

2. CONTRACT NO. 3. SOLICITATION NO. **N00173-03-R-MS08** 4. TYPE OF SOLICITATION SEALED BID (IFB) NEGOTIATED (RFP) 5. DATE ISSUED **11JUL03** 6. REQUISITION/PURCHASE NO. **10-0116-03**

7. ISSUED BY CONTRACTING OFFICER
 NAVAL RESEARCH LABORATORY
 4555 OVERLOOK AVENUE SW
 WASHINGTON DC 20375-5326
 ATTN: CODE 3220.MS
 CODE **N00173**

8. ADDRESS OFFER TO (If other than Item 7)

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

SOLICITATION

9. Sealed offers in original and 4 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in See Section L-3 until 4:00pm local time 11AUG03
 (Hour) (Date)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-10. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL: A. NAME **Mary M. Sandy** B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) **202-767-3710**

11. TABLE OF CONTENTS

(✓) SEC.	DESCRIPTION	PAGE(S)	(✓) SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE			PART II - CONTRACT CLAUSES		
X A	SOLICITATION/CONTRACT FORM	1	X I	CONTRACT CLAUSES	7-10
X B	SUPPLIES OR SERVICES AND PRICES/COSTS	2	PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.		
X C	DESCRIPTION/SPECS./WORK STATEMENT	2	X J	LIST OF ATTACHMENTS	11
X D	PACKAGING AND MARKING	3	PART IV - REPRESENTATIONS AND INSTRUCTIONS		
X E	INSPECTION AND ACCEPTANCE	3	X K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	11
X F	DELIVERIES OR PERFORMANCE	3-5	X L	INSTRS., CONDS., AND NOTICES TO OFFERORS	12-17
X G	CONTRACT ADMINISTRATION DATA	5-6	X M	EVALUATION FACTORS FOR AWARD	17-18
X H	SPECIAL CONTRACT REQUIREMENTS	7			

OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.
 12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT 10 CALENDAR DAYS % 20 CALENDAR DAYS % 30 CALENDAR DAYS % CALENDAR DAYS %

14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amend-)

AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

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

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

AWARD (To be completed by Government)

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

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

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

26. NAME OF CONTRACTING OFFICER (Type or print) _____ 27. UNITED STATES OF AMERICA _____ 28. AWARD DATE _____

(Signature of Contracting Officer)

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

PART I - THE SCHEDULE**SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS****B-1 SUPPLIES OR SERVICES AND PRICES/COSTS**

ITEM NUMBER	SUPPLIES OR SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0001	The contractor shall design, fabricate, and install two (2) Class 100 Clean room modules in accordance with Section C.	2	EA	\$	\$
0002	Data in accordance with Exhibit A (DD 1423)	* NSP	* NSP	* NSP	* NSP

TOTAL FIRM FIXED PRICE: \$

*CONTRACT LINE ITEM NUMBER

**SECTION C
DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK**

C-1 Items furnished under this contract shall comply with Attachment (1), Statement of Work with Exhibit A, DD Form 1423, Contracts Data Requirements List, and all other Attachments cited in Section J, which are incorporated by reference into Section C.

C-2 REQUIREMENTS FOR ON-SITE CONTRACTORS

For those portions of the work under this contract performed at any NRL site, the contractor shall comply with the Requirements for On-Site Contractors dated 08 October 2002 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/home.htm>

**SECTION D
PACKAGING AND MARKING**

D-1 Preservation, packaging, packing and marking of all deliverable contract line items must conform to normal commercial packing standards to assure safe delivery at destination.

D-2 The Contractor shall mark all shipments under this contract in accordance with the edition of ASTM-D-3951-90 "Standard Practice for Commercial Packaging" in effect on the date of the contract.

**SECTION E
INSPECTION AND ACCEPTANCE**

E-1 INSPECTION AND ACCEPTANCE CLAUSES BY REFERENCE:

FAR CLAUSE TITLE

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

DFARS CLAUSE TITLE

- | | | |
|--------------|---|---|
| 252.246-7000 | - | Material Inspection And Receiving Report (MAR 2003) |
|--------------|---|---|

E-2 INSPECTION AND ACCEPTANCE

Inspection and acceptance of the final delivery will be accomplished by the Technical Manager (TM) or Contracting Officer Representative (COR) designated in Section G of this contract . Inspection and acceptance will be performed at the Naval Research Laboratory, Washington DC 20375-5320.

