackhammers, Hydraulic Jacks, Tampers, Air Tampers, Concrete Processing Material, Form-Setters, Airport Runways, Operators of Concrete Saws on Pavement (other than gangsaws) Power Operated Concrete Buggies, Hot Asphalt Labor, Paving Breakers, Cofferdams, Boxtenders, Caissons 8' to 12', Jack-Hammer Operators in Caissons over 12', Labor Applicable to Pipe Coating or Wrapping, Pipe Wrappers, Plant and Yard, Relining Pipe, Hydroliner (a plastic may be used to waterproof), Pipelayer on Underground Bores, Sewer, Monitors, Jeep Holiday Detector Men, Pump Operators, Rakers, Vibrators, Hydro-Boom, Mixer Man, Gunnite Nozzlemen, Shortcrete Operator, Timberman, Timber and Chain Saws, Sand Blasters, Licensed Powdermen, Powdermen and Blasters, Siphons, Signalmen, Grade Checker.

ZONE PAY

The reference point for determining zone pay shall be from the intersection of Interstate Highway 25 and Interstate Highway 40 (The Big "I") in Albuquerque.

ZONE 1 - FREE ZONE - 0 to 50 miles

ZONE 2 - 50 to 85 miles from reference points. \$2.50 per hour above base wage.

ZONE 3 - over 85 miles from reference points. \$4.00 per hour above base wage.

Workmen employed on work forty (40) or more feet above the ground or above a solid floor, deck, or flat roof shall receive premium pay as follows:

40 to 80 feet - \$0.25 per hour
 80 to 120 feet - \$0.50 per hour
 120 to 160 feet - \$0.75 per hour
 above 160 feet - \$1.00 per hour

SHAFTS, RAISES, MISSILE SILOS, AND ALL OTHER UNDERGROUND WORK (EXCLUDING REPROCESSING PIPE UNDERGROUND):

ZONE 1:		
GROUP I	15.40	2.45
GROUP II	15.67	2.45
GROUP III	15.82	2.45
Shifter	16.05	2.45
ZONE 2:		
GROUP I	17.90	2.45
GROUP II	18.17	2.45
GROUP III	18.32	2.45
Shifter	18.55	2.45
ZONE 3:		
GROUP I	19.40	2.45
GROUP II	19.67	2.45
GROUP III	19.82	2.45
Shifter	20.05	2.45

LABORER CLASSIFICATIONS

GROUP I: Tunnel Workers: Laborers and Hand Muckers Top Landers, Groutmen, Nippers, Trackmen.

GROUP II: Chuck Tenders.

GROUP III: Shaft Workers, Air Tugger Operators, Concrete Workers (including all cement chipping and finishing underground), Drillers, Form Setters and Handlers, Hand Muckers, Miners, Powdermen, Steel Setters, Tunnel Liners, Plate Setters, Reinforcing Steel Setters, all Cutting and Welding incidental to Miners' work, Powdermen and Blasters, Timbermen.

LABO0016D 10/01/2001

	Rates	Fringes
LABORERS:		
HEAVY CONSTRUCTION:		
ZONE 1:		
GROUP I	13.65	2.45
GROUP II	13.90	2.45
GROUP III	14.05	2.45
GROUP IV	14.97	2.45
ZONE 2:		
GROUP I	16.15	2.45
GROUP II	16.40	2.45
GROUP III	16.55	2.45
GROUP IV	17.47	2.45
ZONE 3:		
GROUP I	17.65	2.45
GROUP II	17.90	2.45
GROUP III	18.05	2.45
GROUP IV	18.97	2.45

ZONE PAY

The reference point for determining zone pay shall be from the intersection of Interstate Highway 25 and Interstate Highway 40 (The Big "I") in Albuquerque.

Free Zone - 0 to 50 miles.

Zone 2 - 50 to 85 miles from above reference points. \$2.50 per hour above base wage.

Zone 3 - over 85 miles from above reference points. \$4.00 per hour above base wage.

Workmen employed on work forty (40) or more feet above the ground or above a solid floor, deck, or flat roof shall receive premium pay as follows:

40 to 80 feet - \$0.25 per hour

80 to 120 feet - \$0.50 per hour

120 to 160 feet - \$0.75 per hour

above 160 feet - \$1.00 per hour

LABORER CLASSIFICATIONS

GROUP I: Wagon Core, Diamond Drillers

GROUP II: Concrete Burner, Hodcarriers, Mortar Mixers, Plaster Spreader Operators, Plaster Tenders, Guniting Nozzlemen, Pipelayers Pumpcrete Nozzlemen.

GROUP III: Powdermen and Blasters.

GROUP IV: Includes but is not limited to the following specialty categories of Construction Specialists: Asbestos Abatement Laborers, Toxic and Hazardous Waste Removal Laborers, Lead Base Paint Removal Laborers, Laborer/Concrete Specialist, Pest Technician (Licensed by the Bureau of Rodent Management), State

Licensed Powderman and Blaster, Laborers-AGC Certified Rigger and Signal Man, Laborers-AGC Certified Scaffold Builder Laborer, or Hydromobile Scaffold Builder, Radiation Worker II.

 PAIN0823A 04/01/2000

	Rates	Fringes
PAINTERS:		
Mines, mills, Power plants, energy plants, refineries, coal gassification plants, nuclear related facilities & all steel work incidental thereto including stacks of all descriptions:		
Brush, roller, pot tender, sandblaster, grinder operator:		
New Work:		
Zone I	16.05	4.08
Zone II	17.05	4.08
Zone III	18.55	4.08
Repaint/remodel:		
Zone I	13.64	4.08
Zone II	14.64	4.08
Zone III	16.14	4.08
Spray; Preparation for and application of epoxy & special coatings; Hand Finisher/Machine Texture:		
New Work:		
Zone I	16.55	4.08
Zone II	17.55	4.08
Zone III	19.05	4.08
Repaint/remodel:		
Zone I	14.57	4.08
Zone II	15.57	4.08
Zone III	17.07	4.08
Hand texture		
New Work:		
Zone I	16.75	4.08
Zone II	17.75	4.08
Zone III	19.25	4.08
Repaint/remodel:		
Zone I	14.24	4.08
Zone II	15.09	4.08
Zone III	16.36	4.08
Paperhangers:		
New Work:		
Zone I	17.05	4.08
Zone II	18.05	4.08
Zone III	19.55	4.08
Repaint/remodel:		
Zone I	14.49	4.08
Zone II	15.49	4.08
Zone III	16.99	4.08
Drywall finisher; Ames Tool operator:		
New Work:		
Zone I	17.25	4.08

Zone II	18.25	4.08
Zone III	19.75	4.08
Repaint/remodel:		
Zone I	14.66	4.08
Zone II	15.51	4.08
Zone III	16.79	4.08

HIGH PAY: High pay shall apply to any free fall area exceeding 30 feet from the ground level. The hourly wage rate shall be increased \$.50 per hour from the 30 foot level up. The determining factor in high pay shall be a stationary floor, landing or grate, excluding elevated tank walkways.

PAINTERS ZONE DEFINITIONS

Free Zone: An area within a 30 mile radius of the main post office in the city or town where an employee permanently resides at the time of hire shall be considered Zone 1. All jobs beyond the 30 mile radius shall be covered by the zone schedule below:

- ZONE I - BASE PAY UP TO 30 MILES
 - ZONE II - EXTENDING 30 MILES TO 75 MILES BEYOND ZONE I
 - ZONE III - EXTENDING 75 MILES AND BEYOND
- Albuquerque, Santa Fe and Belen shall be considered in Zone 1.

0 -----

1
2 PAIN0823B 04/01/2002

3		Rates	Fringes
4	GLAZIERS	19.15	4.11

5 -----

6
7 PAIN0823C 04/01/2002

8		Rates	Fringes
9	SOFT FLOOR LAYERS:		
0	ZONE I	16.73	4.58
1	ZONE II	17.73	4.58
2	ZONE III	19.23	4.58

3
4 SOFT FLOOR LAYERS ZONE DEFINITIONS

5
6 Free Zone: An area within a 30 mile radius of the main post
7 office in the city or town where an employee permanently
8 resides at the time of hire shall be considered Zone 1. All
9 jobs beyond the 30 mile radius shall be covered by the zone
0 schedule below:

- 1 ZONE I -- Up to 30 miles
- 2 ZONE II -- 30 to 75 miles
- 3 ZONE III - 75 miles and beyond

4
5
6 Albuquerque, Santa Fe and Belen shall be considered Zone 1.

7 -----

8
9 PAIN0823D 04/01/2000

0		Rates	Fringes
1	PAINTERS:		
2	All Other Work: Commercial:		
3	Brush, roller, spray and		
4	special coatings:		
5	Zone I	14.24	3.58

6	Zone II	15.24	3.58
7	Zone III	16.74	3.58
8	Sand blasters; striping		
9	machine operators:		
0	Zone I	15.69	3.58
1	Zone II	16.69	3.58
2	Zone III	18.19	3.58
3	Sign painters:		
4	Zone I	16.04	3.58
5	Zone II	17.04	3.58
6	Zone III	18.54	3.58
7	Paper hangers:		
8	Zone I	16.19	3.58
9	Zone II	17.19	3.58
0	Zone III	18.69	3.58
1			
2	Tenant Improvement*:		
3	Hand texture:		
4	Zone I	14.14	3.58
5	Zone II	15.14	3.58
6	Zone III	16.64	3.58
7	Paper hangers:		
8	Zone I	14.44	3.58
9	Zone II	15.44	3.58
0	Zone III	16.94	3.58
1	Drywall finishers:		
2			
3	Zone I	14.49	3.58
4	Zone II	15.49	3.58
5	Zone III	16.99	3.58
6	Ames Tool operators:		
7	Zone I	14.74	3.58
8	Zone II	15.74	3.58
9	Zone III	17.24	3.58

1 *Tenant improvement shall be considered the following types of
2 work: repaint, remodel, alterations and additions to an existing
3 building, the painting and repair of hotels, motels and
4 apartment buildings five stories and over, new and repair.

5
6 HIGH PAY: High pay shall apply to any free fall area exceeding
7 30 feet from the ground level. The hourly wage rate shall be
8 increased \$.50 per hour from the 30 foot level up. The
9 determining factor in high pay shall be a stationary floor,
0 landing or grate, excluding elevated tank walkways.

1
2 PAINTERS ZONE DEFINITIONS

3
4 Free Zone: An area within a 30 mile radius of the main post
5 office of the city or town where an employee permanently
6 resides at the time of hire shall be considered Zone 1. All
7 jobs beyond the 30 mile radius shall be covered by the zone
8 schedule below:

9
0 ZONE I - BASE PAY UP TO 30 MILES
1 ZONE II - EXTENDING 30 MILES TO 75 MILES BEYOND ZONE I
2 ZONE III - EXTENDING 75 MILES AND BEYOND

3
4 Albuquerque, Santa Fe and Belen shall be considered in Zone 1.
5 -----
6
7 PLAS0254A 10/01/2001
8 Rates Fringes
9 CEMENT MASONS 16.95 3.98
0 -----
1
2 * PLAS0254B 07/01/2002
3 Rates Fringes
4 PLASTERERS 17.50 4.42
5 -----
6
7 PLUM0412A 04/01/2001
8 Rates Fringes
9 REMAINING COUNTIES
0
1 PLUMBERS & PIPEFITTERS 22.98 5.95
2
3 LOS ALAMOS, WHITE ROCK, SOUTH MESA, MCGREGOR, WHITE SANDS MISSILE
4 RANGE AND/OR PROVING GROUNDS
5
6 PLUMBERS & PIPEFITTERS 23.78 5.95
7
8 LIGHT COMMERCIAL :
9
0 All irrigation & 15.96 4.20
1 lawn sprinkler
2 -----
3
4 ROOF0174A 10/01/1994
5 Rates Fringes
6 ROOFERS 13.30 1.99
7 -----
8
9 SHEE0049A 04/01/2002
0 Rates Fringes
1 REMAINING COUNTIES
2
3 SHEET METAL WORKERS 23.30 7.11
4 -----
5
6 SHEE0049B 04/01/2002
7 Rates Fringes
8 LOS ALAMOS COUNTY
9
0 SHEET METAL WORKERS 25.30 7.17
1 -----
2
3 SUNM1002A 08/11/1993
4 Rates Fringes
5 SPRINKLER FITTERS:
6 Bernalillo, Los Alamos &
7 Santa Fe, Counties 15.55
8 Otero County 17.45 3.75
9 Remaining Cos. (Except Dona Ana) 16.06 2.95

	Rates	Fringes
0		
1		
2	TEAM0492A 06/01/1993	
3		
4	TRUCK DRIVERS:	
5	BUILDING CONSTRUCTION:	
6	Zone I:	
7	GROUP I	1.89
8	GROUP II	1.89
9	GROUP III	1.89
0	GROUP IV	1.89
1	GROUP V	1.89
2	GROUP VI	1.89
3	GROUP VII	1.89
4	GROUP VIII	1.89
5	GROUP IX	1.89
6	Zone II	
7	GROUP I	1.89
8	GROUP II	1.89
9	GROUP III	1.89
0	GROUP IV	1.89
1	GROUP V	1.89
2	GROUP VI	1.89
3	GROUP VII	1.89
4	Group VIII	1.89
5	Group IX	1.89
6		
7	Zone III:	
8	GROUP I	1.89
9	GROUP II	1.89
0	GROUP III	1.89
1	GROUP IV	1.89
2	GROUP V	1.89
3	GROUP VI	1.89
4	GROUP VII	1.89
5	GROUP VIII	1.89
6	GROUP IX	1.89
7	BUILDING CONSTRUCTION:	
8	Light Commercial Construction:	
9	Zone I:	
0	GROUP I	1.89
1	GROUP II	1.89
2	GROUP III	1.89
3	GROUP IV	1.89
4	GROUP V	1.89
5	GROUP VI	1.89
6	GROUP VII	1.89
7	GROUP VIII	1.89
8	GROUP IX	1.89
9	Zone II:	
0	GROUP I	1.89
1	GROUP II	1.89
2	GROUP III	1.89
3	GROUP IV	1.89
4	GROUP V	1.89
5	GROUP VI	1.89
6	GROUP VII	1.89

7	Group VIII	9.95	1.89
8	Group IX	10.07	1.89
9	Zone III:		
0	GROUP I	9.66	1.89
1	GROUP II	9.88	1.89
2	GROUP III	9.94	1.89
3	GROUP IV	10.04	1.89
4	GROUP V	10.08	1.89
5	GROUP VI	10.16	1.89
6	GROUP VII	10.24	1.89
7	GROUP VIII	10.35	1.89
8	GROUP IX	10.47	1.89
9	HEAVY CONSTRUCTION:		
0	Zone I:		
1	GROUP I	10.08	1.79
2	GROUP II	10.35	1.79
3	GROUP III	10.43	1.79
4	GROUP IV	10.55	1.79
5	GROUP V	10.60	1.79
6	GROUP VI	10.70	1.79
7	GROUP VII	10.80	1.79
8	GROUP VIII	10.94	1.79
9	GROUP IX	11.09	1.79
0	Zone II:		
1	GROUP I	11.58	1.79
2	GROUP II	11.85	1.79
3			
4	GROUP III	11.93	1.79
5	GROUP IV	12.05	1.79
6	GROUP V	12.10	1.79
7	GROUP VI	12.20	1.79
8	GROUP VII	12.30	1.79
9	GROUP VIII	12.44	1.79
0	GROUP IX	12.59	1.79
1	Zone III:		
2	GROUP I	11.83	1.79
3	GROUP II	12.10	1.79
4	GROUP III	12.18	1.79
5	GROUP IV	12.30	1.79
6	GROUP V	12.35	1.79
7	GROUP VI	12.45	1.79
8	GROUP VII	12.55	1.79
9	GROUP VIII	12.69	1.79
0	GROUP IX	12.84	1.79

2 TRUCK DRIVER (BUILDING & HEAVY CONSTRUCTION) CLASSIFICATIONS

4 GROUP I:

5 Pickup 3/4 Ton and Under, Lubrication, Light Tire Repair and
6 Washer, Swamper, 2 or 4 and up.

8 GROUP II:

9 Dump or Batch Truck Under 8 C.Y.W.L.: Flat Bed (bobtail) 2
0 Ton and Under, Warehouseman including Material Check, Fork
1 Lift Under 5 Ton MRC.

3 GROUP III:

4 Dump Trucks (Including All Highway and Off Highway) 8 up to
5 16 C.Y.W.L.C.; Water, Fuel or Oil Trucks Less Than 3,000 gal.
6 Flat Bed (bobtail) Over 2 Tons.

7

8 GROUP IV:

9 Distributor Driver, Heavy Tire Repair, Lumber Carrier Driver,
0 Young Buggy or Similar Equipment, Transit Mix or Agitator 2
1 or 3 Axle Bobtail Equipment, Scissor Truck, Bulk Cement
2 Bobtail 2 or 3 Axle, Semi-Trailer Flat Bed or Van Single Axle
3 Forklift 5 Ton and over M.R.C.

4

5 GROUP V:

6 Dumpsters and Dumpcrete Driver; Water, Fuel or Oil Trucks
7 3,000 to 6,000 Gallons; Lowboys and Light Equipment Driver;
8 Euclid Type Tank Wagon Under 6,000 Gallons.

9

0 GROUP VI:

1 Vacuum Truck; Dump Trucks (including all highway and off-
2 highway 16 up to 22 C.Y.W.L.C.

3

4 GROUP VII:

5 Transit Mix or Agitator Semi or 4 Axle Equipment Driver;
6 Flaherty Truck Type Spreader Box Driver; Slurry Truck Driver
7 Bulk Cement Driver; Semi-Doubles; 5 Axle Bobtail; Winch Truck
8
9 and "A" Frame; Dump Truck (including all Highway and Off-
0 Highway) 22 CY up to 35 C.Y.W.L.C.