**SECTION F
DELIVERIES OR PERFORMANCE**

F-1 DELIVERIES OR PERFORMANCE CLAUSES BY REFERENCE:

FAR CLAUSE TITLE

- | | | |
|-----------|---|--|
| 52.211-17 | - | Delivery Of Excess Quantities (SEP 1989) |
| 52.242-15 | - | Stop-Work Order (AUG 1989) |
| 52.242-17 | - | Government Delay Of Work (APR 1984) |
| 52.247-34 | - | F.O.B. Destination (NOV 1991) |

F-2 FAR 52.211-8 - TIME OF DELIVERY (JUN 1997)

(a) The Government requires delivery to be made according to the following schedule:

REQUIRED DELIVERY SCHEDULE		
Item No.	Quantity	Within Days After Date Of Contract
0001	2 EA	130

The Government will evaluate equally, as regards time of delivery, offers that propose delivery of each quantity within the applicable delivery period specified above. Offers that propose delivery that will not clearly fall within the applicable required delivery period specified above, will be considered nonresponsive and rejected. The Government reserves the right to award under either the required delivery schedule or the proposed delivery schedule, when an offeror offers an earlier delivery schedule than required above. If the offeror proposes no other delivery schedule, the required delivery schedule above will apply.

PROPOSED DELIVERY SCHEDULE		
Item No.	Quantity	Within Days After Date Of Contract

(b) Attention is directed to the Contract Award provision of the solicitation that provides that a written award or acceptance of offer mailed, or otherwise furnished to the successful offeror, results in a binding contract. The Government will mail or otherwise furnish to the offeror an award or notice of award not later than the day award is dated. Therefore, the offeror should compute the time available for performance beginning with the actual date of award, rather than the date the written notice of award is received from the Contracting Officer through the ordinary mails. However, the Government will evaluate an offer that proposes delivery based on the Contractor's date of receipt of the contract or notice of award by adding (i) five calendar days for delivery of the award through the ordinary mails or (ii) one working day if the solicitation states that the contract or notice of award will be transmitted electronically. (The term "working day" excludes weekends and U.S. Federal holidays.) If, as so computed, the offered delivery date is later than the required delivery date, the offer will be considered nonresponsive and rejected.

F-3 PLACE OF DELIVERY - FOB DESTINATION

The contractor shall deliver supplies, all transportation charges paid, to destination in accordance with the clause in Section F of the Schedule titled FAR 52.247-34 FOB Destination (NOV 1991).

Receiving Officer
Naval Research Laboratory
Contract Number
ATTN: *
CODE: *
LOCATION: *
Bldg. 49
4555 Overlook Avenue, SW
Washington DC 20375-5320

(* To be filled in at time of award.)

**SECTION G
CONTRACT ADMINISTRATION DATA****G-1 PROCURING OFFICE REPRESENTATIVE**

In order to expedite administration of the contract, the Administrative Contracting Officer (ACO) will direct inquiries to the appropriate office listed below. Please do not direct routine inquiries to the person listed in Item 20A on Standard Form 26.

Security Matters- Contracting Officer for Security, Code 1221, (202) 767-2240, DSN 297-2240, email security-group@nrl.navy.mil

Safety Matters- Head, Safety Branch, Code 3540, (202)767-2232, DSN 297-2232, , email safety@nrl.navy.mil

Patent Matters- Associate Counsel (Intellectual Property), Code 1008.2, (202)404-1552, DSN 297-1552, email patents@nrl.navy.mil

Release of Data- Public Affairs Officer, Code 1030 (202) 767-2541, DSN 297-2541, email publicaffairs@nrl.navy.mil

G-2 TECHNICAL MANAGER - FUNCTIONS AND LIMITATIONS

* is hereby designated the cognizant Technical Manager who will represent the Contracting Officer in the administration of technical details within the scope of this contract and inspection and acceptance. The Technical Manager is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The Technical Manager does not have the authority to alter the Contractor's obligations or change the specifications in the contract. If, as a result of technical discussions, it is desirable to alter contract obligations or statements of work, a modification must be issued in writing and signed by the Contracting Officer. The Technical Manager, after review and signature of the "Material Inspection and Receiving Report, DD Form 250, If applicable, will forward a copy to the Administrative Contracting Officer.

(* To be filled in at time of award)

G-3 NAPS 5252.232-9000 - SUBMISSION OF INVOICES (FIXED PRICE) (JUL 1992)

(a) "Invoices" as used in this clause does not include contractor's requests for progress payments.

(b) The contractor shall submit original invoices with 4 copies to the address identified in the solicitation/contract award form (SF 26-Block 10; SF 33-Block 23; SF 1447-Block 14), unless delivery orders are applicable, in which case invoices will be segregated by individual order and submitted to the address specified in the order (DD 1155-Block 13 or SF 26-Block 10).

(c) The use of copies of the Material Inspection and Receiving Report (MIRR), DD Form 250, as an invoice is encouraged. DFARS Appendix F-306 provides instructions for such use. Copies of the MIRR used as an invoice are in addition to the standard distribution stated in DFARS F-401.

(d) In addition to the requirements of the Prompt Payment clause of this contract, the contractor shall cite on each invoice the contract line item number (CLIN); the contract subline item number (SLIN), if applicable; the accounting classification reference number (ACRN) as identified on the financial accounting data sheets, and the payment terms.

(e) The contractor shall prepare:

- a separate invoice for each activity designated to receive the supplies or services.
- a consolidated invoice covering all shipments delivered under an individual order.
- either of the above.