1

2 GROUP VIII:

3 Euclid Diesel Power Turnarocker; Terra Coba-DW20-Tourneau
4 Pulls and Similar Diesel Powered Equipment when used to haul
5 Materials and Assigned to a Teamster-Lowboy Heavy Equipment
6 Driver; Water, Fuel and Oil Trucks 6,000 Gallons and Over
7 Including Tank Wagon Drivers, Semi-Trailer Driver (Flat-Bed
8 or Van Tandems); Light Equipment Mechanic; Dump Trucks
9 (Including All Highway and Off-Highway) 35 C.Y.W.L.C. and
0 Over; Truck and Trailer or Semi-Trailer (Flated); eject all.

1

2 GROUP IX:

3 Lowboy (Heavy Equipment Double Gooseneck); Heavy Equipment
4 Mechanic; Welder (Body and Fender Men).

5

6 TRUCK DRIVERS ZONE PAY BASING POINTS AND DEFINITIONS LISTED BELOW
7 FOR BUILDING AND HEAVY CONSTRUCTION - BASING POINTS ARE AS
8 FOLLOWS:

9

0 ALAMOGORDO, ALBUQUERQUE, ARTESIA, BAYARD, BELEN, CARLSBAD,
1 CLOVIS, DEMING, ESPANOLA, EUNICE, FARMINGTON, GALLUP, GRANTS,
2 HOBBS, LAS CRUCES, LAS VEGAS, LORDSBURG, LOVINGTON, PORTALES,
3 RATON, ROSWELL, RUIDOSO, SANTA FE, SANTA ROSE, SILVER CITY,
4 SOCORRO, TAOS, TUCUMCARI

5

6 ZONE I

7 Projects within 15 miles from the starting points above

8

9 ZONE II

0 Projects 15 or more road miles but less than 35 miles from

1 above, includes all of Los Alamos County

2

3 ZONE III

4 Projects more than 35 road miles, or more from above.

5

6 -----

7 FOOTNOTE:

8

9 **LIGHT COMMERCIAL DEFINITION

0

1 Construction, erection, alteration, repair, modification,
2 addition to or improvement in whole or in part of structures for
3 which the major support system is wood frame construction and
4 will also include all apartments over 4 stories, all convenience
5 stores, fast food restaurants, automobile service stations &
6 motels up to 2 stories high.

7 -----

8

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

1 =====

2

3 Unlisted classifications needed for work not included within
4 the scope of the classifications listed may be added after
5 award only as provided in the labor standards contract clauses
6 (29 CFR 5.5(a)(1)(ii)).

7 -----

8 In the listing above, the "SU" designation means that rates
9 listed under that identifier do not reflect collectively
0 bargained wage and fringe benefit rates. Other designations
1 indicate unions whose rates have been determined to be
2 prevailing.

3

4 WAGE DETERMINATION APPEALS PROCESS

5

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

8

- 9 * an existing published wage determination
- 0 * a survey underlying a wage determination
- 1 * a Wage and Hour Division letter setting forth a
- 2 position on a wage determination matter
- 3 * a conformance (additional classification and rate)
- 4 ruling

5

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

3

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

7

8 Branch of Construction Wage Determinations
9 Wage and Hour Division
0 U. S. Department of Labor
1 200 Constitution Avenue, N. W.
2 Washington, D. C. 20210
3

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

8
9 Wage and Hour Administrator
0 U.S. Department of Labor
1 200 Constitution Avenue, N. W.
2 Washington, D. C. 20210
3

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

8
9 3.) If the decision of the Administrator is not favorable, an
0 interested party may appeal directly to the Administrative Review
1 Board (formerly the Wage Appeals Board). Write to:

2
3 Administrative Review Board
4 U. S. Department of Labor
5 200 Constitution Avenue, N. W.
6 Washington, D. C. 20210
7

8 4.) All decisions by the Administrative Review Board are final.
9 END OF GENERAL DECISION

52.225-11 BUY AMERICAN ACT --CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS
(MAY 2002)

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

Component means an article, material, or supply incorporated directly into a construction material.

Construction material means an article, material, or supply brought to the construction site by the Contractor or subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

Cost of components means--

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the construction material (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the end product.

Designated country means any of the following countries: Aruba, Austria, Bangladesh, Belgium, Benin, Bhutan, Botswana, Burkina Faso, Burundi, Canada, Cape Verde, Central African Republic, Chad, Comoros, Denmark, Djibouti, Equatorial Guinea, Finland, France, Gambia, Germany, Greece, Guinea, Guinea-Bissau, Haiti, Hong Kong, Iceland, Ireland, Israel, Italy, Japan.

Kiribati, Korea, Republic of, Lesotho, Liechtenstein, Luxembourg, Malawi, Maldives, Mali, Mozambique, Nepal, Netherlands, Niger, Norway, Portugal, Rwanda.

Sao Tome and Principe, Sierra Leone, Singapore, Somalia, Spain, Sweden, Switzerland, Tanzania U.R., Togo, Tuvalu, Uganda, United Kingdom, Vanuatu, Western Samoa, Yemen.

Designated country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a designated country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a designated country into a new and different construction material distinct from the materials from which it was transformed.

Domestic construction material means--

(1) An unmanufactured construction material mined or produced in the United States; or

(2) A construction material manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic.

Foreign construction material means a construction material other than a domestic construction material.

North American Free Trade Agreement country means Canada or Mexico.

North American Free Trade Agreement country construction material means a construction material that--

- (1) Is wholly the growth, product, or manufacture of a North American Free Trade Agreement (NAFTA) country; or
- (2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a NAFTA country into a new and different construction material distinct from the materials from which it was transformed.

United States means the 50 States and the District of Columbia, U.S. territories and possessions, Puerto Rico, the Northern Mariana Islands, and any other place subject to U.S. jurisdiction, but does not include leased bases.

(b) Construction materials. (1) This clause implements the Buy American Act (41 U.S.C. 10a-10d) by providing a preference for domestic construction material. In addition, the Contracting Officer has determined that the Trade Agreements Act and the North American Free Trade Agreement (NAFTA) apply to this acquisition. Therefore, the Buy American Act restrictions are waived for designated country and NAFTA country construction materials.

(2) The Contractor shall use only domestic, designated country, or NAFTA country construction material in performing this contract, except as provided in paragraphs (b)(3) and (b)(4) of this clause.

(3) The requirement in paragraph (b)(2) of this clause does not apply to the construction materials or components listed by the Government as follows: None.

(4) The Contracting Officer may add other foreign construction material to the list in paragraph (b)(3) of this clause if the Government determines that--

(i) The cost of domestic construction material would be unreasonable. The cost of a particular domestic construction material subject to the restrictions of the Buy American Act is unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent;

(ii) The application of the restriction of the Buy American Act to a particular construction material would be impracticable or inconsistent with the public interest; or

(iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(c) Request for determination of inapplicability of the Buy American Act. (1)(i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(4) of this clause shall include adequate information for Government evaluation of the request, including--

(A) A description of the foreign and domestic construction materials;

(B) Unit of measure;

(C) Quantity;

(D) Price;

(E) Time of delivery or availability;

(F) Location of the construction project;

(G) Name and address of the proposed supplier; and

(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

(iv) Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.

(2) If the Government determines after contract award that an exception to the Buy American Act applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is not less than the differential established in paragraph (b)(4)(i) of this clause.

(3) Unless the Government determines that an exception to the Buy American Act applies, use of foreign construction material is noncompliant with the Buy American Act.

(d) Data. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison

Construction material description	Unit of measure	Quantity	Price (dollars)
-----------------------------------	-----------------	----------	-----------------

Item 1:

Foreign construction material...
Domestic construction material...

Item 2:

Foreign construction material...
Domestic construction material...

\1\ Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued).

List name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.

Include other applicable supporting information.

(End of clause)

PROPOSAL SCHEDULE
 (To be attached to SF 1442)

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
0001	Total Cost for Design of the Telescope Atmosphere Compensation Laboratory and All Site Improvements, Complete	Job	Sum	***	\$ _____
0002	Total Cost for Construction of the Telescope Atmosphere Compensation Laboratory, Inside the Building 5'-0" Line, Complete	Job	Sum	***	\$ _____
0003	Total Cost for Construction of All Site Improvements, Including Demolition (Outside the Building 5'-0" Line), Including Grading, Rigid and Flexible Paving, Utilities, Storm Drain, Parking, Dumpster Pad, Curb and Gutters, Sidewalks, Chain Link Fencing, Exterior Lighting, Complete	Job	Sum	***	\$ _____
0004	Final As-Built Drawings	Job	Sum	***	\$ 8,500.00
0005	Operation and Maintenance Manuals	Job	Sum	***	\$ 8,500.00
TOTAL AMOUNT					\$ _____

PROPOSAL SCHEDULE (Cont'd)

NOTES:

1. Award of all Proposal Items will be made to one proposer. Proposers must bid on all items.

2. PROGRESS PAYMENT REQUESTS made by the Contractor pursuant to the provisions of Contract Clause, PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS, shall be submitted on ENG FORM 93 to the billing office as designated on Block 26, Standard Form 1442, Solicitation, Offer and Award, back. ENG FORM 93 shall be submitted to that office on the 1st of each month in appropriate form and certified. Photocopies of the form shall be furnished on that same date to the Corps of Engineers offices designated at the Pre-Construction Conference.

Specifications: Telescope Atmosphere Compensation Laboratory, Kirtland Air Force Base, New Mexico

SECTION 00800

SPECIAL CLAUSES

1. COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK (FAR 52.211-10) (APR 1984).

(a) The Contractor shall be required to (a) commence work under this contract within ten (10) calendar days after the date the Contractor receives notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than the dates or number of calendar days after the date of receipt by him of notice to proceed set forth in the schedule below:

SCHEDULE

Item of Work	Commencement Time	Completion Time in Calendar Days After Receipt of Notice to Proceed	Liquidated Damages Per Calendar Day
(5) 1.1 Design and Construction of the Telescope Atmosphere Compensation Laboratory, Including All Site Improvements, Complete	After Receipt of Notice to Proceed (see Note 1)	530	\$1,085.00
1.2 Final As-Built Drawings	(See Note 2)	-	-
1.3 Operation and Maintenance (O & M) Manuals	(See Note 3)	-	-

NOTES:

1. The completion time includes 30 calendar days for Government review of the 60% and 100% design submittal and 15 calendar days for the corrected final design submittal review and approval. Written acknowledgement and verification of conformance to the RFP of the corrected final by the Government and receipt of construction documents shall constitute Notice to proceed with construction. Prior to NTP with construction, the Contractor may be allowed to mobilize on site with Contracting Officer approval.

2. As-Built Drawings. The Contractor shall complete work on the final as-built drawings upon his receipt of the approved working as-built drawings. The Contractor shall provide final as-built drawings as specified in Section 01720. Upon satisfactory completion of this work the Contractor shall have earned the amount shown for Final As-Built Drawings in the Proposal Schedule.

SECTION 01010

DESIGN REQUIREMENTS

3. CIVIL DESIGN

3.1 **General.** The project consists of the design and construction of the Telescope/Atmosphere Compensation Laboratory (TAC LAB) and associated demolition and site development. See the Project Location Map (Sheet C1) for the location of the facility. The project consists of the construction of a 2-story administration/laboratory building, access streets, roads and parking lot, loading dock(s), visitor vehicle holding area (1 full size semi-tractor trailer and 3 POV spaces), motorized chain-link roll gate, chain-link double swing gate, sidewalks, fencing, water and gas utilities distribution and service lines, fire protection line, sanitary sewer system, lift station(s), water booster pump station(s), lighting, traffic signage, storm drainage system, and grading. The visitor holding area is a temporary holding/parking area adjacent to the motorized roll gate. Demolition at the site consists of the removal of any existing structures located within the new project site and demolition of the high pressure nitrogen and helium gas lines, as shown on the drawing sheet C9. The project requires the provision of a fire protection distribution connecting the TAC Lab fire suppression system to the 320,000-gallon HERTF water storage tank.

(5)

(5)

3.2 **Technical Criteria and Standards.**

3.2.1 U.S. Army Corps of Engineers, Southwestern Division, Architectural and Engineering Instructions Manual (CESWD-AEIM), September 1998.

3.2.2 AFM 88-11, Volume 1, Sanitary and Industrial Wastewater Collection - Gravity Sewers and Appurtenances.

3.2.3 AFM 88-11, Volume 2, Sanitary and Industrial Wastewater Collection and Pumping Stations and Force Mains.

3.2.4 Recommended Standards for Water Works (Ten States Standards), dated 1997.

3.2.5 National Fire Protection Association (NFPA) 22, Standard for Water Tanks for Private Fire Protection, latest edition.

3.2.6 National Fire Protection Association (NFPA), Fire & Life Safety.

3.2.7 Kirtland Air Force Base, New Mexico. Architectural Compatibility Guide (ACG) for Kirtland AF Operating Instruction 32-1001, 2 November 1998, Kirtland AFB, NM.

3.2.8 National Fuel Gas Code, NFPA 54-latest version.

3.2.9 Uniform Federal Accessibility Standards, Federal Register.

3.2.10 TM 5-822-2, July 1987, General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas.

or depressions in the ground resulting from demolition operations shall be filled with satisfactory materials and graded to drain in accordance with specification SECTION 02300 - EARTHWORK, and Appendix M, Revegetation and Erosion Control. The Contractor shall obtain and comply with the City Of Albuquerque Soil Disturbance permit. Rubble and debris resulting from the demolition process shall be removed from the site. Trees shall not be removed unless required within the approved proposed site plan.

3.9 Utility Demolition. High pressure nitrogen and helium gas lines to be demolished, shall be removed to the main or distribution line and capped. The service line laterals crossing under roads shall be removed to and capped at a distance of 5 feet from the edge of the road. Service line laterals crossing site boundaries shall be removed to and capped at a distance of 5 feet within the boundary line. High pressure nitrogen and helium gas lines are as shown on the drawing sheet C9. Existing utility lines servicing structures to remain shall be relocated as required when they interfere with the construction of the TAC Lab Building. Refer to the Electrical portion of Section 01010 for demolition of existing electrical items.

3.10 Site Development. The site development for this project consists of the complete design and construction of a 2-story administrative/laboratory building, a separate mechanical equipment building (at offeror's option, see Architectural design, paragraph, **Separate Mechanical Equipment Building**), access driveways, an asphalt or crushed rock pavement parking area, sidewalks, dumpster pads, rigid pavement at loading dock(s), mechanical pad, chain-link fence, electric roll gate, chain-link double swing gates, chain-link security fencing, fire demand lines, gas line, domestic water line (including booster pump(s)), sanitary sewer lines (including force mains), sanitary sewer lift station(s), communication lines, fire hydrants, and all associated valves, manholes, fittings, specials, etc, and storm drainage system. Any disturbance to the landscaping adjacent to site shall be repaired/replaced by the Contractor to pre-project condition or better as determined by the Contracting Officer. It is highly desired that the weather tower remain in its current location. If the proposed site design requires restringing of the guide wires or relocation of the weather tower, the Contractor must include provisions for temporary acquisition of weather data.

3.10.1 Building Siting. The facility shall be sited to ensure an interesting, attractive, and functional site taking into consideration the existing features of the site and adjacent facilities. Consideration shall be given to views, solar orientation, and the topography of the site. The building shall be sited on the east side of Mount Washington Road, on Forest Service land. Site planning shall take into consideration natural characteristics of the environs, climatic conditions, and prevailing winds. Design should capitalize upon economies inherent in the natural characteristics of the site, using existing terrain to minimize cut and fill, reducing street frontage, and consolidating utilities and common open spaces. Contractors are encouraged to consider energy conservation when developing their proposed building arrangements.

3.10.1.1 General. Refer to drawing sheet C8 for approximate site boundaries. Paved areas should be minimized. The TAC Lab shall not be located within the current 100-year flood plain. For flood plain locations, refer to the flood hazard report for Kirtland Air Force Base.

3.10.1.2 **Building Setbacks.** Clearances between adjacent buildings must consider requirements for fire protection, safety, privacy, and emergency access. Values stated below are mandatory except where superseded by more stringent requirements stated elsewhere in this Request for Proposal (RFP). Minimum requirements for standoff distances and building layout are stated in Interim DOD Antiterrorism/Force Protection Construction Standards, December 16, 1999 and DOD Antiterrorism Construction Standards, August 30, 2001.

3.10.2 **Facility Entrances and Driveways.** The proposed site shall be accessible by emergency vehicles, service vehicles, waste collection vehicles and moving vans. Access to the facility shall be provided from a new driveway off Mount Washington Road and from the access road south of Mount Washington Road. A culvert following the ditch/gutter line shall be provided across this new driveway to pass runoff under the access road. If a culvert cannot be provided, a concrete swale (valley gutter), 0.91 m (3 ft) wide minimum, following the gutter line shall be provided across these new driveways to prevent the concentrated flow of runoff on flexible pavement. Driveways shall be designed for two-way traffic with radii and widths in accordance with the U.S. Army Corps of Engineers, Southwestern Division, Architectural and Engineering Instructions Manual (CESWD-AEIM), dated September 1998, hereinafter as AEIM. It is preferred that the existing curb cuts on the site align with adjacent streets or parking lots be maintained if possible. There shall be two entrances into the TAC Lab. One of the required entrances shall be located at the west end of the project site and the other at the north end of the project site. See drawing sheet C1 for Contractor's access to the TAC Lab Facility. The use of a turnaround or similar feature at the road termination is dependent on the site layout and is at the Contractor's discretion.

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3.10.3 **Traffic Signs.** The Contractor shall perform a traffic study to determine what type of traffic control is required. Traffic control signs shall be provided by the Contractor at all intersections and shall conform to requirements of the Kirtland Air Force Base Architectural Compatibility Guide (ACG). Items not addressed in the ACG shall conform to the U.S. Department of Transportation, Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways.