(f) If acceptance is at origin, the contractor shall submit the MIRR or other acceptance verification directly to the designated payment office. If acceptance is at destination, the consignee will forward acceptance verification to the designated payment office.

G-4 INVOICING ADDRESS

With reference to paragraph (b) of the above provision, "Submission of Invoices(Fixed Price)", the contractor shall submit invoices to the address in Block 12 of the contract award form (SF26).

**SECTION H
SPECIAL CONTRACT REQUIREMENTS**

H-1 TYPE OF CONTRACT

(To be filled in at time of award)

H-2 REPRESENTATIONS AND CERTIFICATIONS

The Contractor's completed Representations, Certifications, and Other Statements of Offerors or Respondents is incorporated herein by reference in any resultant award.

H-3 ELECTRONIC AND INFORMATION TECHNOLOGY (EIT)

In accordance with Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d), all EIT supplies and services provided under this contract must comply with the applicable accessibility standards issued by the Architectural and Transportation Barriers Compliance Board at 36 CFR part 1194 (see FAR Subpart 39.2). Electronic and information technology (EIT) is defined at FAR 2.101.

**PART II - CONTRACT CLAUSES
SECTION I
CONTRACT CLAUSES**

I-1 52.252-2 - CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://www.arnet.gov/far>

<http://heron.nrl.navy.mil/contracts/home.htm>

a. FEDERAL ACQUISITION REGULATION CLAUSES**FAR CLAUSE TITLE**

52.202-1	-	Definitions (DEC 2001)
52.203-3	-	Gratuities (APR 1984)
52.203-5	-	Covenant Against Contingent Fees (APR 1984)
52.203-6	-	Restrictions On Subcontractor Sales To The Government (JUL 1995)
52.203-7	-	Anti-Kickback Procedures (JUL 1995)
52.203-8	-	Cancellation, Rescission, And Recovery Of Funds For Illegal Or Improper Activity (JAN 1997)
52.203-10	-	Price Or Fee Adjustment For Illegal Or Improper Activity (JAN 1997)

- 52.203-12 - Limitation On Payments To Influence Certain Federal Transactions (JUN 2003)
- 52.204-4 - Printed Or Copied Double-Sided On Recycled Paper (AUG 2000)
- 52.209-6 - Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (JUL 1995)
- 52.211-5 - Material Requirements (AUG 2000)
- 52.211-15 - Defense Priority And Allocation Requirements (SEP 1990)
- 52.215-2 - Audit And Records-Negotiation (JUN 1999)
- 52.215-8 - Order Of Precedence - Uniform Contract Format (OCT 1997)
- 52.215-11 - Price Reduction For Defective Cost Or Pricing Data - Modifications (OCT 1997)
- 52.215-13 - Subcontractor Cost Or Pricing Data Modifications (OCT 1997)
- 52.215-14 - Integrity Of Unit Prices (OCT 1997)
- 52.215-17 - Waiver Of Facilities Capital Cost Of Money(OCT 1997) (*will be included if the successful offeror does not propose facilities capital cost of money*)
- 52.215-21 - Requirements For Cost Or Pricing Data Or Information Other Than Cost Or Pricing Data -Modifications (OCT 1997)
- 52.219-4 - Notice Of Price Evaluation Preference For HUBZone Small Business Concerns (JAN 1999) Offeror elects to waive the evaluation preference.
- 52.219-8 - Utilization Of Small Business Concerns (OCT 2000)
- 52.219-9 - Small Business Subcontracting Plan (JAN 2002)
- 52.219-16 - Liquidated Damages - Subcontracting Plan (JAN 1999)
- 52.219-25 - Small Disadvantaged Business Participation Program-Disadvantaged Status And Reporting (OCT 1999)
- 52.222-3 - Convict Labor (JUN 2003)
- 52.222-19 - Child Labor – Cooperation With Authorities And Remedies (SEP 2002)
- 52.222-21 - Prohibition of Segregated Facilities (FEB 1999)
- 52.222-26 - Equal Opportunity (APR 2002)
- 52.222-35 - Equal Opportunity For Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (DEC 2001)
- 52.222-36 - Affirmative Action For Workers With Disabilities (JUN 1998)
- 52.222-37 - Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (DEC 2001)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)
- 52.223-5 - Pollution Prevention and Right-To-Know Information (APR 1998)
- 52.223-6 - Drug-Free Workplace (MAY 2001)
- 52.223-14 - Toxic Chemical Release Reporting (JUN 2003)
- 52.225-13 - Restrictions On Certain Foreign Purchases (JUN 2003)
- 52.227-2 - Notice And Assistance Regarding Patent And Copyright Infringement (AUG 1996)
- 52.227-3 - Patent Indemnity (APR 1984)
- 52.228-5 - Insurance - Work on a Government Installation (JAN 1997)
- 52.229-3 - Federal, State, And Local Taxes (APR 2003)
- 52.230-2 - Cost Accounting Standards (APR 1998)
- 52.230-3 - Disclosure And Consistency Of Cost Accounting Practices (APR 1998)
- 52.230-6 - Administration Of Cost Accounting Standards (NOV 1999)
- 52.232-1 - Payments (APR 1984)
- 52.232-8 - Discounts For Prompt Payment (FEB 2002)
- 52.232-9 - Limitation On Withholding Of Payments (APR 1984)
- 52.232-11 - Extras (APR 1984)