3.10.4 **Loading Dock(s) Access.** Access to the loading dock(s) shall be provided for trucks (AASHTO designation SU, 2.50m (8.5 ft) wide X 9.14m (30 ft) long) and full size semi-tractor trailer, HS-20 loading, backing up to the dock(s). The loading dock(s) shall be screened from view of the access road traffic by landscaping or concrete masonry units as required for the dumpster pad in paragraph, **Dumpster Pad**, below. Access to the loading dock(s) shall be designed so that vehicles accessing the dock(s) shall not pass through parking areas or interact with pedestrian traffic entering or exiting the building.

3.10.5 **Parking Areas.** A new parking area shall be provided for the facility. The number of spaces provided shall be 80% of the number of building occupants plus 20, but not less than 120 parking spaces (including 5 handicap parking spaces). The 20 additional spaces are for visitor parking. Refer to the Architectural Design section for the number of building occupants. The parking area layout including offset from the building, offset

(5) from adjacent streets, turning radii, lane widths, end island design, parking space size, configuration of the spaces, lanes, and striping of the parking area shall be made in accordance with Section II, Civil design of the AEIM. The new parking area shall utilize asphalt or crushed rock pavement for its finished surface. The existing gravel or flexible pavement shall be removed and new asphalt or crushed rock pavement provided for the new parking area in accordance with the Geotechnical Design, Section 4. Additional requirements for parking lots are stated in Interim DOD Antiterrorism/Force Protection Construction Standards, December 16, 1999 and DOD Antiterrorism Construction Standards, August 30, 2001. (5)

(5) **3.10.6 Pavement Marking.** All parking spaces (including 5 handicap parking spaces) and pedestrian crosswalks shall be properly striped to define the parking spaces, crossing areas, and no-parking areas. Pavement marking shall be in accordance with specification SECTION 02763 - PAVEMENT MARKINGS. Striping shall be 100 mm (4 in) wide and white in color, except for handicapped spaces which will be blue in color. All pavement marking shall conform to requirements of the Kirtland Air Force Base Architectural Compatibility Guide (ACG). Items not addressed in the ACG shall conform to the U.S. Department of Transportation, Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways. Pavement markings shall be provided at the parking area located west of the building. New pavement markings shall accommodate the new loading dock. New pavement markings are not required if crushed stone is used for the parking area. (5)

(5) **3.10.7 Dumpster Pad.** A dumpster pad shall be provided. The pad shall be designed and constructed in accordance with the City Of Albuquerque design criteria pertaining to dumpster pads. It is preferred that the pad shall be located on the south side of the building and shall be conveniently located for access by janitorial staff, however, it shall not be placed within 7.6 m (20 ft) of the building. The site design shall provide for access to the pad by waste collection vehicles. (5)

(5) A bollard shall be provided in front of each side wall of the pad enclosure and two bollards shall be provided between each bin and the back wall of the enclosure to prevent damage to the enclosure. The Contractor shall determine the number of bins required for a building of this size and function per City of Albuquerque criteria. A minimum 4.6m (15 foot) long, concrete pavement approach slab shall be placed at the access to the dumpster pad. The approach slab shall be the full width of the dumpster pad. (5)

(5) **3.10.8 Sidewalks.** Concrete for sidewalks shall be standard concrete in accordance with the KAFB Design Compatibility Standards, provided in Appendix A. Walks shall be provided to allow for pedestrian circulation to the various elements of the facility including the building, parking areas, dumpster pad, etc. The minimum walk width shall be as indicated in section II of the AEIM. Walks shall be provided to all secondary entrances to the building as well as to the main entrances. Walks provided for access to the building shall be centered at the doorway they serve. Walks shall be constructed in accordance with Plates C16 and C17 as shown in the AEIM. Walks along parking areas perpendicular to the direction of parking shall be a minimum of 6 feet wide to compensate for vehicle overhang. Sidewalks shall be of non-reinforced concrete, except at walk intersections, with a minimum (5)

(5) nominal thickness of 4 inches. Other miscellaneous walkways shall be surfaced as appropriate for their intended use.

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(5) 3.10.9 **Handicapped Access.** Ramps for the handicapped shall be provided for wheel chair access from the parking areas to the building. All ramps shall be designed and installed in accordance with the Uniform Federal Accessibility Standards and in accordance with Plate C15 as shown in the AEIM. The main entrances to the building, at a minimum, shall be accessible to the handicapped. Ramps for the handicapped shall be provided at intersections by depressing adjacent walk.

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3.10.10 **Standard Details.** Site features shall be constructed in accordance with the standard details provided in the AEIM.

3.10.11 **Pavement Design.** Refer to Appendix D, Geotechnical, for pavement requirements. See pavement details in Section II, Civil Design of the AEIM.

(5) 3.10.11.1 **Rigid (Concrete) Pavement.** Rigid (concrete) pavements shall be located adjacent to the new loading dock(s) at the building. The rigid (concrete) pavement adjacent to the overhead door shall extend 1 foot beyond door jambs and 20 feet out from the face of the building addition.

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3.10.11.2 **Flexible Pavement.** Portions of the Mount Washington Road and the access road south of Mount Washington Road shall require flexible pavement in accordance with the CESWD-AEIM, October 2000, for new flexible to existing flexible pavement. See pavement details in Section II, Civil Design of the AEIM.

3.11 **Borrow Area.** Borrow material shall be obtained from an off-base site, approved by the Contracting Officer. The borrow material shall meet the requirements discussed in Appendix C - Foundation Design Analysis. These requirements shall be addressed in the specifications developed by the Contractor. Borrow material used beneath structures shall be non-expansive. By the 14th day after the last disturbance, the borrow site shall be reclaimed as given in Appendix M, "Revegetation and Erosion Control". However, if the borrow site, upon initial disturbance, will not be redistributed for 21 days or more, the borrow site must be temporarily stabilized upon the 14th day since the last disturbance. Note the borrow area location on the project location and vicinity map sheet.

3.12 **Waste Area.** Disposal of waste fill (unsuitable soils, trees, roots, etc.), debris from existing structures, demolition and construction waste from the project shall be disposed of at an off-base location approved by the Contracting Officer. The disposal of all construction related waste material is the responsibility of the Contractor. There are no approved waste areas within the limits of Kirtland Air Force Base. All waste material shall be disposed of at a licensed, off-base landfill in accordance with local, state and federal regulations. The Contractor shall not use base refuse containers for disposal of construction debris.

Contractor shall use the Intensity-Duration-Frequency Curve for KAFB in the criteria from the City Of Albuquerque.

3.16.3 Discharge of Storm Water. Storm water may be discharged into the existing arroyo. Maximum allowable discharge velocity into the existing arroyo shall be 2 feet per second. Energy dissipators shall be used to control discharge velocities in excess of 2 feet per second. The integrity of existing structures shall not be compromised during installation or operation of the new drainage discharge system. Existing utilities may be relocated as required to accommodate the new proposed drainage discharge system. See paragraph, **Supplemental Survey Required**, for additional survey information.

3.16.4 Maximum Gutter Flow. Maximum flow in all gutters shall be restricted to the quantity which will cause flooding of 1/2 of the adjacent traffic lane at the design storm. When this flow is reached, it shall be intercepted and removed off site.

3.16.5 Sidewalk Culverts. Sidewalk culverts are not permitted. Sidewalk drains shall be constructed in accordance with Plate C-18 as shown in the AEIM.

(5) **3.17 Manholes and Surface Inlets.** Manholes or junction boxes shall be provided at intersections and at points of change in conduit grade or size. The distance between intermediate manholes shall not exceed 122m (400 ft). Manholes shall be constructed in accordance with details as shown in Section II, Civil Design, in the AEIM. Surface inlets shall be constructed in accordance details as shown in Section II, Civil Design, in the AEIM. Storm drain inlets shall be located so that no collection swales flow across a street or sidewalk to reach a storm sewer other than where cross gutters are used. Side opening catch basins are preferable. Where grating must be used, they shall be of "bicycle proof" design. (5)

3.17.1 Inlets. Grating areas of surface inlets shall be oversized 100 percent.

3.17.2 Roof Drainage. Runoff from the roof of the building shall be conveyed south of the building by overland flow and/or an underground roof drain system as required. Splash blocks shall be in accordance with Plate C19 as shown in the AEIM and shall be provided at all downspouts that are not connected directly to an underground roof drain collection system.

3.17.3 Storm and Roof Drain Line Materials. Materials for storm and roof drain lines shall comply with the requirements and standards in specification SECTION 02630 - STORM-DRAINAGE SYSTEM. Pipe joints shall be watertight in accordance with the specification. Metallic pipe shall be removed from the guide specifications as they are not a viable option due to the corrosive nature of the soil. Concrete pipe may be used only for pipe diameters greater than 36 inches. Pipe joints shall be watertight and shall not contain ferrous metallic materials.

3.18 Utilities. Gas, water and sewer utilities services are available at the Lovelace Road/Mount Washington Road intersection. The TAC Lab facility shall be connected to the existing utilities at this location. Utility

3.19.2 **Contractor's Staging Area.** During construction, a temporary, 6-foot high, chain-link, security fence shall be provided around the perimeter of the Contractor's staging area to house the vehicles, supplies, and materials.

(3) 3.19.3 Deleted.

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(5) 3.20 Deleted.

3.20.1 Deleted.

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3.21 **Calculations.** The design shall include but may not be limited to the following calculations. These calculations are not required for the proposal submittal. Refer to Section 00830 for guidance on calculation requirements for submittals.

3.21.1 **Water System.**

- a. Domestic Water Demand Calculations
- b. Distribution, Service Line, Fire Flow Calculations
- c. Fire Flow Demand and Sizing Calculations
- d. Domestic and Fire Demand Line Sizing
- e. Booster Pump(s), Sizing

3.21.2 **Storm Drainage for TAC Lab.**

- a. Runoff Calculations
- b. Drainage Patterns
- c. Storm Drain Calculations (if an underground or open channel system is used)

(5) d. Surface inlet calculations (if an underground system is used)

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- e. Dissipation structure calculations (if used)

3.21.3 **Gas Distribution.**

- a. Gas distribution and service verification/sizing calculations

3.21.4 **Sanitary Sewer.**

- a. Sanitary Sewer (average and peak flows demands and velocities)
- b. Lift Station(s), Force Mains, including electrical power supply

5.6 **Space Allocations.** Individual space allocations shall be developed based on the Detailed Space Descriptions and the floor plan diagram contained in the appendix of this RFP. After award, minor revisions to the floor plans may be required to better meet the mission requirements.

5.7 **Barrier Free Design.** This facility shall be fully accessible to all handicapped individuals in accordance with the requirements of the Americans with Disabilities Act (ADA) and the Uniform Federal Accessibility Standards (UFAS).

5.8 **Life Safety.** This facility shall be designed to meet or exceed the minimum construction and life safety standards as required by Military Handbook, 1008-C and the NFPA 101 Life Safety Code, latest editions. Occupancy separations shall be as per the Uniform Building Code.

5.9 **Fire Safety.** Minimum allowable construction type, per Military Handbook 1008-C shall be a minimum Type II, non-combustible construction, but actual construction type shall be determined and proposed by the offerors after a Code analysis. The interior of the building shall be fully sprinkled. Fire Department access shall be provided on all sides of the building.

(5) 5.10 **Sensitive Compartmented Information Facility (SCIF).** Security protocols for access, acoustical design, hardware and monitoring systems are per the Director of Central Intelligence Directive, January 1994 (DCID), Manual for Physical Security Standards for Sensitive Compartmented Information Facilities. Additional security requirements are contained in the Detailed Space Descriptions contained in the appendix of this RFP. Individual offices and office suites and support spaces contained within the SCIF are not required to be constructed to SCIF standards. Only the perimeter walls and ceiling/floor assembly are required to be built to SCIF standards. STC 45 exterior windows located in the SCIF are not required. (5)

5.11 **Antiterrorism/Force Protection.** The building and site shall be designed to incorporate minimum construction standards in accordance with Appendix 2 of the DoD Antiterrorism/Force Protection Minimum Standards.

5.12 **Energy Conscious Design.** Active solar systems are not permitted. Passive solar design shall be limited to building orientation, thermal mass, roof color, building color, door and window orientation, window glazing, window shading, and shade tree types and locations in accordance with the Corps of Engineers' SWD-AEIM, latest edition.

5.12.1 **Insulation.** Thermal insulation shall be provided in accordance with the Mechanical Section of this RFP. Perimeter rigid insulation shall be provided for all foundation walls of heated spaces. A vapor barrier shall be provided on warm side of exterior walls, ceiling insulation and floors over unheated spaces. No loose or granular fill insulation will be permitted.

(5) 5.13 **Acoustical Design.** The conference room perimeter walls shall be designed and constructed using tested assemblies with a minimum sound rating of STC 45. Copy/equipment rooms, mechanical/electrical rooms and toilet/janitor rooms shall be designed to provide a sound rating of STC 40. (5)

5.14 **Building Systems, Materials, and Equipment.** The proposed building systems, materials, and equipment shall be in accordance with the Kirtland Air Force Base Design Compatibility Guide and the requirements of this RFP. The intent of this RFP is to allow Offerors the maximum flexibility to design and construct this facility in an economical manner without sacrificing good

engineering practices, quality materials and systems. The Government desires low or no maintenance finish materials to the greatest extent possible. The exterior building color, including the roof color shall be white or light colored to minimize heat gain by the roofs that may affect the existing facilities.

5.14.1 **Concrete.** Precast concrete may be used for minor architectural elements such as splash blocks, window sills, window surrounds and parapet coping. Precast architectural concrete, if proposed, shall be fabricated with integrally colored concrete, in a color and texture to coordinate with other major building materials and in accordance with the Kirtland Air Force Base Design Compatibility Guide. All precast concrete elements shall be lightly sandblasted to produce a unified, matching color, texture and overall appearance. All exterior finished architectural concrete shall be sealed against water penetration using a clear, non-sheen, impregnating sealer.

5.14.2 **Masonry Walls:** If proposed, all exterior concrete masonry shall be single or double wythe construction, integrally colored or stained white or off-white. Exterior exposed masonry and matching mortar color shall be white or off-white. Concrete masonry units and mortar shall be manufactured using integral water repellent as an efflorescence barrier. All exterior finished masonry shall also be sealed against water using an impregnating sealer. All interior concrete masonry except in mechanical rooms and stair wells, shall be a manufacturer's standard, integrally buff colored concrete masonry units. Interior masonry corridor and room walls which are not furred-out are to be sealed similar to exterior walls. Exposed masonry walls in mechanical and stair areas are to be sealed. Mechanical room walls shall be constructed with full height reinforced eight-inch thick masonry units constructed to the underside of the structural deck, with all cells filled solid with grout.

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5.14.3 **Exterior Insulation Finish System (EIFS).** If proposed, an exterior insulation finish system (EIFS) using a synthetic stucco finish over mesh and insulation shall be provided. Three or two coat stucco systems are not allowed. The exterior color shall be white or off-white.

5.14.4 **Factory Finished Metals.** Anodized aluminum finishes shall be white or off-white AA-M12 C22 A42, minimum 0.7 mils, Class I, per Aluminum Association Designation System. All miscellaneous prefabricated components, such as fire extinguisher cabinets, shall be specified to have factory applied finishes, in colors to coordinate with the facility. All other miscellaneous metal items, exposed to view, which do not have a factory finish, shall be painted with urethane gloss enamel. Louvers shall have bird or insect screens, as appropriate.

5.14.4.1 **Handrail System.** Interior handrail systems shall be a custom prefabricated, factory finished railing system.

5.14.4.2 **Catwalks/Equipment Platforms.** Suspended catwalks and equipment platforms required for servicing mechanical or electrical equipment shall be fabricated of steel with open grating flooring (maximum 1/2" wide grate opening), metal handrails and suspension struts. Design of walks, access gates and accessories shall meet OSHA standards.

5.14.4.3 **Access Ladders.** Access ladders in mechanical spaces shall be of welded steel construction and be designed to meet OSHA safety standards.

5.14.5 **Wood.** The use of wood shall be limited to interior office doors, paneling, wainscots, shelves and cabinetry, minor wall accents, chair rails, baseboards, telephone backboards and unexposed treated roofing nailers.

5.14.6 **Roofs.**

5.14.6.1 **Standing Seam Metal Roof.** Offerors shall provide a standing seam metal roof, minimum slope 1 inch in 12. No other roofing system is acceptable. An architectural, UL 90 standing seam roof assembly shall be provided which conforms to ETL 1110-9-12 for the building roof areas. The seams shall be a minimum of 1" (25 mm) high and 12" to 24" (300 to 600 mm) on center. Roof system shall incorporate a fully concealed fastening system. Color shall be factory applied anodized white or off-white. Mechanical equipment shall not be located on the pitched roof areas.

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5.14.6.2 **Access Hatches and Roof Hatches.** Access hatches and roof hatches shall be of steel or aluminum frame type with pneumatic operators, minimum of 36 x 36 size, with keyed locking device and padlock at roof hatches. Roof hatch curbs and cover are to be thermally insulated.

5.14.6.3 **Metal Soffits.** The exterior roof overhangs, if proposed, shall have metal soffit panels. Soffits may be of factory painted galvanized steel, 24 ga. minimum, or 26 ga. anodized aluminum, concealed fastener interlocking design to match roof color and appearance.

5.14.7 **Hollow Metal Doors and Frames.** All exterior and laboratory hollow metal door assemblies shall have a polyurethane core foamed-in-place or laminated to each outer panel. All hollow metal door and frame assemblies shall be constructed as required by ANSI/SDI-100 to meet or exceed a heavy duty, grade II, model 2, seamless-hollow steel construction, and shall be constructed with flush end closures at the top and flush closures or recessed channels at the bottom. All door openings shall be a minimum of 3'-0" wide by 7'-0" high. Hollow metal exterior doors and door frames shall be galvanized and painted, color shall be white or off-white.

5.14.8 **Exterior Storefront.** If proposed, the exterior storefront system shall be a standard storefront type, such as Kawneer or equal. Storefront, entrance assemblies and window walls shall be of the same manufacturer and coordinated for appearance, stile and rail sizes and glazing position, with respect to frame section. Exterior assemblies shall be of thermal break construction. Door frames and trim moldings shall be extruded of 6063-T5 aluminum alloy and temper (ASTM B221 alloy G.S. 10A-T5). Glazing gaskets for doors and frames shall be EPDM elastomeric extrusions. All doors shall be a minimum of 3'-0" wide by 7'-0" high. Finish may be natural aluminum or anodized white or off white.

(5) 5.14.9 **Interior Office Doors.** Interior office doors shall be solid core wood doors, premium grade, with stained hardwood veneer options as listed in the Corps of Engineer's guide specification for Wood Doors. Doors shall be factory finished. Office doors shall be a minimum of 3'-0" wide by 7'-0" high. All door frames installed in masonry shall be grouted solid with mortar. All door frames installed in the conference facility, including the conference room, vestibule, and kitchen doors, shall be filled solid with foam insulation after erection.

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5.15 **Door Hardware.** Door hardware shall be coordinated with the functional and security requirements of the Detailed Space Descriptions contained in the appendix to this RFP. Door hardware shall meet the minimum requirements of the Corps of Engineer's guide specification for Builder's Hardware.

5.15.1 **Locksets and Latchsets.** Locksets and latchsets shall comply with ANSI A156.2, Grade 1. All locksets shall be compatible with the existing AF base keying system. The existing Kirtland Air Force Base system is **Schlage Heavy Duty Commercial Lever Type** with removable cores. Provide construction cores.

5.15.2 **Cipher Locks.** If required by the "Manual for Physical Security Standards for Sensitive Compartmented Information Facilities", January 1994, pushbutton access controls shall conform to ANSI 156.2 Grade 1. The offeror will be responsible for coordination of cipher locks with builder's hardware.

5.15.3 **Finishes and Materials.** Architectural builder's hardware shall be per Builder's Hardware Manufacturers Association A-156.18. Finish shall be brushed chrome.

(5) 5.15.4 **Door Accessories.** Door closers shall be in accordance with ANSI A156.4 and NFPA 80 Fire Doors and Windows. Fully gasketed seals and sweeps are required at all SCIF doors. Kickplates are required on all interior doors. Armor plates are required on laboratory doors.

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5.15.5 **Master Keys.** The project shall be master keyed to an existing master key system at building 66047. Provide a key control storage system conforming to ANSI A156.5.

5.16 **Windows.** Proposed exterior window system shall be a manufacturer's standard product that meets the minimum requirements of the Corps of Engineer's guide specification for aluminum windows. Frames shall be aluminum, and shall have a minimum performance rating of F-AW65 per AAMA 101. Windows shall not be proposed for the laboratory spaces. Frame color shall be natural aluminum or anodized white or off white.

(5) 5.16.1 **Exterior Window Glazing.** Glazing units for all exterior windows and storefront systems shall be double-paned fixed, sealed, and shall have an outboard lite of tinted float glass with a minimum 1/2 inch thick air space, and a clear inboard lite of a minimum 1/4 inch thick annealed laminated glass with a Low-E coating on surface #3. The outboard lite shall be safety or tempered glazing where required by safety requirements.

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(5) 5.16.2 **Interior Windows.** If proposed, window frames shall be aluminum or painted steel. All glazing for all interior window systems may be single-paned, tempered if required, and shall be sealed. All steel window frames installed in masonry shall be grouted solid with mortar.

5.16.3 Deleted.

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5.16.4 **Blinds.** Blinds shall be provided for all exterior windows. Blinds shall be of the horizontal metal louver type, with a silver or off white outer surface color.

5.17 **Flooring Finishes.**

5.17.1 **Raised Floor.** Raised floors shall be of steel construction, pedestal and stringer supported, with standard high-pressure laminate finish. 250# psf live load capacity is required. Concrete floors below raised floors shall be sealed with a paint finish.

5.17.2 **Ceramic Porcelain Tile.** As a minimum, ceramic tile shall be frost resistant, and have a water absorption of 0.004%, an abrasive wear index of 234, a breaking strength of 365, and a coefficient of friction of 0.6. Provide slip resistant tile where appropriate. In showers, ceramic wall tile may be installed over cement board over metal stud framing or over a setting bed per TCA Tile Council of America Handbook, latest edition.

5.17.3 **Quarry Tile.** As a minimum, quarry tile shall have moisture absorption of 0.9-3.0%, a breaking strength of 360 - 490 lbs (163 to 222 kg), and a coefficient of friction of 0.7-0.9. Provide slip resistant tile where appropriate.

5.17.4 **Grout.** Select the darkest complimentary grout color to coordinate with the tile color. Ensure that it is properly sealed to prevent excess soiling. Grout must be of a high strength, non-shrink, sanded type with latex admixture.

5.17.5 **Carpet.** As a minimum, carpet shall be 12'-0" (3.6 m) wide broadloom; tufted graphic loop pile; solution-dyed DuPont DSDN BCF SD nylon-6,6, or equal; 28 oz. (0.8 kg/m²) minimum pile weight; 1/10 gauge; minimum 12 stitches per inch; less than 3,500 volts permanent conductive filament, antimicrobial, soil and stain resistant, Class I per ASTM E 648, less than 450 ASTM 662 NBS smoke chamber, ADA compliant, with options for custom coloring as required to match furnishings. Patterns shall be non-linear and non-geometric.

5.17.6 **Concrete Sealer.** Where a floor finish, such as carpet, tile, or painted floor coating is not specified, concrete floors shall receive a clear sealer.

5.18 Interior Wall Finishes.

5.18.1 Paint. Painted gypsum board walls, exposed to view, shall have a spray-on texture, medium orange peel, and minimum two coats of latex paint over primer. Finish shall be eggshell in office/conference areas and semi-gloss in wet or damp areas and storage areas.

5.18.2 Vinyl Wall Covering. As a minimum, vinyl wall covering shall be type 2 (medium duty), class A with 21 ounces/lineal yard weight. Offerors shall propose colors, textures and locations.

5.18.3 Ceramic Porcelain Tile in Restrooms and Janitor's Closets. As a minimum, a 5'-0" high ceramic tile wainscot shall be provided behind and on the side of water closets and urinals, and all walls within a janitor's closet that contains a mop sink.

5.18.4 Exposed Block. Exposed concrete block for interior spaces shall have a sealed, integral color. Exposed painted block for interior spaces is permitted in stairwells and in approved utilitarian spaces.

5.18.5 Wall Base. Allowable materials shall be quarry tile, porcelain ceramic tile, pre glazed block, rubber, vinyl, or stained and painted wood base. The base shall be a minimum of 4 inches high.

5.18.6 Edge Guards. Provide aluminum or stainless steel corner guards at all outside wall corners of gypsum board walls in corridors and restrooms. Top of edge guards shall be a minimum of 6'-0" (1.8 m) above finished floor. Bottom of guard shall be to floor in areas of no base and to top of base at all other areas.

5.19 Ceilings.

5.19.1 Gypsum Board. Painted gypsum board ceilings shall have a smooth texture. Suspended acoustical gypsum board ceilings are required in restrooms, janitor rooms, telephone and electrical closets or where required by Detailed Space Descriptions contained in the appendix of this RFP.

5.19.2 Suspended Acoustic Ceiling Tile System. SATC shall be 24" x 24" x 3/4". Acoustic ceiling tile is required throughout the facility except where other systems are required by Detailed Space Descriptions contained in the Appendix to this RFP. As a minimum, suspended acoustic ceiling tile systems shall comply with the options listed in the Unified Facilities Guide Specifications.

(5) **5.19.3 Linear Ceiling Systems.** Linear metal ceiling systems are not required or encouraged for the lobby area. Suspended acoustical ceiling systems are preferred in the lobby.

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5.19.4 Exposed Structural. Where spaces are moisture-prone or fire-rated, exposed structural members shall be protected accordingly.

5.20 **Cabinets.** As a minimum, cabinets shall be custom grade in accordance with AWI, hardwood veneer or plastic laminate over plywood, per AWI custom grade standards. Interior cabinet finishes may be "melamine" or plastic laminate.

5.20.1 **Cabinet Finish.** The finished material of exposed fronts and ends of cabinets, door and drawer fronts shall be plastic laminate or stained wood. Metal cabinets will be permitted in locations where chemicals may be stored. Cabinet finish shall be a light color.

5.20.2 **Cabinet Hardware.** Cabinet hardware shall conform to ANSI 156.9. Cabinet hinges shall be concealed offset and spring-loaded, "European" style, commercial grade. Cabinet drawer guides shall be a minimum of 20 gage steel with double rollers, heavy duty commercial type.

5.21 **Countertops.**

5.21.1 **Ceramic Tile.** Ceramic tile countertops are not permitted.

5.21.2 **Plastic Laminate.** Countertops in breakrooms may be of high pressure laminated plastic, with heat resistive adhesive, fully formed with a continuous sheet of plastic. Provide no-drip bull nose edges with integral coved backsplash where appropriate. 90 degree glued horizontal counter edges are not permitted.

5.21.3 **Solid Surface Material Countertops at Restrooms.** Restroom vanity tops shall be resinous materials, exposed outside corners shall be filleted, chamfered, or radius profiles.

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5.22 **Signage.** Provide signage throughout the facility (interior, exterior, and site) in accordance with Part V of the Kirtland Air Force Base Design Compatibility Guide.

5.22.1 **Building Identification.** Building identification shall be in accordance with KAFB Design Compatibility Guide.

5.23 **Specialties and Furnishings.**

5.23.1 **Toilet Accessories and Partitions.** Toilet accessories shall be provided in all restrooms and janitor closets containing a mop sink. Provide heavy-duty stainless steel waste receptacles, toilet paper dispensers, sanitary napkin disposers, soap dispensers per acceptable industry practice. All toilet accessories shall be stainless steel or chrome finished steel/brass. Toilet partitions shall be baked enamel or solid plastic partitions.

5.23.2 **Projection Screens.** Provide 6 foot high by 6 foot wide electric projection screens in all conference rooms and a 10 foot wide by 7 foot high electric projection screen in the large conference room. (ceiling recessed).

5.23.3 **Building Directory.** Provide building directories with hinged, and lockable glazed doors in aluminum frames and felt background surface in accordance with AFP 88-40 Sign Standards. Locate one in each lobby(s) or entry.

5.23.4 **Liquid Markerboards (Whiteboards).** Markerboards shall be white porcelain enamel. Provide one in each private office and two in each small conference room. Provide four markerboards in the large conference room.

5.23.5 **Workstations.** Provide utilities (power and communication) at appropriate locations to support workstations provided under separate contract.

5.23.6 **Elevator.**

5.23.6.1 **Elevator.** Provide a hydraulic, ADA compliant, passenger elevator, with a minimum 3500 lb.(1588 kg) capacity and a minimum speed of 125 fpm (0.635 m/s) at full load up. Elevator shall be in full compliance with ASME/ANSI A 17.1. In addition, emergency fire service control and automatic shutdown shall be provided in accordance with NFPA 72. Elevator shall have stainless steel door and hoistway (hall) frame trim.

5.23.7 **Equipment.**

5.23.7.1 **TV Monitors.** Each conference room and training room shall be equipped with ceiling or wall-mounted video monitor supports to support a 36" monitor at 500 pound load. Monitors shall be GFGI equipment.

(5) 5.23.8 **Comprehensive Interior Design (CID).** A comprehensive interior design is not required. Contractor shall select interior and exterior colors, materials and finishes.

(5)

- m. 05300 - Steel Decking.
- n. 05400 - Cold-Formed Steel Framing.
- o. 05500 - Miscellaneous Metals.
- p. 13080 - Seismic Protection for Miscellaneous Equipment.
- q. 13120 - Standard Metal Building Systems.

(5) **6.5 Structural Drafting Standards:** These structural drafting standards shall take precedence over all other drafting standards referenced in this RFP document to include the ERDC/ITL TR-01-6, "A/E/C CADD Standard". (5)

6.5.1 Reference Bubbles.

6.5.1.1 All structural plans, sections, and details shall be identified with a reference bubble. The respective reference bubbles shall be referenced from structural notes, plans, or other sections and details. The number and lettering sequence shall start with number "1" and letter "A" on each respective drawing sheet.

6.5.1.2 All reference bubbles shall be divided up into 3 parts.

6.5.1.3 Part one is the upper half of the bubble and is the reference number or letter of the bubble. Sections shall be numbers, and details and plans shall be letters.

6.5.1.4 The lower half of the bubble circle shall be divided up into two halves (two quarters of the circle). The left quarter contains the sheet number where the section, detail, or plan is referenced. The right quarter contains the sheet number where the section, detail or plan is drawn.

(5) 6.5.1.5 **Foundation and Framing Plan Dimensioning.** All structural foundation and framing plans shall be fully dimensioned. No dimensions shall be referred back to the drawings of another discipline. Also, no dimensions shall be referenced back to a foundation plan from a framing plan or visa versa.

6.5.2 Grid Lines.

6.5.2.1 All foundation and framing plans shall contain grid lines in both directions and on diagonals (if necessary for angular portions of the structure) for bearing and shear walls, beam and column lines, ribbed mat slab ribs, walls around stairs and elevators, pad footings and at all edges of the building. (5)

(5) 6.5.2.2 All grid lines shall be labeled for the element that they located on the foundation and framing plans.

6.5.2.3 **Section and Detail Drawing Scales.** All roof and floor framing sections and details shall be drawn at a scale of 1-1/2" = 1'-0".

6.5.3 **CESPA Standard Structural Drawing Sheets.** The design drawings shall contain structural notes and typical details. These notes and details shall contain a list of the design loading criteria, a list of the strengths of the engineering materials used, the soil design values, and any other data that would be pertinent to remodeling and/or future additions. Reference CESPA Standard Structural Drawing Sheets S1, S2, S3, S4 and S5 for required minimum standard structural notes and typical details. These five sheets shall be placed as the first five sheets of the contract drawings no matter the size of the drawing sheets. There are two sets of Sheets S1, S2, S3, S4 and S5, one for reinforced ribbed mat slabs (RRMS) and one for "Floating Slabs" foundation systems as noted on the respective drawings. Standard sheets RM1, RM2 & RM3 are for RRMS foundation systems for use on layout of the ribs (sheet RM1) and typical foundation details (sheet RM2 and RM3). For electronic copies of these standard structural drawings go to web site <http://www.spa.usace.army.mil/ec/cadd/index.htm>, click on "Discipline Specific Requirements" and click on "Structural." The contact for these drawings is Mr. Mike Mitchell with the CESPA COE at 505-342-3409, Fax 505-342-3497 or email at Michael.e.Mitchell@usace.army.mil. These standard structural drawings are in MicroStation format. The minimum requirements for the respective notes are described in detail throughout this CESPA structural criteria document. (5)

determined by design and shall be at least 204 mm (8-inches) wider than the foundation wall (minimum 102 mm (4-inches) on each side of the foundation wall).

6.10.8 Column Spot Footings.

6.10.8.1 Foundation column spot footing sizes shall be determined by design but shall not be less than 610 mm (24-inches) in any direction and a minimum thickness of 305 mm (12-inches). The spot footings shall be reinforced per design requirements with a minimum reinforcing of 3-#13 bars each way or 25.4 mm (12-inches) on center bottom reinforcement whichever provides the greater number of bars. Specify spot footing reinforcement by number of bars and not by spacing.

6.10.8.2 Slab-on-ground blockouts for columns which bear below the top of the slab shall be detailed on the contract drawings as shown in CESPAs Standard Structural Drawing Sheet S1, Detail C.

(5) 6.10.9 Slabs-on-Ground.

6.10.9.1 Floor slabs-on-ground shall be a minimum of 127 mm (5-inches) thick, bar reinforced with a minimum #13 bar with a minimum area of reinforcing of 0.2% of the slab cross sectional area and located 51 mm (1-1/2-inches) clear from the top surface of the slab. The preferred slab-on-ground reinforcing is #13 bars at 457 mm (18-inches) on center. Welded wire mesh and fiber mesh reinforcing in the slab concrete will not be allowed.

6.10.9.2 A 152 mm (6-inch) thick capillary water barrier shall be placed under all building interior slabs-on-ground. There shall be a minimum 3/8-inch thick expansion joint material installed between the foundation walls and the slabs-on-ground.

6.10.9.3 Reentrant corner bars minimum #13 bar by 914 mm (36-inches) long at 45 degrees to the main slab reinforcement shall be required as part of the slab reinforcement requirements.

6.10.10 **Curling.** The edges of slabs on ground shall be designed and detailed to minimize the effects of curling on free edges of the slabs and on construction joints. Curling has become an increasing problem with slabs on ground on CESPAs projects in the Southwest USA. In order to counter the effects of curling the recommendations in ACI 302 and ACI 360 shall be followed in the design and identified in the concrete specification. It is also recommended for the designer to consider the following methods of construction for the edge of slabs on ground adjacent to vertical surfaces of the foundation walls.

a. The slabs on ground shall be doweled into the vertical face of the foundation wall with dowels the same size and spacing as the slab on ground reinforcing. The slab on ground shall be thickened 8-inches at the edge and transitioned back 36-inches to the standard thickness of the slab on ground.

b. The slabs on ground shall be turned down 8-inches over the top of the foundation wall and doweled into the top of wall with dowels the same size

and spacing as the slab on ground reinforcing. The 8-inch thick portion of slab shall be transitioned to the thickness of the slab on ground for a distance of 36-inches back from the inside vertical edge of the foundation wall.

c. The footing and slab shall be placed monolithically to form a turned down edge footing. The turned down edge footing width shall be the required design width for the footing. The turned down edge footing shall be reinforced with vertical reinforcing that is projected at least 36-inches into the slab on ground and is the same size and spacing as the slab on ground reinforcing. The turned down edge footing shall have #13 horizontal reinforcing spaced at 10-inches on center (minimum of two bars required). Continuous and transverse reinforcing shall be provided in the bottom of the turned down edge the same as required in the paragraph "Continuous Footings".