- 52.232-17 - Interest (JUN 1996)
- 52.232-23 - Assignment Of Claims (JAN 1986)
- 52.232-25 - Prompt Payment (FEB 2002)
- 52.232-33 - Payment By Electronic Funds Transfer-Central Contractor Registration (MAY 1999)
- 52.233-1 - Disputes (JUL 2002)
- 52.233-3 - Protest After Award (AUG 1996)
- 52.237-2 - Protection Of Government Buildings, Equipment, And Vegetation (APR 1984)
- 52.242-13 - Bankruptcy (JUL 1995)
- 52.243-1 - Changes - Fixed Price (AUG 1987)
- 52.244-2 - Subcontracts (AUG 1998) - Alternate I (AUG 1998)
- 52.244-5 - Competition In Subcontracting (DEC 1996)
- 52.245-1 - Property Records (APR 1984)
- 52.245-9 - Use And Charges (APR 1984)(DEVIATION)
- 52.246-23 - Limitation Of Liability - (FEB 1997)
- 52.248-1 - Value Engineering (FEB 2000)
- 52.249-2 - Termination For Convenience Of The Government (Fixed Price) (SEP 1996)
- 52.249-8 - Default (Fixed-Price Supply And Service) (APR 1984)
- 52.252-6 - Authorized Deviations In Clauses (APR 1984) fill in Defense Federal Acquisition Regulation Supplement (48 CFR Chapter 2);
- 52.253-1 - Computer Generated Forms (JAN 1991)

DFARS CLAUSE TITLE

- 252.203-7001 - Prohibition On Persons Convicted Of Fraud Or Other Defense Contract Related Felonies (MAR 1999)
- 252.204-7003 - Control Of Government Personnel Work Product (APR 1992)
- 252.204-7004 - Required Central Contractor Registration (NOV 2001)
- 252.205-7000 - Provision Of Information To Cooperative Agreement Holders (DEC 1991)
- 252.209-7000 - Acquisition From Subcontractors Subject To On-Site Inspection Under The Intermediate-Range Nuclear Forces (INF) Treaty (NOV 1995)
- 252.209-7004 - Subcontracting With Firms That Are Owned Or Controlled By The Government Of A Terrorist Country (MAR 1998)
- 252.215-7000 - Pricing Adjustments (DEC 1991)
- 252.219-7003 - Small, Small Disadvantaged And Women-Owned Small Business Subcontracting Plan (DoD Contracts) (APR 1996)
- 252.223-7006 - Prohibition On Storage And Disposal Of Toxic And Hazardous Materials (APR 1993)
- 252.225-7001 - Buy American Act And Balance Of Payments Program (APR 2003)
- 252.225-7002 - Qualifying Country Sources As Subcontractors (APR 2003)
- 252.225-7012 - Preference For Certain Domestic Commodities (FEB 2003)
- 252.225-7013 - Duty-Free Entry (APR 2003)
- 252.225-7014 - Preference For Domestic Specialty Metals (APR 2003)
- 252.225-7025 - Restriction On Acquisition Of Forgings (APR 2003)
- 252.225-7030 - Restriction On Acquisition Of Carbon, Alloy, And Armor Steel Plate (APR 2003)
- 252.225-7031 - Secondary Arab Boycott Of Israel (APR 2003)

- 252.225-7036 - Buy American Act – North American Free Trade Agreement Implementation Act – Balance Of Payments Program (APR 2003)
- 252.226-7001 - Utilization of Indian Organizations and Indian-Owned Economic Enterprises-DoD Contracts (SEP 2001)
- 252.231-7000 - Supplemental Cost Principles (DEC 1991)
- 252.232-7003 - Electronic Submission Of Payment Requests (MAR 2003)
- 252.242-7000 - Postaward Conference (DEC 1991)
- 252.242-7004 - Material Management And Accounting System (DEC 2000)
- 252.243-7001 - Pricing Of Contract Modifications (DEC 1991)
- 252.243-7002 - Requests For Equitable Adjustment (MAR 1998)
- 252.244-7000 - Subcontracts For Commercial Items And Commercial Components (DOD Contracts) (MAR 2000)
- 252.245-7001 - Reports Of Government Property (MAY 1994)
- 252.247-7023 - Transportation Of Supplies By Sea (MAY 2002)
- 252.247-7024 - Notification Of Transportation Of Supplies By Sea (MAR 2000) *(will be included if the successful offeror made a negative response to the inquiry at DFARS 252.247-7022)*
- 252.251-7000 - Ordering From Government Supply Sources (OCT 2002)

I-2 FAR 52.223-11 - OZONE-DEPLETING SUBSTANCES (MAY 2001)

(a) *Definitions.* “Ozone-depleting substance”, as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR Part 82 as –

- (1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or
- (2) Class II, including, but not limited to, hydrochlorofluorocarbons.

(b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j (b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

WARNING

Contains (or manufactured with, if applicable) *_____, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.

*The Contractor shall insert the name of the substance(s).

PART III - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS
SECTION J
LIST OF ATTACHMENTS

J-1 Attachment (1) - Statement of Work – 38 Pages with Exhibit A - DD Form 1423, Contract Data Requirements - 5 Pages.

J-2 Attachment (2) - Accounting and Appropriation Data. 1 page. *

(To be included at time of award)*

PART IV - REPRESENTATIONS AND INSTRUCTIONS
SECTION K
REPRESENTATIONS, CERTIFICATIONS
AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS

K-1 REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS

Each Offeror must submit a completed Representations, Certifications, and Other Statements Of Offerors or Respondents with its proposal which is available electronically in full text at <http://heron.nrl.navy.mil/contracts/rep&certs.htm>

Use Representations and Certifications: A

K-2 FILL IN FOR FAR 52.219-1 - SMALL BUSINESS PROGRAM REPRESENTATIONS (MAR 2001)

The fill in information is as follows:

The NAICS code for this acquisition is 332311.

The small business size standard is 500 employees.

SECTION L
INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS OR RESPONDENTS

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

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

<http://www.arnet.gov/far>

<http://heron.nrl.navy.mil/contracts/home.htm>

FAR CLAUSE TITLE

- | | | |
|-----------|---|---|
| 52.204-6 | - | Data Universal Numbering System (DUNS) Number (JUNE 1999) |
| 52.214-34 | - | Submission Of Offers In The English Language (APR 1991) |
| 52.214-35 | - | Submission Of Offers In U.S. Currency (APR 1991) |
| 52.215-1 | - | Instructions To Offerors- Competitive Acquisition (MAY 2001) |
| 52.215-5 | - | Facsimile Proposals (OCT 1997) |
| | | Paragraph (c) is completed as follows: (202) 767-0430 (primary) or (202) 767-0494 (alternate). In addition proposals may be transmitted by e-mail to sandy@contracts.nrl.navy.mil (primary) or bays@contracts.nrl.navy.mil (alternate) in either Microsoft Word (version 97 or earlier) or pdf format. |
| 52.215-16 | - | Facilities Capital Cost Of Money (JUN 2003) |
| 52.219-24 | - | Small Disadvantaged Business Participation Program - Targets (OCT 2000) |
| 52.237-1 | - | Site Visit (APR 1984) |

DFAR CLAUSE TITLE

- | | | |
|--------------|---|--|
| 252.209-7001 | - | Disclosure Of Ownership Or Control By The Government Of A Terrorist Country (MAR 1998) |
| 252.211-7005 | - | Substitutions For Military Or Federal Specifications And Standards (FEB 2003) |

L-2 SITE VISIT SCHEDULE

- (a) A site visit will be conducted on July 23, 2003, 1:30PM. Offerors must contact Mary Sandy, 202-767-3710, on or before July 21, 2003 to be scheduled for the site visit. A limit of 2 representatives from each company is requested.
- (1) The contractors must bring hard hats to be worn during the site visit.

L-3 INSTRUCTIONS FOR SUBMISSION OF PROPOSALS/OFFERS

All proposals shall be submitted in accordance with FAR 52.215-1- *Instructions to Offerors-Competitive Acquisition*. Proposals/offers submitted in paper media through the United States Postal Service (USPS) or overnight delivery services shall be addressed to:

Contracting Officer, ATTN: Code ___3220.MS_____

Naval Research Laboratory (NRL)

4555 Overlook Avenue, S.W.

Washington, D.C. 20375

Solicitation/RFP No. – N00173-03-R-MS08

Closing Date: _____ Time _____

Proposals may be hand delivered to the Contracting Office, NRL, 4555 Overlook Avenue, S.W., Washington, D.C. 20375, Building 222, Room 115 between the hours of 8AM until 4PM, local time, excluding weekends and federal holidays. NRL is a controlled-access facility. Photo identification will be required. Report first to Building 72, Visitor Control for access to NRL. After receiving a Visitor Pass, proceed directly to Building 222, Room 115, Contracting Office Receptionist to deliver the proposal. All offerors shall allow sufficient time for delivery of their proposal to the Contracting Office prior to the closing date and time announced in the solicitation. Directions and additional information about NRL is available at <http://www.nrl.navy.mil/aboutdc.htm>

If facsimile proposals are authorized, contracting officers may request offeror(s) to provide the complete; original signed proposal at a later date.