These three methods are not mandatory for the design of the slabs on ground but are just some ideas to prevent curling. It is possible that these three methods will be in conflict with the FDA and may require a meeting with the geotechnical engineer to resolve the type of foundation system to be used. The designer shall address curling in the Design Analysis write up and explain the measures taken in the structural design to reduce the potential for curling of the slabs on ground.

6.10.11 **Slabs-on-Ground Joints.** Slab-on-ground joints shall be located no greater than 7620 mm (25-feet) on center each direction. The joints can be either construction or contraction joints (weakened plane joints) as detailed in CESPAS Standard Structural Drawing Sheet S2. Only tooled joints or saw cut joints performed by the early-entry dry-cut (soft cut) saw-cut method will be acceptable. (5)

(5) 6.10.12 **Early-Entry Dry-Cut (Soft Cut) Saw Cut Method.** Saw cut shall be performed as soon as the slab can support the weight of the operator and the machine without disturbing the finish (usually within 2 hours after final finishing time when the concrete's initial set stage is between 150 psi to 800 psi). Saw cut shall produce a joint of 1-inch minimum depth or depth recommended by saw-cut machine manufacturer. The saw cut machine shall have a depth control device to assure a constant-depth cut is maintained, and a means to prevent the raveling of concrete. (5)

(5) 6.10.13 **Foundation Walls.** The foundation walls shall be a minimum 203 mm (8 inches) thick reinforced concrete. The walls shall be reinforced with a minimum #13 bars with a minimum vertical reinforcing area of 0.15 percent and a minimum horizontal reinforcing area of 0.25 percent of the wall cross sectional area. Provide continuous perimeter rigid insulation on the interior surface of the exterior foundation walls adjacent to all interior heated areas. The insulation shall be a minimum 25 mm (one-inch) thick by 610 mm (24 inches) deep or to the top of the footing whichever is the least from the top of the slab-on-ground. The minimum depth of the foundation wall from the top of footing to the top of the slab on ground shall be 18-inches. (5)

(5) 6.10.14 **Reinforced Ribbed Mat Slab (RRMS) Foundation.**

6.10.14.1 **General Requirements.** RRMS foundations consist of a slab on ground that acts monolithically with a grid of stiffening beams (ribs) (5)

beneath the slab. Ribbed mat slabs for non-expansive soil conditions shall be designed in accordance with reference TI 809-28, Design and Construction of Conventionally Reinforced Ribbed Mat Slabs (RRMS). The requirements of this CESPAs structural RFP document shall control in the case of conflicting requirements between the two documents. The foundation may be designed as conventionally reinforced or as post tensioned. However, the design procedure shall not be changed during construction. Floor penetrations, if any, shall be coordinated with the appropriate disciplines. The ribs shall be placed separately from the slab on ground by a mandatory continuous horizontal construction joint placed 8-inches down from the top of the slab.

(5) 6.10.14.2 Design Requirements.

6.10.14.2.1 General: The design procedure involves satisfying minimum requirements and performing a design analysis as necessary. (5)

(5) 6.10.14.2.2 Minimum Requirements (5)

a. Minimum 28-day concrete compressive strength shall be 20 Mpa (3000 psi).

b. Minimum slab reinforcement shall be 0.2% times the slab cross sectional area each way consisting of #13 bars or larger at a maximum bar spacing of 457 mm (18-inches) on center each way. Reinforcing shall be located 51 mm (2-inches) clear from the top of the slab.

c. Ribs shall be continuous across the slab, spaced no more than 7700 mm (25-feet) on centers. Rib depths shall be not less than 30-inches deep for exterior ribs and 24-inches for interior ribs (these depth requirements will supercede any contradictory FDA recommendations). Minimum rib width shall be 305 mm (12-inches). Provide ribs on all sides of large openings (1219 mm (48-inches) and larger inside dimensions) in the slab. Minimum total rib reinforcing percentage shall be 0.5 percent of the cross sectional area of ribs divided between the top and bottom of the rib. Provide more reinforcement when analysis shows more is required to carry the loads.

d. All bearing wall loads and column loads shall be distributed to the soil by the ribs. An effective width of slab on each side of the rib, equal to the slab thickness, may be added to the rib width for bearing. The bearing pressure under the ribs shall not exceed the allowable soil bearing pressure given in the "Foundation Design Analysis". Ribs may be widened locally or thickened integral spot footings may be used to distribute column loads to the soil. Reference CESPAs Standard Structural Drawing Sheet RM-1, RM-2 and RM-3 for a typical slab rib layout and typical rib sections, respectively.

e. Joint spacing: Ribbed mat slabs construction or contraction joints shall be placed in 7620 mm (25-feet) maximum in both directions. Reference CESPAs Standard Structural Drawing Sheet S1, Concrete and Foundation Notes, Note 10, for the required construction and contraction joint details, and CESPAs Standard Structural Drawing Sheet RM-1 for a typical plan layout.

f. Capillary water barrier, and 18-inches minimum non-expansive fill material shall be placed under ribbed-mat slabs. The minimum floor slab thickness shall be 127 mm (5-inches).

g. Analytical Requirements. All ribbed mats must be designed to distribute concentrated loads to the soil as spot footings, strip footings, or by beam on elastic foundation methods.

(5) 6.10.14.3 **Post Tension Design:** The above requirements also apply to post tension ribbed mat foundations except as follows. (5)

(5) 6.10.14.4 Conventional slab reinforcement shall be a minimum of .075 of the slab cross sectional area and not less than #13 bars spaced no more than 1219 mm (48-inches) on center. Ribs top reinforcement shall be two #4 bars continuous and bottom rib reinforcing shall be 0.33 percent of the rib cross sectional area. Minimum prestress shall be 700 kPa (100 psi), including effects of subgrade friction as calculated by the PTI method, in accordance with the Post Tensioning Institute. All ribs shall have #13 closed ties at 914 mm (36-inches) on center minimum. (5)

(5) 6.10.14.5 Section properties for calculation of bending stresses shall consider an effective flange for each rib as limited by ACI 318 for T-beams. Concrete tensile stress shall be limited to 3 multiplied by square root of f_c' and shear stress limited to 1.1 multiplied by square root of f_c' . (5)

6.11 Superstructure System: The system shall provide vertical and lateral load carrying capacity and shall provide durability, maintainability and cost effectiveness. An adequate level of protection against structural failure under extreme loads shall be provided.

6.11.1 Precast/Prestressed Hollow Core Plank Floors and Roofs.

6.11.1.1 All design, detailing and tolerances of hollow core floor and roof (optional) planks (referred to as "plank(s)" in the rest of this document) shall be as recommended in the Precast/Prestressed Concrete Institute, "Manual for the Design of Hollow Core Slabs."

6.11.1.2 All planks shall be a maximum of 48-inches wide and a minimum 8-inches thick in English designation or a maximum 1219.2 mm wide and minimum 203.2 mm thick in Metric designation.

6.11.1.3 All diaphragm chord reinforcing shall consist of a minimum 1-#13 continuous bar encased in concrete grout at the level of the planks.

6.11.1.4 All grout used to bond the plank integral with each other in the shear keys and within the masonry supporting walls shall have a minimum 28 day compressive strength of 3000 psi and shall be a sand aggregate non-shrink concrete grout.

6.11.1.5 The grouted shear keys between the planks shall be reinforced with 1-#13 x 48" dowel with a 12" hook at each bearing end of the plank. The 48"

7.2.6 Outside Design Temperature Requirements:

Outside Summer:	36° C (96° F) DB
	16° C (61° F) WB
Outside Winter:	-11° C (12° F)
Air Cooled Condenser Temperature:	41° C (105° F)

Maximum U values W/m² K (Btu/hr ft² F)

Opaque Walls:	0.450 (0.08)
Gross Walls:	0.738 (0.13)
Roof & Ceiling:	0.147 (0.026)
Perimeter Loss Coefficient:	1.136 (0.20)

Degree Days 18.3° C (65° F) Base

Cooling:	757 (1394)
Heating:	2391 (4337)

7.2.7 Indoor Design Temperatures.

	Summer Indoor Design Dry Bulb Temp. (Admin. Areas):	23.9° C (75° F)	
	Summer Indoor Design Temperature (Server Rooms & Labs):	21.1° C (70° F)	
	Summer Night Setback Temperature (Server Rooms & Labs):	26.7° C (80° F)	
(3)	Summer Indoor Ventilation Temperature (Mech/Elec):	32.2° C (90° F)	(3)
	Winter Indoor Design Dry Bulb Temperature:	21° C (70° F)	
	Winter Night Setback Temperature:	13° C (55° F)	
	Freeze Protection (Mechanical & Electrical Rooms):	10° C (50° F)	

(5) 7.2.8 HVAC Equipment Selection Parameters. All heating, ventilation, and air conditioning equipment shall be sized and selected based on the calculated peak sensible and total loads for each space. Sizing equipment based on the calculated block loads will not be accepted. Heating coils located within terminal units serving administrative areas shall be sized to produce a minimum heating supply air temperature of 105 deg. F based on the required heating air flow quantity calculated for each unit. Heating coils located within terminal units serving laboratory areas shall be sized to produce a minimum heating supply air temperature of 90 deg. F based on the required heating air flow quantity calculated for each unit. (5)

7.3 Heating, Ventilating, and Air Conditioning System Design, Equipment and Accessories.

7.3.1 Design Objectives and Provisions. Heating, ventilation, and air conditioning systems provided for the facility shall include the requirements stated herein and the requirements indicated in Appendix B. Designer shall pay close attention to the requirements indicated under section titled "Detailed Space Descriptions". The design shall also be in compliance with requirements indicated in the Interim Department of Defense Antiterrorism/Force Protection Construction Standards (FPCS).

7.3.1.1 General HVAC Considerations. Heating, ventilation, and air conditioning shall be provided for all spaces within the facility and shall be accomplished with indoor, ceiling, mezzanine and floor mounted chilled/hot water air handling units, variable air volume terminal units, hot water unit heaters, computer room air handling units, and hydronic radiant baseboard heaters. Four-pipe, reverse return hydronic cooling and heating systems shall be supplied from a packaged chilled water system and a gas-fired heating water boiler system. These units will require good part-load control

due to the high air rate required and the intermittent interior load. HVAC designs shall consider the effects of elevation in sizing equipment and ductwork. Placement of hvac equipment within the facility shall be coordinated with the architectural floor plans to insure proper clearances around all equipment can be achieved within the allotted floor area. Mechanical room areas shall be increased or decreased as needed to maintain the manufacturers recommended minimum service clearances and the clearances required for removal of the equipment. Ventilation (fresh) air requirements shall be in accordance with ASHRAE 62 (latest edition). Pressure classifications of ductwork shall be shown on the drawings, using the convention described in the SMACNA HVAC Systems Duct Design Manual.

7.3.2 Air Handling System Design.

(5) 7.3.2.1 **Office and Support Areas.** The first and second floor office and support areas (toilets, storage rooms, kitchens, hallways, etc.) shall be served by a minimum of one chilled/hot water air-handling unit per floor with variable air volume (vav) terminal units serving individual building zones. (5)

7.3.2.1.1 **Non-Secure Areas.** Air handling systems and controls for these spaces shall maintain the space temperature to within 1.7° C (3° F) of set point. Individual vav boxes shall be provided to serve zones covering up to a maximum of 56 m² (600 ft²) in the large open office areas, and a maximum of 42 m² (450 ft²) in the hard-walled office areas or a maximum of two hard walled offices, whichever is less. In addition, each individual office and conference room with areas greater than 28 m² (300 ft²) will have its own vav box. All vav boxes will be supplied with a supplementary hot water heating coil.

7.3.2.1.2 **Secure Areas.** Secure areas shall not be served by vav boxes that serve the non-secure areas. Air handling systems and controls for these spaces shall maintain the space temperature to within 1.7° C (3° F) of set point. Individual vav boxes shall be provided to serve zones (excluding server rooms) covering up to a maximum of 37 m² (400 ft²) in the large open office areas, and a maximum of 32 m² (350 ft²) in the hard-walled office areas or a maximum of two hard walled offices, whichever is less. In addition, each individual office and conference room with areas greater than 28 m² (300 ft²) will have its own vav box. All vav boxes will be supplied with a supplementary hot water heating coil. All equipment and ductwork serving the secure areas of the facility shall fully comply with the requirements indicated in the DCID manual. Where two separate secure rooms are served by a single terminal unit, the designer shall insure that proper sound separation is made between the two spaces (coordinate with Architectural to acquire the required sound levels). Sound separation between spaces shall fully comply with the requirements indicated in the DCID manual.

(5) 7.3.2.2 **Optics Laboratories.** Each laboratory shall be served by individual chilled/hot water, constant or variable air volume air-handling units. Constant volume units shall be used only when the calculated space sensible cooling airflow is within 20 percent of the airflow required to maintain the clean room classification. When required, units will be supplied with a hot water pre-heat or re-heat coil. All laboratories shall be designed to maintain a Class 10,000 clean room environment. Air handling systems and controls for these spaces shall maintain the space temperature to within 0.6° C (1° F) of set point. The air handling units serving these spaces shall be sized to include an internal equipment sensible heat gain equivalent to 100 percent of the maximum electrical demand provided for the space minus the process chilled water load in the space. (5)

- (5) 7.3.2.3 **Class 100,000 Clean Room Laboratories.** All Class 100,000 laboratories shall be served by a minimum of three chilled/hot water air-handling units with variable air volume (vav) terminal units serving individual building zones. Each laboratory, including associated work areas (cut outs) as indicated, shall be served by individual vav boxes. Air handling system and controls for these spaces shall be designed to maintain a Class 100,000 clean room environment and shall maintain the space temperatures to within 1.7° C (3° F) of set point. The air handling units serving these spaces shall be sized to include an internal equipment sensible heat gain equivalent to 100 percent of the maximum electrical demand provided for the space, minus the process chilled water load in the space. Individual vav air handling units shall be provided to serve zones covering up to a maximum of 362 m² (3900 ft²). All vav boxes will be supplied with a supplementary hot water heating coil. Provide pre-heat coils in air handling units when required. (5)
- (5) 7.3.2.4 **Coating Facility.** Coating facility shall be served by a dedicated chilled/hot water air-handling unit with variable air volume (vav) terminal units serving the building zones. Air handling system and controls for this space shall maintain the space temperature to within 2.8° C (5° F) of set point. The air handling units serving these spaces shall be sized to include an internal equipment sensible heat gain equivalent to 70 percent of the maximum electrical demand provided for the space. (5)
- (5) 7.3.2.5 **Machine Shop.** Machine shop areas (including receiving area) shall be served by a dedicated chilled/hot water air-handling unit with variable air volume (vav) terminal units serving individual building zones. Individual vav boxes shall be provided to serve zones covering up to a maximum of 65 m² (700 ft²). All vav boxes will be supplied with a supplementary hot water heating coil. Air handling system and controls for this space shall maintain the space temperature to within 2.8° C (5° F) of set point. The air handling units serving these spaces shall be sized to include an internal equipment sensible heat gain equivalent to 100 percent of the maximum electrical demand supplied to the space. (5)
- (5) 7.3.2.6 **Server Rooms.** The secure and non-secure server/computer rooms will be served by individual ceiling mounted chilled/hot water or split system dx and hot water computer room air conditioning (CRAC) units with space mounted microprocessor controllers. The air conditioning units in the server rooms will be sized to include an internal equipment sensible heat gain equivalent to 100 percent of the maximum electrical demand provided for the space. (5)
- 7.3.2.7 **Make-up Air Handling Units.** Outside air to all air handling units serving the spaces that are required to maintain a clean room environment shall be supplied by ceiling or floor mounted chilled/hot water make-up air units.
- 7.3.3 **Air Handling System Equipment and Accessories**
- (5) 7.3.3.1 **Air Handling Units.** Air handling units shall be as specified in Section 15895 - AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM. The air handling units shall be located in the interstitial spaces of the corridors and in the mechanical rooms. Units located in the mechanical rooms shall be mounted on isolated, reinforced concrete housekeeping pads with a 150 mm (6-inch) clear space from the unit to the edge of the pad. Provide the manufacturer's recommended service clearance or a minimum of 610 mm (24") clearance around the entire unit, whichever is greater. Units located in the interstitial spaces shall be floor or ceiling mounted (per architectural and structural design). The units, whether floor or ceiling mounted, shall be (5)

- (3) provided with an engineered vibration isolation system for the entire unit (fan isolation alone is not acceptable) that will provide a minimum of 95% isolation (Transmissibility = 0.05). All components of the air handling units shall be factory installed products of the same manufacturer. (3)
- (5) As minimum, units shall be equipped with a supply fan, preheat coil (only when required), cooling coil, mixing box, pre-filter and final filter sections, controls, access sections, economizer, outside air/ventilation airflow measuring station, variable frequency drive (vfd) and vfd rated motor. (5)
- (3) Heating and chilled water circuits to air handlers shall be supplied with isolation valves, flow control valves, strainers, thermometers (inlet & outlet), calibrated balancing valves, and temperature and pressure plugs. (3)
- Air handling units serving clean rooms and air handling units located in the ceiling/interstitial space shall be constructed with solid galvanized steel double wall panels that are factory insulated with a minimum of 51 mm (2 inch) thick insulation. Insulation shall be 24 kg/m³ (1 ½ lb/ft³) density. Non clean room air handling units located in mechanical rooms shall be constructed with solid or perforated galvanized steel double-wall panels that are factory insulated with a minimum of 51 mm (2 inch) thick insulation. Insulation shall be 24 kg/m³ (1 ½ lb/ft³) density. An insulated double wall condensate drain pan shall be supplied with each unit. Condensate drains shall be coordinated with the sanitary sewer design. Air handling unit locations shall be coordinated with all disciplines. Ventilation air shall be supplied to each unit in accordance with the ventilation system design parameters. The supply fan and return fan (if used) in each air handling unit shall be supplied with a variable frequency drive to control supply airflow to the system air distribution devices and return air to the air handling unit. Differential pressure switches (provide a minimum of two per air handler for units serving office areas) shall be supplied to signal the fan or fans to speed up or slow down in response to system pressure changes. Unless otherwise indicated, the units shall be capable of controlling the space temperature to +/- 0.5° C (1° F) of the set points indicated. Air handling units shall be equipped with local trouble alarm controls and audible horn. The audible horn shall be activated when the controller senses problems with the air handler and when space temperature requirements are not being met. The horn shall be installed near or on the air handler that it serves. All air handling units (excluding units serving clean rooms and the make-up air handling units) shall be equipped with a 100 percent air-side dry bulb economizer (utilizing outside air when possible for free cooling). (3)

- 7.3.3.2 Make-Up Air Handling Units.** Air handling units shall be as specified in Section 15895 - AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM. The make-up air handling units shall be located in the interstitial spaces of the corridors or in the mechanical rooms. Units located in the mechanical rooms shall be mounted on isolated, reinforced concrete housekeeping pads with a 150 mm (6-inch) clear space from the unit to the edge of the pad. Provide the manufacturer's recommended service clearance or a minimum of 610 mm (24") clearance around the entire unit, whichever is greater. Units located in the interstitial spaces shall be floor or ceiling mounted (per architectural and structural design). The units, whether floor or ceiling mounted, shall be provided with an engineered vibration isolation system for the entire unit (fan isolation alone is not acceptable) that will provide a minimum of 95% isolation (Transmissibility = 0.05). All components of the air handling units shall be factory installed products of the same manufacturer. As minimum, units shall be equipped with a supply fan, preheat coil, cooling coil, mixing box, pre-filter and final filter sections, (3)

plugs. Heating coils located within terminal units shall be sized to produce a minimum heating supply air temperature of 105 deg. F based on the required heating air flow quantity calculated for each unit. The air terminal units shall be as specified in Section 15895 - AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM. All vav boxes shall be pressure independent units. Insulation shall be provided for each vav box to prevent condensation on the outside of the units.