L-4 FAR 52.211-14 - NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE USE (SEP 1990)

Any contract awarded as a result of this solicitation will be a DX rated order; DO rated order certified for national use under the Defense Priorities and Allocations system (DPAS) (15 CFR 700), and the Contractor will be required to follow all of the requirements of this regulation.

L-5 FAR 52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 1997)ALTERNATE IV (OCT 1997)

(a) Submission of cost or pricing data is not required.

(b) Provide information described below : See Section L-11

Offerors should provide information to enable the Contracting Officer to determine that the proposed price is fair and reasonable. Such information could include published price lists, information on previous sales of the same or similar items, or the projected costs of fabricating and installing the item (material costs, labor costs, etc).

L-6 FAR 52.216-1 - TYPE OF CONTRACT (APR 1984)

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

L-7 FAR 52.233-2 - SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in Section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO) shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from the Receptionist Desk, Code 3200, Bldg. 222, Rm. 115, Naval Research Laboratory, 4555 Overlook Ave., S.W., Washington DC 20375-5326.

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

L-8 GOVERNMENT-FURNISHED PROPERTY

No material, labor, or facilities will be furnished by the Government unless provided for in the solicitation.

L-9 INQUIRIES CONCERNING THE RFP

Any questions concerning the RFP must be submitted in writing to the Contracting Officer at the location noted in blocks 7 and 9 of the Standard Form 33, "Solicitation, Offer and Award," no less than fifteen (15) days before closing. The Government will not consider questions received after this date. Offerors are cautioned against directing any questions concerning this RFP to technical personnel at the Naval Research Laboratory.

L-10 PROPOSAL ORGANIZATION

(1) Information for the technical/management proposal shall be placed in Volume I and be completely separate from the business proposal (Volume II).

(2) Proposal Format and Length - No attempt is made to restrict the proposal format and style. However, the proposal should be written and organized so as to be compatible with the RFP. Offerors are encouraged to use recycled paper and maximize the use of double sided copying when preparing responses to solicitations.

L-11 VOLUME I - TECHNICAL/MANAGEMENT PROPOSAL

REQUIRED COPIES: 1 ORIGINAL AND 4 COPIES .

(1) The following information is required for evaluation of your technical/management :

Technical Specification Compliance and Competence.

The proposal must clearly demonstrate the offeror's ability to meet the requirements for Clean Rooms 9 and 10, Building 250, as described in Attachment 1, Statement of Work. It must clearly demonstrate the offeror's understanding of the technical requirement necessary to design, fabricate, and install a Class 100 Clean Room as well as the offeror's technical experts in this area. The offeror should provide as much detail about the proposed installation as possible including, but not limited to, schematic building design drawings including floor plan

and section illustrating the layout of the clean room and HVAC system including routing of return air duct and how material will be delivered to the installation area of the clean rooms and to the mechanical space. The offeror must provide a Basis of Design narrative, which describes how the Offeror intends to meet the requirements in the RFP for successful execution of the subject project.

Critical Component Review.

The proposal provided must clearly demonstrate the offeror's ability to meet the specification for Clean Rooms 9 and 10 in Building 250 as stated in the Statement of Work. It must clearly demonstrate the offeror's understanding of the technical requirements necessary to provide a Class 100 Clean Room as well as the offeror's technical expertise in this area. The offeror must provide details of meeting the temperature control requirement while staying within the acoustic requirement, but all aspects of the criteria must be addressed including installation of the new clean rooms next to the operating clean rooms and within the volume designated for the facility, acoustical/vibration isolation related to mechanical systems, familiarity with conditioned power requirements, and provisions and an understanding of low frequency electromagnetic interference (EMI) interference issues. The offeror should provide detail data sheets describing components: the design, the installation and performance of the clean room wall panels, the air handling units, the access floor system, and other information that the offeror believes will help the government evaluate the offeror's understanding of the project.

Past Performance Information

(a) Offerors shall submit the following information as part of their proposal. (Offerors are encouraged to submit the information prior to other parts of the proposal to assist the government in reducing the length of the evaluation period.) List the last 6 contracts or subcontracts completed by the offeror or predecessor companies during the past 4 years for services similar in nature to this requirement. Include in the 6 any current contracts or subcontracts for similar services that were awarded at least one year prior to the date of this solicitation. Offerors that have no similar previous or current contracts should provide the requested information for proposed subcontractors that will perform major or critical aspects of the requirement or for the proposed project manager or key personnel responsible for major or critical aspects of the requirement.

1. Name of contracting organization.
2. Contract number
3. Contract type
4. Total contract value
5. Description of the contract work
6. Contracting officer and telephone number
7. Contracting officer's representative, program manager, or similar official and telephone number

(b) Offerors shall contact the contracting organizations identified pursuant to paragraph (a) as soon as possible and request them to send past performance information on the identified contracts to the address in Block 7 of the face page of this solicitation. The past performance

report which is available electronically in full text at <http://heron.nrl.navy.mil/contracts/home.htm> is to be provided to the contracting organization for this purpose. If the contracting organization has already collected past performance information on the contract pursuant to FAR Subpart 42.15, the format used to collect the information may be used instead of the past performance report.