(5) 7.3.4 **Heating System Design and Equipment.** The heating system shall be a hot water system. Heating units shall be gas fired or electric. In either case, the building energy use budget specified shall be met. The specifications for the design using gas fired units shall be in accordance with Section 15569 - WATER AND STEAM HEATING; OIL, GAS OR BOTH; UP TO 20 MBTUH. (5)

(5) 7.3.4.1 **Heating Water Boiler.** Gas-fired boilers shall be steel water tube type rated at 862 kPa (125 psi). For heating output capacities less than 1,000,000 btuh, provide atmospheric/natural draft type boilers. For heating output capacities greater than 1,000,000 btuh, provide forced draft type boilers. Electric boilers shall have immersion type heating elements with 150 lb. ANSI flanges. Boilers shall be rated at 862 kPa (125 psi), minimum and have a minimum of 8 steps. The boiler water shall be treated to reduce corrosion and scaling and shall be provided with filter type chemical shot feeders. The water treatment system shall be located within the mechanical room. The water quality parameters can be found in the paragraph titled Water Quality and Treatment. A backflow preventer shall be provided for the boiler makeup water line. The boilers shall be mounted on and anchored to a reinforced concrete housekeeping pad with a minimum of 150 mm (6") clear space from the boiler to the edge of the pad. The manufacturer's specified maintenance clearances shall be provided and indicated on the drawings. Gas-fired boilers shall have a minimum efficiency of 80 percent. The boiler shall be equipped with an ASME rated pressure relief valve. Boiler flue vents shall be provided in accordance with NFPA 54. (5)

(5) 7.3.4.2 **Heating Water Boiler Controls.** Factory installed, UL listed microprocessor based combustion safety controls and equipment shall be provided. Electric boilers shall have modulating step control Controller shall process the signals for complete control and monitoring of the boiler. This shall include maintaining boiler status, starting and stopping all control functions and signaling alarm conditions. Microprocessor controls shall be able to perform self diagnostics and contain a message center to provide operator with status and failure mode information. A 4-inch diameter alarm bell shall be provided and shall be located on the boiler or where directed. The alarm bell shall ring when the boiler is shut down by any safety control or interlock. Indicating lights shall also be provided on the control panel. A red light shall indicate flame failure, and a green light shall indicate that the main fuel valve is open. The following shutdown conditions shall require a manual reset before the boiler can automatically recycle: Flame failure, low-water cutoff, high temperature cutoff and high pressure cutoff. (5)

7.3.4.3 **Heating Water Pumping System.** The hot water hydronic pumping system shall be a variable volume pumping system with two-way valves and reverse return piping system. A constant volume pumping system with three-way valves and reverse return piping system may be provided if proven to be life cycle cost effective. Life cycle cost analysis shall be submitted for approval prior to final selection. Provide a minimum of two hot water pumps, each sized for full capacity. The pumping system shall be designed to maintain the boiler manufacturer's minimum flow requirements. Manufacturer's recommended service clearance shall be provided.

7.3.4.3.1 **Heating Water Pump.** Shaft seal shall be mechanical-seal type. Pump casing and bearing housing shall be close-grained cast iron. High points in the casing shall be provided with manual air vents; low points shall be provided with drain plugs. Impeller, impeller wearing rings, glands, casing wear rings, and shaft sleeve shall be bronze. Shaft shall be carbon or alloy steel, turned and ground. Pump and motor shall be mounted on a structural steel base with lipped edges or drain pan and tapped drainage openings. Pump motor shall be non-overloading and shall have the required capacity to prevent overloading with pump operating at any point on its characteristic curve. Pump speed shall not exceed 1,750 rpm. Pump shall be accessible for servicing without disturbing piping connections. The heating water pump shall be mounted on and anchored to a reinforced concrete housekeeping pad located within the mechanical room.

7.3.4.3.2 **Heating Water System Accessories.** Pump shall be provided with variable frequency drive (vfd) and vfd rated motor, check valve, pressure gauges (inlet and outlet), butterfly valve with memory stop (outlet), strainer, suction diffuser, pressure and temperature ports and isolation valves. Immersion type thermometers shall be provided on system supply and return lines. Provisions shall be made for thermal expansion with a diaphragm expansion tank with an air charge valve and pressure gauge and an air separator with automatic fill valve and air purger. A backflow preventer shall be provided for the chiller makeup water line.

7.3.4.4 **Other Heating Systems.** Hot water unit heaters shall be provided for mechanical and electrical rooms and designed to maintain a space temperature of 10 degrees C (50 degrees F). Baseboard heaters shall be provided in stairwells and designed to maintain a space temperature of 68 degrees C (20 degrees F). Gas fired or electric unit heaters shall be provided for pump station(s) and shall be designed to maintain a space temperature of 7.2 degrees C (45 degrees F). Heating water circuits to the heating units shall be supplied with isolation valves, flow control valves, calibrated balance valves, strainers and temperature and pressure plugs.

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7.3.5 **Cooling System Design and Equipment.** Cooling system shall be a conventional chilled water system or a thermal energy storage based chilled water system. Selection of the chilled water system shall be based on the results of a life cycle cost analysis. The specifications for this design shall be in accordance with Section 15650 - Central Refrigerated Air Conditioning System and/or Section 15848 - Thermal Energy Storage Units: Ice-On-Coil.

7.3.5.1 **Cooling System Alternatives.**

7.3.5.1.1 **Air Cooled Chillers.** Provide a minimum of two chiller units, each sized for a minimum of 35% of the total design load (including safety factors). The chillers shall be packaged air-cooled reciprocating, screw or scroll type with manufacturer's standard microprocessor controls. Units shall have a minimum cop of 2.93 (EER - 10.0). The chillers shall be mounted on and anchored to a reinforced concrete housekeeping pad sized 1'-0" from chiller unit to edge of pad (on all sides). Provide the manufacturer's specified maintenance clearances around each unit. Where multiple chiller units are required, units shall be provided with the manufacturer's standard microprocessor based chiller sequencer or plant manager control package. Sequencer shall provide stand alone chiller sequencing and shall be independent from the building DDC system. Chiller sequencing and control

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strategies shall be indicated on the construction drawings and specifications. Chiller sequencing and compressor staging shall not be controlled by the building DDC system, however chiller enable / disable shall be a function in the building DDS system.

(5) 7.3.5.1.2 **Packaged Thermal Energy Storage (TES) System.** Provide a packaged TES system consisting of a minimum of two chiller units and ice storage tank(s) assembly (all by the same manufacturer) that has a de-rated capacity sized for a minimum of 80% of the total design load (including safety factors). The chillers shall be packaged air-cooled reciprocating, screw or scroll type with manufacturer's standard microprocessor controls. Units shall have a minimum cop of 2.93 (EER - 10.0). Units shall be designed to provide full or partial storage based on the building peak cooling demand requirement and the results of a life cycle cost analysis. The TES system shall be mounted on and anchored to a reinforced concrete housekeeping pad sized 1'-0" from the TES unit to edge of pad (on all sides). Provide the manufacturer's specified maintenance clearances around each unit. Cooling load profiles used to size the system shall be submitted in the Design Analysis for review. Where multiple chiller units are required, units shall be provided with the manufacturer's standard microprocessor based chiller sequencer or plant manager control package. Sequencer shall provide stand alone chiller sequencing and shall be independent from the building DDC system. Chiller sequencing and control strategies shall be indicated on the construction drawings and specifications. Chiller sequencing and compressor staging shall not be controlled by the building DDC system, however chiller enable / disable shall be a function in the building DDS system. (3)

7.3.5.2 **Chiller and Equipment Enclosure.** Packaged chiller units or thermal energy storage system, air compressors and pumps may be located inside a separate mechanical building or outside in an enclosed mechanical yard. The mechanical building shall be fully enclosed (including roof) and shall be sized to include proper equipment maintenance clearances. See the Architectural section of this RFP for additional building requirements. Heat rejected by the condensers on the chiller units shall be mechanically removed. See paragraph titled "**Special Cooling/Exhaust Systems**" for additional requirements.

7.3.5.3 **Chilled Water Pumping System.** The chilled water hydronic pumping system shall be either a constant volume with three-way valve reverse return piping system or a primary-secondary variable volume pumping system with two-way valve reverse return piping system. The system selected shall be based on the results obtained from the building energy use analysis and life cycle cost analysis. Life cycle cost analysis shall be submitted for approval prior to final selection. For primary-secondary systems, provide a separate "primary" constant volume pump for each chiller. For the "secondary" variable volume or the constant volume systems, provide a minimum of two chilled water distribution pumps, each sized for full capacity. The pumping system shall be designed to maintain the chiller manufacturer's minimum flow requirements. Manufacturer's recommended service clearance shall be provided. Chilled water piping from the mechanical yard to the building shall be installed in a pre-cast concrete trench with a solid, removable, galvanized steel or stainless steel cover. Rating for trench covers shall be Load Class A. Coordinate with the Civil discipline to provide proper drainage of the trench.

7.3.5.3.1 **Chilled Water Pumps.** Shaft seal shall be mechanical-seal type. Pump casing and bearing housing shall be close-grained cast iron. High points in the casing shall be provided with manual air vents; low points

shall be provided with drain plugs. Impeller, impeller wearing rings, glands, casing wear rings, and shaft sleeve shall be bronze. Shaft shall be carbon or alloy steel, turned and ground. Pump and motor shall be mounted on a structural steel base with lipped edges or drain pan and tapped drainage openings. Pump motor shall be non-overloading and shall have the required capacity to prevent overloading with pump operating at any point on its characteristic curve. Pump speed shall not exceed 1,750 rpm. Pump shall be accessible for servicing without disturbing piping connections. The chilled water pumps shall be mounted on and anchored to a reinforced concrete housekeeping pad located within the mechanical room. Pumps curves used for selection of chilled water pumps shall be based on the concentration of glycol used in the system. Pump curves based on water only shall not be used.

(3) 7.3.5.4 **Process Chilled Water System.** A process chilled water system shall be provided to serve the spaces indicated in the "Detailed Space Descriptions" located in Appendix B. Process chilled water system shall be designed to provide 10 gpm flow at 30-50 psig to each station. Cooling loads for each process chilled water station shall be based on a 5.6 degrees C (10 degrees F) temperature differential and a 30 to 40 percent propylene glycol solution. Process chilled water system may be a separate system or integral to the building chilled water system. Each station shall be provided with insulated, 1" diameter, copper Type L distribution lines (supply and return) with ball valves in a common bulkhead panel located above the ceiling near the entry door. Chilled water distribution lines to each station shall also be provided with calibrated balancing valves and strainers. (5)

7.3.5.5 **Chilled Water System Accessories.** Pumps shall be provided with variable frequency drive (vfd) and vfd rated motor, check valve, pressure gauges (inlet and outlet), butterfly valve with memory stop (outlet), strainer, suction diffuser, pressure and temperature ports and isolation valves. Immersion type thermometers shall be provided on system supply and return lines. Provision shall be made for thermal expansion with a diaphragm expansion tank with an air charge valve and pressure gauge and an air separator with automatic fill valve and air purger. A backflow preventer shall be provided for the chiller makeup water line.

7.3.5.6 **Chilled Water Treatment System.** The chiller water shall be treated for freeze protection and to reduce corrosion and scaling. Water quality parameters can be found in the Water Quality and Treatment paragraph. An automatic feed type water treatment system shall be provided and shall be located within the mechanical room. In addition, provide filter type chemical feeders. The system shall automatically monitor the make up rate and inject the system with the glycol solution at the correct level so that the water treatment solution is maintained at the optimum level for full protection. A propylene glycol solution with corrosion inhibitors shall be used in the system and shall provide freeze protection down to -14° C (7° F). System capacities shall be de-rated as required for glycol. The use of electric resistance heating cable for freeze protection is not permitted.

7.3.6 **Hydronic System Piping.** Hydronic piping system shall be designed to be efficient, easily balanced, and accessible. Maximum fluid velocities in the piping systems shall not exceed 1.83 m/s (6 fps). Riser piping between floors shall be limited to mechanical chases. Riser piping located in interior partition or exterior walls is prohibited. Piping and fitting materials shall be copper conforming to ASTM B 88, type K or L or steel conforming to ASTM A 53, Schedule 40, type E or S. Unions or flanges shall

- (5) friction design method. A ducted return air system shall be provided to the extent required to alleviate the cross contamination between the return air from spaces with clean room and non-clean room classification. All return ducts or air transfer openings from spaces designated as "secure" shall be provided with a minimum 25 mm (1") thick internal acoustical liner and shall be designed to meet the noise requirements specified in the DCID. Where duct liner is not sufficient to meet the noise requirements specified in the DCID, provide sound baffles or duct silencers. Duct liner shall extend a minimum of 3.04 m (10 ft.) from each return grille. Ductwork locations shall be coordinated with all disciplines. All supply, return, intake, and exhaust ductwork shall be constructed of galvanized sheet metal and shall be as specified in Section 15895 - AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM. All duct fittings (including elbows, tees, and offsets) shall be constructed of rigid sheet metal. Non-metallic flexible duct run outs to air distribution devices shall be insulated and shall be limited to 1.0 m (3 ft.) in total length. Flexible duct shall only be used on straight runs of ducts (horizontal or vertical) and shall not be installed with elbows or with offsets greater than 1/2 duct diameter. Flexible duct shall not be used for connection to air terminal units. The ductwork shall be insulated in accordance with Section 15080 - THERMAL INSULATION FOR MECHANICAL SYSTEMS. Ductwork, ductwork openings, and plenums shall be designed to a maximum RC of 30. Duct and air distribution devices shall meet the velocity requirements indicated in the 1999 ASHRAE Handbook. (5)
- (3) (3)

7.3.10.1 **Duct Layout.** Duct distribution system shall be designed to be efficient, easily balanced, and accessible. Maximum air velocities in the medium pressure ducts (1.5 inches w.c. or greater) shall not exceed 2000 feet per minute (fpm). Maximum air velocities in the low pressure ducts (less than 373 Pa (1.5 inches w.c.)) shall not exceed 5.08 m/s (1000 fpm). Duct risers between floors shall be limited to mechanical chases. Duct layout shall be designed to include a minimum of 6 duct diameters of straight rigid sheet metal duct ahead of the inlet connections to vav terminal units. Duct layout shall also provide a straight section of duct (minimum of 8 duct diameters in length) down stream of the inlets and upstream of the outlets of each air handler. Installation height of all ductwork shall be indicated on the plans.

7.3.11 **Noise Analysis.** An acoustic analysis shall be performed for each air handler, air terminal unit and associated duct distribution system to assure minimal noise transmission to the spaces. The Room Criteria (Per the 1999 ASHRAE HVAC Applications Handbook, Chapter 46) shall be as follows:

Offices (open plan):	RC 30-35
Offices (private):	RC 25-30
Conference and Training Rooms:	RC 25-30
Circulation and Public Lobbies	RC 35-45

- (5) 7.3.12 **Scrubbers.** User furnished scrubber units designed to remove harmful chemicals from the exhaust air stream will be provided for use at the Wash Room of the Coating Facility. All scrubbers will be 99.999% efficient for HCL, nitric acid and lye. Contractor shall provide all ductwork, water and chemical piping materials and supports, equipment pads with spill containment, electrical wiring, conduit and connections, and labor required to place the units into operating conditions. All scrubber ductwork shall be fiberglass-reinforced plastic. Chemical piping shall be materials suitable for use with the chemicals specified. Designer shall coordinate with the user for data on installation of scrubber unit components and appurtenances, and the location of the units in order to properly size the duct and piping systems and electrical components of the scrubber units. Provide coordination meeting notes and sizing information in the Design Analysis for review. (5)

and shall have a filtration efficiency of 30 to 35 percent in accordance with ASHRAE 52.1 and shall have an average arrestance rating of not less than 90 percent. All filters shall be UL Class 2.

7.3.16.2 **Final Filters (Non-Clean Room Air Handlers).** Final filters shall be provided for all air handling units, crac units and make-up air handling units provided for the facility. Medium efficiency cartridge type filters shall be provided for the air handling equipment and shall have a filtration efficiency of 60 to 65 percent in accordance with ASHRAE 52.1. Filters shall have an average arrestance rating of not less than 95 percent. All filters shall be UL Class 1 or 2.

(5) 7.3.16.3 **Final Filters (Clean Room Air Handlers).** Final filters shall be provided for all air handling units serving the clean rooms within the facility. High Efficiency Particulate Air (HEPA) filters shall be provided for the air handling equipment and shall have a filtration efficiency high enough to provide the clean room classification indicated. Filter efficiencies shall be in accordance with ASHRAE 52.1. Filters shall have an average arrestance rating of not less than 98 percent. All filters shall be (5) UL Class 1 or 2.

7.3.17 **Fire/Smoke Dampers.** Combination Fire/Smoke dampers shall be provided at all fire-rated penetrations requiring a fire damper. Leakage rating shall meet Class 1 requirements. Dampers shall be dynamic rated for the maximum air velocity and pressure differential to which it will be subjected. Dampers shall meet the requirements of UL 555 as a fire damper and UL 555S as a smoke damper. Actuators shall be low voltage electric. Power shall be supplied from the fire alarm control system. Factory furnished sleeves with external mounted actuators shall be furnished. The damper assembly shall be easily and fully accessible for service.

7.3.18 **Diffusers, Grilles and Registers.** Air distribution devices shall be factory-fabricated of steel, corrosion-resistant steel, or aluminum and shall distribute the specified quantity of air evenly over space intended without causing noticeable drafts, air movement faster than 0.25 m/s in occupied zone, or dead spots anywhere in the conditioned area. Inlets and outlets shall be sound rated and certified according to ASHRAE 70. Diffusers and registers shall be as specified in UFGS 15895 and shall be color coordinated with the Architectural design.

7.3.19 **Insulation.** All piping, ductwork, air handlers, pumps, storage tanks and other applicable HVAC equipment shall be insulated. The use of flexible cellular insulation conforming to ASTM C 534 or ASTM D 1056 is prohibited. Insulation applied to piping located outside of the facility or underground within a concrete trench shall be cellular glass conforming to ASTM C 552, Type II, and Type III and the insulation shall be installed with the manufacturer's recommended factory applied jacket. Insulation materials and installation shall be in accordance with UFGS Section 15080 - THERMAL INSULATION FOR MECHANICAL SYSTEMS.

7.3.20 **Access Panels.** Access panels/doors shall be provided as required for valves and appurtenances of the HVAC system in accordance with UFGS Section 15895 - AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM. Coordinate with the Architectural discipline to ensure that UFGS Section 05500 - MISCELLANEOUS METAL includes provisions for access panels/doors.

(3) 7.3.21 **Vibration and Noise Isolation.** All piping, ductwork, air handlers, pumps, exhaust fans, unit heaters and related equipment shall be properly isolated to prevent vibration and subsequent noise to 95% isolation (Transmissibility = 0.05). Designer shall provide supporting calculations which validates that all vibration isolation measures taken are in compliance with the requirements in this RFP. (3)

7.3.22 **Seismic Design Requirements.** Protective measures shall be in accordance with UFGS 13080, UFGS 15070 and TI 5-809-04, Seismic Design for Buildings.

7.3.23 **Vacuum Pumps.** Provide all materials, labor, piping, electrical, supports, and appurtenances required to install the user supplied vacuum pumps. Contractor and/or Designer shall coordinate the vacuum pump requirements with the user. Provide vacuum system design calculations, coordination meeting notes and sizing information in the Design Analysis for review.

(5) 7.3.24 Deleted.

7.3.25 **Laboratory Fume Hood System.** Provide a minimum of 600 cfm to each fume hood and solder station required in the "Detailed Space Descriptions indicated in Appendix B. (5)

7.4 Heating, Ventilating, and Air Conditioning Control System.

7.4.1 **Control System.** The Contractor shall be responsible for correct operation of the control system including, but not limited to, software, control relays, sensors, and control wiring. The Contractor shall provide a 40 hour training course in accordance with UFGS 15951.

a. Temperature Controls: Temperature controls shall be direct digital control and be designed per industry standards and in accordance with UFGS 15951 - Direct Digital Control for HVAC. Control drawings, schematics and I/O tables shall be provided during the design stages for review.

b. Direct Digital Controls: Control drawings shall include schematics, ladder diagrams and sequence of operation for all HVAC equipment. The DDC system shall include all application software and equipment to implement the control strategies that are contained in UFGS 15951 - Direct Digital Control

for HVAC. Application software shall be provided for each system as recorded on the Energy Monitoring and Control System (EMCS) points list. The Contractor shall insure that DDC system meets ASHRAE Standard 135 (BACnet™) or LONWorks® standards. The system shall be designed to be completely stand-alone when not connected to the central EMCS. All wiring shall be labeled and terminated as required in the specifications. A portable data entry system shall be provided for the facility to interface with the building DDC system. The system shall consist of a Pentium 900 MHz laptop computer with a minimum of 128 MB of RAM, 30.0 GB hard drive, CD-Rom drive, six hour rated battery pack with re-charger, V90 modem, color display, DOS 6.2, and Windows NT shall be provided (to the Contracting Officer) to interface with the building DDC system. The computer shall be provided with all software and hardware required to field interface with control components, including air terminal units. Pneumatic operated control devices shall not be used. Controls shall be integrated with the fire alarm control system so that automatic shutdown of all air handling units supplying over 944 L/s (2000 cfm) will occur upon any fire alarm condition within the facility.

c. Energy Monitoring and Control System (EMCS): The DDC system shall be provided with a telephone modem (56 Kbps) and telephone line for future connection to the Central EMCS. The Contractor shall fully program the HVAC control panel. Contractor shall install complete graphics and control schemes onto the portable data entry system computer. The graphics screens shall include a building floor plan indicating control locations and detail screens of individual equipment controls as required in the points list. The control schemes and graphics shall be approved by submittal. The building control panel shall accept override controls, set-point adjustments, and program modifications from the portable data entry system computer without disruption to the monitoring and control functions. All alarms generated by the building panel shall automatically be logged at the controller and the system shall page the building manager. Building manager and pager numbers shall be provided to the Contractor during the design process. A text based sequence of operation screen shall be linked to the graphics screens for the building and shall explain control procedures. ETL 83-4 shall provide guidance for the Data Transmission Media (DTM) considerations and AFM 88-36 shall provide guidance for the I/O summary.

d. Direct Digital Control System (EMCS) Points: As a minimum, the following systems shall be provided with the indicated control points for monitoring and control of the hvac systems installed:

- 1) General: Outside Air Temperature.
- 2) Air Handling Units: Supply/return fan status; Fan Start/stop; (5) Outside air flowrate; Filter status; Cooling and Heating control valve status and control; Discharge air temperature; Freeze status; Outside, return and relief damper status and control; Return air temperature; Mixed air temperature; Supply air static pressure; Night setback temperature; Supply/return duct smoke detector status; VFD status.
- 3) Variable Air Volume Terminal Units: Supply air flowrate; vav box damper status and control; Reheat coil valve status and control; vav box supply air temperature; Space temperature. (5)

pads shall have a # 4/0 bare copper cable counterpoise ground which shall be buried and shall encircle the pad a minimum distance of 3 ft. out from the pad, and shall be buried at a minimum depth of 3 ft.

8.2.3.3 **Equipment Grounding.** One 3/4 in. x 10 ft. copper clad ground rod shall be installed in a conduit window of each equipment pad (where transformer pads have more than one conduit window, the ground rod shall be installed in the secondary/low voltage window). The pad's counterpoise shall be connected to the ground rod with two runs of # 4/0 copper cable. All underground grounding connections shall be exothermic type connections. All other equipment grounds shall be bonded to this ground rod with bronze saddle clamps. The equipment grounding conductors shall be AWG #4/0 bare copper.

8.2.4 **Service Entrance.** The building shall be fed from the transformer via secondary conductors in duct sized for the connected load of the building. The service entrance conductors shall not be larger than 500 kCM. If the ampacity of the total load exceeds the ampacity of 500 kCM wire, then parallel runs of conductors shall be used. Parallel runs shall be installed as required by the NEC.

8.2.5 **Sizing Feeders and Transformers.** Sizing calculations shall be provided, per the requirements given in Section 01012 of this RFP, for all equipment, feeders, and transformers. Estimated loads shall be included in the calculations for future and spare equipment, and all equipment required in this RFP.

8.2.5.1 **Transformers.** Transformers shall be sized to supply no less than the largest total demand load as determined by the National Electrical Code, Article 220, Part B. The calculated demand load shall not be more than 100% of the transformer nameplate capacity.

8.2.6 **Exterior Lighting.** IES Handbook recommendations, including cutoff fixtures and shields, shall be used to minimize light trespass. Voltage drop on lighting circuits shall not exceed 6 percent at the most distant fixture. Area lighting shall be provided for walks, the parking area(s), covered courtyards, and entry ways. However, this exterior lighting shall be kept to a minimum. Illumination shall be less than 1.0 footcandle peak maintained. Fixtures shall be Low Pressure Sodium (LPS), and all exterior fixtures shall be provided with a central Hand-OFF-Auto switch to allow shutoff of exterior lights during facility operations. Fixtures shall be visually compatible with the Base Compatibility Standards, and shall meet the State of New Mexico Dark Skies Lighting Standard. Bollards, pole mounted shoebox type fixtures, etc., shall be used. Fixtures shall be rated for wind gusts of up to 125 MPH. All exterior fixtures shall be submitted to the Contracting Officer for review. All fixtures, except soffit mounted, bollard type fixtures and those mounted in covered walkways shall be Low Pressure Sodium (LPS).

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8.2.7 **Communications Utilities.** Exterior communications utilities shall include the following.

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a. **North Primary Conduit:** An underground duct bank consisting of six (6) 4" Sch. 40 PVC conduits, concrete encased, routed out of the western side of the new TAC LAB Facility, from the Computer-Communication space/room(s), to a Manhole (MH by others) located on the east side of Mt. Washington Rd. approximately 200 ft. north of where Mt. Washington turns to the east. (Just

to the north of the project site.)). Two of the above conduits shall each have a 9 way inner ducts installed. Four of the above conduits shall each have a 3 way (1.25") inner ducts installed. Each inner duct shall have a pull cord installed.

b. **North Secondary Conduit:** An underground duct bank consisting of two (2) 4" Sch. 40 PVC conduits, concrete encased, routed out of the eastern side of the new TAC LAB Facility, from the Computer-Communication space/room(s), to a Manhole (MH by others) located on the east side of Mt. Washington Rd. approximately 350 ft. north of where Mt. Washington turns to the east. (Just to the north of the project site.)). One of the above conduits shall have a 9 way inner ducts installed. The other of the above conduits shall have 2 (2") way inner ducts installed. Each inner duct shall have a pull cord installed. The North Secondary Conduit duct bank shall at all points be a minimum of 50 ft. from the North Primary Conduit duct bank.

c. **West Conduit - Part 1:** An underground duct bank consisting of two (2) 4" Sch. 40 PVC conduits, concrete encased, routed out of the western side of the new TAC LAB Facility, from the Computer-Communication space/room(s), to a new contractor installed 4'x4'x4' manhole located at the project site boundary. Each conduit shall have a pull cord installed.

d. **West Conduit - Part 2:** An underground duct bank consisting of two (2) 4" Sch. 40 PVC conduits, concrete encased, routed out of the western side of the new TAC LAB Facility, from the Secure Computer space/room(s), to the new contractor installed 4'x4'x4' manhole described above in part c. Each conduit shall have a pull cord installed.

e. **Duct Bank Installation:** All of the above conduits/duct banks shall be installed with no more than 180 degrees of conduit bend between pull points.

8.2.7.1 Deleted.

8.2.7.2 Deleted.

8.2.7.3 Deleted.

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8.2.7.3.1 **Above Ground.** For the above duct banks, in areas where an underground duct bank is not feasible (eg: on the uphill exposed rock slopes) an above ground duct bank may be installed. The above ground duct bank(s) shall be IMC conduit(s) and NEMA 12 type lockable pullboxes mounted on a double strength unistrut type support system, securely founded on concrete footings. The footings and support system(s) shall be designed to suit the soil/rock conditions and for seismic loads, dead loads, wind, and thermal loadings. The seismic design loading shall be .11658740 g. (where g. equal

acceleration due to gravity) peak ground acceleration (PGA). The thermal temperature design range shall be from -20 deg. F. to +120 deg. F. The wind speed design range shall be up to 125 MPH. The IMC conduits and support system shall be installed with expansion joints suitable for the above design criteria. Conduits shall be installed with no more than 180 degrees of conduit bend between pullboxes. Duct bank cable routings shall be submitted to the Contracting Officer for approval. Pull ropes shall be provided in all conduits and innerducts for future installations.

8.2.8 **Miscellaneous.**

8.2.8.1 **Road Crossings.** It shall be the responsibility of the Contractor to provide proper coordination and obtain all necessary permits, approvals, etc., before installing the crossings. Crossing ducts shall consist of reinforced concrete encased nonmetallic conduits.

8.2.8.2 **Utility Crossings.** Clearances from existing and new utilities (water, gas, sewer, etc.) shall be as specified in ANSI C2.

8.2.8.3 **Underground Splices.** Underground connections or splices shall not be permitted in primary or secondary conductors.

8.2.8.5.4 Installation Test Requirements. After installation, a minimum polarization voltage shift of 100 millivolts as measured between the underground component and a saturated copper-copper sulphate reference electrode contacting the earth directly over the underground component, shall be provided. 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 will occur. The voltage reading, after the immediate shift, shall be used as the base reading from which to measure polarization decay. Measurements achieving 100 millivolts decay shall be made over 95 percent of the metallic surface being protected.

8.3 Interior Electrical.

8.3.1 **General.** The Contractor shall provide complete electrical systems throughout the TACLAB building. Power, lighting, communications, and special systems connections and equipment shall be as required below, in the referenced CCD, and in the equipment lists in Appendix E.

8.3.1.1 All installations shall be as required by the National Electrical Code. The Contractor shall provide power to ALL equipment. The Contractor shall be responsible for coordinating between his sub-contractors for control power and shall provide control for all mechanical equipment.

8.3.1.2 **Under Slab.** No conduits, wires, cable, or equipment, except the main service entrance(s), shall be located under the building concrete slab.

8.3.1.3 **Enclosure Covers.** Enclosures shall have screws or screw clamps and shall have provision for locking with utility-type seals.

8.3.1.4 **Fault and Overcurrent Protection.** Overcurrent and fault protection devices shall be coordinated with line-side and load-side fuses or circuit breakers to isolate any electrical fault or overload from the rest of the system. Some breaker sizes may not coordinate under some fault conditions; however, good engineering practices shall be used and devices shall coordinate for all overload conditions. This includes coordination across transformers.

8.3.1.5 **Labeling.** All materials, equipment, fixtures and appurtenances shall be labeled by Underwriters Laboratories, Inc., or a similar acceptable organization.

8.3.1.6 **Water Booster Pump Station Buildings.** In addition to the TACLAB building, the contractor shall provide complete electrical systems for each Water Booster Pump Station Building. The electrical systems shall include power, grounding and lightning protection, lighting, complete and operational control systems for the pumps and provisions for future telephone connections (a telephone backboard). All systems shall be installed, where applicable, per the requirements given below.

8.3.2 Service Entrances.

8.3.2.1 **Service Equipment.** Service entrance equipment shall consist of a 480 Volt, 3 phase, Main Panel (switchgear, MCC, or switchboard). For bid/contract purposes, the contractor shall assume that the total electrical demand load of the building is 1.5 mVA., and the demand diversity factors of

(5)

(3) the connected loads throughout the building shall be adjusted, using good design practices, to realize this total demand load. (Note: During design the contractor shall inform the Contracting Officer what these calculated demand and delivery factors turnout to be.) The service entrance equipment shall be rated for a minimum of 150% of the total building demand load. The main panel shall have a single main circuit breaker (see note below) which shall serve as the building disconnecting means. The main panel shall have indicating instruments which shall show current and voltage for all three phases, line-to-ground and line-to-line. There shall be one meter for voltage and one for current. The service entrance equipment shall be provided with kWh demand meter(s) and instrumentation to monitor all power provided to the building, from the normal power source. All service equipment shall be "fully rated" for available fault current. This service entrance equipment shall provide power for all downstream devices, panels, step-down transformers, etc. Note: Due to the potentially large size of the service entrance, the service entrance equipment may be split into not more than three switchboards, each with its own main circuit breaker. However, these main circuit breakers shall be interlocked with shut trip devices and connected so that there is a single point of disconnect for all power to the building. (3)

8.3.2.1.1 **Electrical Equipment Room.** The service entrance equipment and other electrical power equipment shall be located in a separate electrical power equipment room within the building. The building design and layout shall provide a separate electrical equipment room for this purpose. Local feeder/branch panels may be located elsewhere in the building, as appropriate.

8.3.2.2 **System Ground.** The grounding electrode shall be a grounding counterpoise, which shall completely enclose the building. The counterpoise shall be installed a minimum of three feet outside the building foundation and a minimum of three feet BFG. The counterpoise shall consist of #4/0 bare copper cable which shall be connected to the building service entrance neutral/grounding bonding point with a minimum of two #4/0 copper cable grounding electrode conductors and per other requirements in the NEC. In addition the counterpoise shall be connected to the building grounding systems with #4/0 copper cables where required by NFPA 780 for lightning protection systems (a minimum of 4 connections shall be provided). Where they exist, additional electrodes such as User grounds or metal underground water pipes shall be bonded to the grounding system, but the required grounding electrode shall be the counterpoise. The grounding electrode conductors shall be physically protected, and shall be bonded to the electrode with exothermic welds. In addition, building steel, foundation slab rebar, and second floor slab rebar shall be bonded to the ground system. Grounding provided for SCIF areas shall be per the grounding requirements in the Director of Central Intelligence Directive 1/21 (DCID). The final design shall insure that the system will have no ground loops for protection of the equipment. All below ground or encased in concrete grounding connections shall be made with exothermictype connections.

8.3.2.2.1 **Grounding.** All circuits shall be equipped with a green ground no matter what type of load is connected. The ground shall be connected to the panel grounding bus per the NEC.