(c) Offerors may include in their proposals specific information relating to problems encountered in performing the identified contracts and any corrective actions by the offeror. Offerors should not provide general information on their performance on the identified contracts as this will be obtained from the contracting organizations.

Corporate Experience.

The proposal must provide a narrative description of the company experience on projects with tasks similar to those required in the Statement of Work. The experience to be addressed includes (1) clean room design, fabrication, and installation; (2) complete testing and performance assessment of clean rooms; and (3) integration of clean rooms into existing facilities. The offeror shall indicate past experience on related contracts of both the offeror and the subcontractors.

L-12 VOLUME II - BUSINESS PROPOSAL

REQUIRED COPIES: 1 ORIGINAL AND 4 COPIES

(1) PRICE PROPOSAL

The offeror shall submit a business proposal that includes a price proposal with supporting information. The supporting breakdown should include such elements as materials, direct labor, indirect cost, and other costs such as travel. The offeror shall provide exhibits as necessary to substantiate the price.

(2) SMALL BUSINESS PARTICIPATION

(a) In addition to complying with the clause at FAR 52.219-9, Small Business Subcontracting Plan (JAN 2002) with its Alternate II (OCT 2000), proposals must include information to permit evaluation of the extent of participation of small businesses and historical black colleges or universities and minority institutions in performance of the contract. Participation to be identified may be in the form of a joint venture, teaming arrangement, or subcontract. Small business concerns that are not required by FAR 52.219-9 to submit a subcontracting plan must indicate the extent to which proposed joint ventures, teaming arrangements, or subcontracts are with historically black colleges or universities and minority institutions. Information provided should include the extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

(b) Proposals must also include information to permit evaluation of the extent of participation of small disadvantaged business concerns in performance of the contract. See the provision at FAR 52.219-24, Small Disadvantaged Business Participation Program--Targets (OCT 2000), and the clause at 52.219-25, Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting (OCT 1999). Any targets will be incorporated into and become part of any resulting contract. Information provided should include the extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

SECTION M EVALUATION FACTORS FOR AWARD

M-1 EVALUATION

Award will be made to that offeror whose proposal is determined to be the best value to the Government, proposed price and other factors considered. The Government reserves the right to make award to other than the low offeror.

M-2 EVALUATION FACTORS FOR AWARD

Proposals will be evaluated in accordance with the following criteria. The technical factor is more important than the price factor. The technical factors are in descending order of importance. The Technical Specification Compliance and Competence factor is significantly more important than the other factors.

M-2-1. TECHNICAL/MANAGEMENT

Technical Specification Compliance and Competence

The proposal will be evaluated based upon the offeror's technical capability in meeting the requirement for Clean Rooms 9 and 10, Building 250, as described in the Statement of Work (SOW). The proposal, which best meets or exceeds the specifications in the SOW will be rated the highest in this category. The Technical Competence of the offeror will be evaluated on the basis of the knowledge demonstrated in the understanding of the requirements of designing, fabricating and installing the clean rooms in the designated volume within Building 250. Technical information on the proposed fabrication and installation of the facility must show the offeror's ability to meet critical performance specifications.

Critical Component Review

The proposal will be evaluated based upon the offeror's selection of critical components to be used in design, fabrication, and installation of the facility. Since the design, fabrication and installation of a clean room includes key components, which impact the performance of the clean room system, this is being evaluated separately from the technical approach. This criterion will examine the use of critical material/components and how their selection will meet the required

specifications. These materials will be judged both on their own merit as well as how they will perform in the total system. Included in this evaluation is an assessment of the ability to assemble the components necessary to meet the temperature control criteria, acoustic requirement, and all the other criteria contained herein.

Past Performance

Past performance will be evaluated on the basis of the quality of the work performed or supplies delivered and timeliness of performance or delivery. The evaluation will be based on the information provided pursuant to Section L and other sources if available. The evaluation will take into account past performance information regarding predecessor companies, subcontractors that will perform major or critical aspects of the requirement, or the proposed project manager or key personnel responsible for major or critical aspects of the requirement. Offerors that have no relevant performance history or for which past performance information is not available will not be evaluated favorably or unfavorably on past performance. The government may begin proposal evaluation prior to receipt of past performance information. If, after completion of proposal evaluation except evaluation of past performance, the contracting officer determines that evaluation of past performance will not affect the outcome of competitive selection, the contracting officer may waive its evaluation in accordance with FAR 15.304(c)(3)(iv).

Corporate Experience

The proposal will be evaluated based upon the offeror's corporate expertise in work, which is closely related to the effort required in the Statement of Work. The experience of the offeror and proposed subcontractors will be evaluated for appropriate expertise in the technical fields relevant to the fabrication, assembly/installation and testing of clean rooms.

M-2-2 PRICE TO THE GOVERNMENT

Proposed price to the Government.