8.3.3 **Sizing Services and Feeders.** Sizing calculations shall be provided in the format used in the current edition of the National Electrical code, Chapter 9, Part B, **Examples**. Estimated loads shall be included in the calculations for future and spare equipment, and all equipment listed in the subparagraphs of "Interior Electrical, Dedicated Circuits".

8.3.3.1 **Panelboard Feeders.** Panelboard feeders from the service shall be sized to supply the full load rating of the panel that they serve. For instance, a panel with a 100 amp demand load shall be fed by 100 amp wire, minimum.

8.3.4 **Panelboards.** Secondary and local panelboards shall be sized for a minimum of 125% of the demand load they serve. They shall be fully rated for the available fault current, and furnished with main circuit breakers (unless feed from an upstream panel breaker, in which case they may have MLO), full sized plug-in or bolt-on branch breakers, insulated neutral busses and bonded equipment grounding busses. Panelboards located in finished areas shall be recessed, with flush fronts and hinged doors. Panelboards shall be located near the loads they serve. Twenty-five percent of single pole spaces (minimum) shall be provided for spares. The Contractor shall provide and install printed labels, in the panelboard, for all installed circuits. Panelboard buses shall be copper, aluminum buses shall not be allowed. Contractor shall removal all references to aluminum buses from specifications.

8.3.5 **Surge Protection.** The Building power supply system shall be provided with a surge protection system. The system shall consist of surge protection packages and modules installed in or connected to all panelboards, switchboards, and switchgear. The surge protection packages shall consist of three levels of protection; 1.) The main panel level (for service entrance panels, MDPs, MCCs, switchgear, etc.) 2.) The secondary panel level (for distribution panels, switchboards, etc.) 3.) The local panel level (local panelboards and power panels). One package of the appropriate size and level of protection shall be installed in all panels.

8.3.6 **Load Separation.** Panelboards, feeders, branch circuits, and receptacles which supply power for user computer and data processing loads shall be separately derived systems (a separate step down transformer). Data processing loads shall include, computers, servers, monitors, printers, and all other peripheral equipment associated with computer and data processing systems. All of these computer and data processing loads shall be separate and distinct from the panels, feeders, etc., which supply the HVAC, lighting and other non-computer type building loads.

(3) 8.3.6.1 **UPS.** Computer, data processing, building, and user loads, as listed below in the Room-by-Room requirements in Appendix B and Appendix E, shall be provided with a power supply system which has provisions for a UPS system to be added at a later time (by others). The (future) UPS system provisions shall include a way to connect the (future) UPS system into the system (eg: Provide a simple connection between a step-down transformer and the panel it supplies, which can be re-connected with a UPS system in-line between the transformer and the panel.) Also, if the equipment is installed in a location where equipment and conduits are concealed, spare conduits shall be provided to allow the UPS system to be installed without removing walls or other finished installations. (3)

(3) 8.3.6.1.1 **Floor Space for UPS.** For future UPS equipment (by others) the contractor shall provide an area/floor space 17' x 6' in area with a minimum height of 8'. This area shall be provided in a separate utility room located near the electrical and mechanical rooms. (3)

8.3.6.2 **Red Power.** Power supplies to secured computers and computer systems (red systems), as defined or listed in Appendix E, shall be provided with separately derived power supplies, which are installed with the required physical separations from non-secured systems, per the installation requirements for "Red" per the DOD Mil Handbook 232A, and for "SCIF" per DCID 1/21.

8.3.7 **Conductors.** All conductors shall be copper, aluminum is not allowed and not smaller than #12 AWG. Conductors #10 and #12 shall be solid; conductors #8 and larger shall be stranded. All conductors shall be

installed in metallic conduit. Nonmetallic electrical conduit (smurf tube) is not allowed. Wire types THW or THWN shall be used. Fixture whips shall be armored cable or conductors installed in metallic flex. Type NM wire is not acceptable.

8.3.8 Branch Circuits, Receptacles and Outlets. All general receptacle and lighting circuits shall be 20 Ampere circuits, minimum, fed by 20 Ampere circuit breakers, minimum. All branch circuits required by the National Electrical Code shall be provided. Receptacles on opposite sides of common walls shall be horizontally offset.

8.3.8.1 Separate Circuits. Lighting and receptacles shall be on separate branch circuits.

8.3.8.2 Outlets per Circuit. Receptacles which are for general use (ie: not installed for a specific defined load) shall be on circuits with a maximum of 6 duplex outlets, rated at 180VA, per circuit.

8.3.8.3 General Purpose Receptacles. General purpose receptacles shall be installed per the N.E.C. in hallways, equipment rooms, and other general use areas. Where not otherwise specified, a minimum of one duplex general purpose receptacle shall be provided for every 25 ft. of wall space, one per landing in stairwells, and two per wall in conference rooms.

8.3.8.3.1 Receptacle Loading. General use receptacles which do not have specific loads defined shall be assigned a demand load of 180VA per duplex outlet.

(5) **8.3.8.4 Computer Loads.** Circuits terminating in receptacles shall be provided for all user provided computer loads, as defined below and in the Computer Connected Loads List, given in Appendix E. (5)

8.3.8.4.1 Computer Circuit Loading. Where computer type loads are to be supplied, the demand loading shall be as follows: 250VA per CPU, 150VA per monitor, 400VA per personal printer, and 750 VA per heavy printer. These workstation loads shall be assumed to be continuous loads and the load demand factor shall be 100%.

(5) **8.3.8.5 User Equipment Loads.** Circuits shall be provided for all user connected equipment loads, as defined below, and in the Room-by-Room, in Appendix B and in Appendix E. Unless otherwise stated, these circuits shall be terminated in a surface mounted disconnect switch (which gives a place for future connections), sized to match the defined load/circuit capacity, and located as close to the defined load location as possible. (5)

(3) **8.3.8.5.1 User Equipment Connected Load.** Where user equipment is defined, the connected load shall be as given. Where general use receptacles are required, the connected load shall be calculated at 180 VA per duplex (5) receptacle. Where requirements are given in "circuits" or "disconnects", the connected load shall be assumed to be 80% of the circuit breaker nameplate size (eg: for a 20A, 120V circuit, 80% of 20A = 16A, which at 120V gives 1920VA as a connected load for that circuit). Where disconnects are required, they shall be assumed to be 3 phase, unless noted otherwise. (5)

- (5) 8.3.8.5.1.1 **User Loads Definition.** The following list shall be the definition of "User Loads". For the purposes of equipment power supplies only, this list shall supersede those given in Appendix B and Appendix E.
- 8.3.8.5.1.1.1 **General Offices.** One (1) 20A, 120 Volt circuit per office, with a minimum of 4 duplex receptacles per office.
- 8.3.8.5.1.1.2 **Coating Areas.** Three (3) 20A, 120 Volt circuits each, with a minimum of 7 duplex receptacles per circuit, spaces at not more than 15' intervals. One (1) 200A, 480 volt disconnect each area, and one (1) 100A, 208 Volt disconnect each area.
- 8.3.8.5.1.1.3 **Shop Areas.** Two (2) 20A, 120 Volt circuits each, with a minimum of 10 duplex receptacles per circuit. One (1) 100A, 480 volt disconnect each area, and one (1) 50A, 208 Volt disconnect each area.
- 8.3.8.5.1.1.4 **Receiving Areas.** One (1) 20A, 120 Volt circuits each, with a minimum of 6 duplex receptacles per circuit.
- 8.3.8.5.1.1.5 **Sensor Suite.** One (1) 20A, 120 Volt "UPS" circuit per room. One (1) 50A, 208 Volt disconnect per suite.
- 8.3.8.5.1.1.6 **Spec Electronics.** One (1) 50A, 208 Volt disconnect per suite.
- 8.3.8.5.1.1.6.1 **Spec Electronics - Work Areas.** Two (2) 20A, 120 Volt circuits throughout the WAS.
- 8.3.8.5.1.1.6.2 **Spec Electronics - Lab Areas.** Two (2) 20A, 120 Volt circuits (one is UPS) throughout the Lab Areas.
- 8.3.8.5.1.1.7 **Gen. Electrical Suite.** One (1) 30A, 208 Volt disconnect per suite.
- 8.3.8.5.1.1.7.1 **Gen. Electrical Suite - Work Areas.** One (1) 20A, 120 Volt circuits throughout the WAS.
- 8.3.8.5.1.1.7.2 **Gen. Electrical SuiteSpec Electronics - Lab Areas.** Two (2) 20A, 120 Volt circuits (one is UPS) throughout the Lab Areas.
- 8.3.8.5.1.1.8 **Opto-Mech Lab.** Two (2) 20A, 120 Volt "UPS" circuits. One (1) 50A, 208 Volt disconnect.
- 8.3.8.5.1.1.9 **Opt Metrology/Storage Combo.** Two (2) 20A, 120 Volt circuits (one is UPS). One (1) 50A, 208 Volt disconnect.
- 8.3.8.5.1.1.10 **Laser Lab.** Two (2) 20A, 120 Volt circuits (one is UPS). One (1) 50A, 480 Volt disconnect, and one (1) 50A, 208 Volt disconnect.
- 8.3.8.5.1.1.11 **Wavefront Corrector Labs (Optic and Elec Lab).** Two (2) 20A, 120 Volt "UPS" circuits per lab. One (1) 50A, 208 Volt disconnect in the Optics Lab, and one (1) 50A, 208 Volt disconnect in the Elec Lab.
- 8.3.8.5.1.1.12 **Elec. Crib.** One (1) 20A, 120 Volt circuits.

8.3.8.5.1.1.13 **Secure Suite (all except Computer Lab).** Offices as given above and one (1) 30A, 208 Volt, 2 pole, 1 phase, disconnect (near multi-media room).

8.3.8.5.1.1.14 **Computer/Comm.** One (1) 20A, 120 Volt circuits. Five (5) 20A, 120 Volt "UPS" circuits. One (1) 30A, 208 Volt, 1 phase, circuit (with one receptacle) and one (1) 30A, 208 Volt, 1 phase, "UPS" circuit (with one receptacle).

8.3.8.5.1.1.15 **Computer/Server.** One (1) 20A, 120 Volt circuits. Ten (10) 30A, 120 Volt "UPS" circuits. One (1) 30A, 208 Volt, 1 phase, "UPS" circuit (with one receptacle).

8.3.8.5.1.1.16 **Other spaces not covered above.** One 120 Volt, duplex receptacle per 15 ft. of wall space (with a minimum of one receptacle per wall). Assume a connected load of 3A per receptacle with a diversity factor 50%.

8.3.8.5.2 Deleted.

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8.3.8.5.3 **User Equipment in Offices.** In staff and scientist offices the equipment loading shall be assumed to be a minimum of one computer (CPU and monitor), and personal printer per office, sized as indicated above. The demand loading for the computer equipment shall be assumed to be 100%. Also, three general use receptacles at 180VA each shall be assumed per office. (Note: This should be equal to assuming one 20A, 120V circuit, with a demand of 70%, per office.)

8.3.8.6 **Non User Equipment Demand.** Interior lighting throughout the building shall be assumed to have a demand factor of 100%. Demand load factors from HVAC equipment shall be based on the HVAC system design under design basis conditions. Other miscellaneous equipment shall have demand factors per the NEC.

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8.3.9 **Isolated Grounds.** Isolated ground power supplies and/or receptacles are not required on this project.

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8.3.14.1 **Requirements.** Outlets and connects within the building shall be provided as required by the Communications Requirements List in Appendix E (Note: Where there are conflicts, the requirements given in the Communications Requirements List in Appendix E supersede those given in the Room-By-Room requirements given in Appendix B.) (Additional Note: For bid/contract purposes the contractor shall assume that the total number of Copper Connections from Drops, under Unclass Network (type B), in Appendix E, is 648 instead of 1114.)

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8.3.14.2 **Outlet Terminations.** Telephone outlets shall be modular, four-position RJ-45 type receptacles, rated for CAT-5e installation, per EIA 568A or the latest approved version of the ANSI/TIA/EIA standards. Each outlet location shall be a duplex (two RJ-45) receptacle. In locations where LAN outlets are required, the telephone outlets (duplex RJ-45 outlets) shall be installed together with the required LAN outlets in a Quadruplex outlet. Telephone outlets shall be "keyed" differently from the LAN outlets so that they cannot be interchanged.

8.3.14.3 **Wiring.** Telephone system wiring shall be 4 twisted pair, #24 copper, rated for CAT-5e or the latest approved version of the ANSI/TIA/EIA standards. Interior wiring shall be installed in EMT, IMC, or RGS conduit, or a combination of conduit and cable tray. In all cases, a raceway, which will allow future cables to be installed or removed shall be installed throughout the full length of the communication cabling pathway. Cables for the telephone wiring system shall have an outside jacket which is white.

8.3.14.4 **Telephone System Service Entrance.** The telephone system service entrance shall consist of the Backboard and punch down blocks in the telephone room and a minimum of two (2) 4" conduits (with pull ropes) installed with the FO cable and the 400 twisted pair exterior telephone cables required above. The exterior copper cable described above shall be terminated on 66 type punchdown blocks, and the FO cable(s) shall be terminated on a wall mounted patch panel/LAN Rack.

8.3.14.5 **Requirements.** Throughout the building, each facility area, as defined the Communications Requirements List, in Appendix E, shall be provided with the number of phone drops as required under the Type A list, in the Communications Equipment Receptacles List. Each phone drop shall be one (1) standard modular duplex telephone receptacle (providing a total of 2 RJ-45 outlets), as defined above.

8.3.15 **Data (LAN) Communications System.** Data communications (LAN) systems shall be provided throughout the building. Three (3) separate LAN networks shall be installed. A Type B network, a Type D network, and a Type E network. For definitions and equipment requirements, see the Communications Requirements List, in Appendix E. Each network shall each be installed as a complete system, including raceway systems, wire and cable, connections and termination devices and equipment racks. All cables installed shall be terminated. For each device or location listed here or below the Contractor shall install a duplex data/LAN port. The systems shall be provided with a performance warranty covering the entire system. Unless otherwise specified, the copper systems installation shall be a Category 5e system per EIA 568A or the latest approved version of the ANSI/TIA/EIA standards.

SECTION 01012 - DESIGN AFTER AWARD

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2.3 **Drawings:** All design drawings submitted shall be "D" size drawings, with a border having overall dimensions of 35.25" by 23.25". This border is available on the Albuquerque District web page at <http://www.spa.usace.army.mil/ec/cadd/index.htm>. All lettering shall be in all capitals, with a minimum height of 1/8" on full size drawing, and all lettering fonts shall be Microstation "Font # 1" or AutoCad "Roman Simplex" with a width factor of zero point 8 (0.8). In addition to these requirement, all drawings shall be prepared per the CAD standards given in the A/E/C CADD Standards Release 2.0, which is available on the internet at <http://tsc.wes.army.mil>. Drawings shall be in soft metric in accordance with Appendix L.

2.4 **Design Analysis:** The Design Analysis shall be developed in accordance to the criteria specified within this RFP, Section 01010 and Appendix J. An electronic template of the Design Analysis is available to the Contractor. The Design Analysis shall include all features with the necessary calculations, tables, methods and sources used in determining equipment and material sizes and capacities, and shall provide sufficient information to support the design.

2.5 **Specifications:** Specifications shall be developed utilizing Corps of Engineers Guide Specifications, "Master Spec", or "Spectext" in conjunction with Section 01010 and Appendix H. If other than Corps guides are utilized, the Contractor shall insure that the specifications follow the Master Format. All specifications shall be in sufficient detail to fully describe and demonstrate the quality of materials, the installation and performance of equipment, and the quality of workmanship. If other than Corps guides are utilized, the Contractor shall edit the specifications used so that all of the submittal, quality control and testing requirements given in all of the guides are included in the specifications used. In addition, the quality control procedures used shall include the testing and quality control requirements given in the Quality Assurance/Quality Control found in Section 01451. If specific brand names or products are identified in the specifications, the Contractor shall provide an "or equal" statement and shall provide the salient characteristics that may be used in determining what is "equal". The Contractor shall not alter specifications Section 00800 or any Division 1 specifications during the design process. These shall be submitted verbatim with the Final, Corrected Final, and Construction Set specifications. The Contractor shall obtain Corps of Engineers Guide Specifications from the Albuquerque District office.

2.6 **Color Boards.** Color/finish boards shall be in accordance with Appendix I of this RFP.

2.7 **Electronic Data Deliverables.** Drawings shall be delivered in MicroStation™ 5.0 and AutoCAD™ 2000. Specifications shall be delivered in Microsoft MS Word 97™. Electronic data deliverables shall be on compact disk.

2.8 **Certification of Computer Media:** Certification of Computer Media shall be in accordance with Appendix K.

(5) 2.9 Deleted.

2.9.1 Deleted.

2.9.2 Deleted.

2.9.3 Deleted.

2.10 **RMS Requirements.** The contractor shall use the Government furnished software module entitled Resident Management System (RMS) to create the Submittal Register and the DD Form 1354 during the design phase of this contract. The data generated by the contractor during the design phase will be used by the CQC manager in the construction phase of the project. See Section 01451 and 01312 for a more detailed description of RMS. (5)

3. DESIGN SUBMITTALS:

3.1 **General:** The first submittal shall include the 60 percent design. The second submittal shall include the 100 percent design. The third design submittal shall include the 100 percent corrected final design. The fourth submittal shall be the set used for construction. Further submittal clarification can be found in Section 01010, Design Requirements.

3.2 **Contractor Design Review.** Contractor shall ensure that all design documents including all drawings and calculations are reviewed by registered senior engineers/architects in the required discipline, who are independent from and not associated with the design. These individuals may be associated with the organization which did the original design. All drawings and design calculations in the Design Analysis shall be co-signed by the independent reviewers. The independent reviewer shall submit within the Design Analysis a signed letter of certification stating that the design documents for that discipline are complete, correct, and in conformance with the requirements of the RFP.

3.3 **Reproduction:** The Contractor shall be responsible for reproduction and distribution of design documents.