M-2-3 SMALL BUSINESS PARTICIPATION

- (a) The extent of participation of small businesses and historically black colleges or universities and minority institutions in performance of the contract will be evaluated on the basis of the proposed extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.
- (b) The extent of participation of small disadvantaged business concerns in performance of the contract will be evaluated on the basis of the proposed extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

Statement of Work
Design, Fabricate and Install Clean Room Modules 9 and 10
Building 250

TABLE OF CONTENTS

Section A10 Proposal Summary
Section A20 Project Requirements
Section B10 Design Submittal Requirements
Section B20 Fabrication and Installation
 Submittals
Section C10 Interior Work
Section D10 Clean Room
Section D20 Plumbing Systems
Section D30 Heating, Ventilating, and Air
 Conditioning (HVAC) Systems
Section D40 Fire Protection Systems
Section D50 Electrical Systems Room Data Sheets

SECTION A10 PROPOSAL SUMMARY

PART 1 GENERAL

1.1 Project Description

The work includes the design, fabrication, and installation of two class 100 clean room modules in the Institute for Nanoscience in Building 250 at the Naval Research Laboratory. Work includes clean rooms complete with walls, HEPA ceilings, electrical panels & outlets, lights, access flooring, VAV make up air box, and air handling units.

1.2 Specific requirements per module (see also room data sheets):

Clean room class - 100 laminar, vertical flow

Dimensions: 20' x 25' nominal each

Each clean room module is to remain free of internal columns and bearing walls.

Raised floor panel system to match existing return floor of 24" height

Occupancy - 2 people average; 3 people maximum

Temperature Range (when unoccupied) 20°C ± 0.1°C Drift - <0.1°C /hr

Humidity Range (when unoccupied) - 45% ±2.5% Drift - <0.5%/hr

Extend clean compressed air from utility corridor into the clean room

Extend dry nitrogen piping from utility corridor into the clean room

Existing conditioned make up air supply to each zone - 500 CFM

Heat Gain (Equipment & Plug Load) - 279W/SM (26W/SF)

Provide 2 empty capped feedthrough piping 50-mm (2-inch) under raised floor from the clean room into the utility corridor

Wall: Alum. Composite Panel from concrete floor to structural ceiling

Ceiling: Lay-In Perforated Class 100 - 2' X 4' Panels

Ceiling Height 3050 mm (10')

Fully ducted supply from the AHU to the ceiling

Provide emergency exit door & light in each module

Telecommunications Electrical

Data/LAN/Ethernet Jacks block each zone:

2-Multi Mode Fiber 110/120 V

2-Single Mode Fiber 208/220/480 V

2-Cat 6 UTP data jacks Panel Board (Amps)

2-Voice per Zone 6-Cat 6 UTP jack Ground See Electrical D50

Acoustic/Noise Level - less than 60dB

Electrical each zone:

House power panelboard - 225A 42 pole MCB 208Y/120V 3 phase 4W

Conditioned panelboard - 100A 30 pole MCB 208Y/120V 3 phase 4W

UPS circuits for Government supplied UPS

Electrical distribution as in section D50

Conditioned Laboratory Power Criteria (CL)

Steady State Voltage Regulation - 1.0% for steady state loads varying from none to full

Step Voltage Regulation - 5.0% for 25% step load

- 8.0% for 50% step load

+10/-8% for 100% step load

Step Load Recovery Time - 1.0% voltage within one cycle with up to 100% step

Voltage Transients 330 volt maximum

Voltage Distortion - 5.0% total harmonic distortion

- 3.0% any single frequency

Phase Angle - 3.0% with up to 30% unbalanced

Shielded isolation transformer

Transient voltage surge suppression

1.3 Existing conditions:

A 20' X 50' vacant space adjacent to the east end of the 4,000 SF ballroom style clean room in Building 250 is reserved for installation

of the two 20' X 25' clean room modules (zones) on this requirement. The four sides of each zone are formed by: the existing clean room, a utility corridor, a circulation corridor, and the other zone being outfitted on this requirement. A dedicated space is reserved in the mechanical penthouse immediately above each clean room module to locate the clean room air handling unit. A 10" round stainless steel exhaust duct with mechanical connections may need to be removed and reinstalled in order to get the new air handlers through the existing penthouse roll-up door. Protect existing roofing outside the roll-up door from damage during rigging of new air handlers into the building. Protection must include at a minimum $\frac{3}{4}$ " sheathing to cover the roofing during rigging. The floor slab in each clean room zone is depressed 24" to receive access flooring. It has an epoxy sealer on it. The top of the penthouse floor slab is 22' above the depressed slab. There is an 11'-6" clear height between the penthouse floor and the bottom of the penthouse roof trusses. All existing spaces are sprinklered. The double entrance doors from the existing clean room into the proposed ones are being installed (by others) on the adjacent clean room module contract. Laboratory utilities are available in the utility corridor adjacent to each module. A 3' wide space by 16' long space is dedicated in each utility corridor for the return air duct from the depressed floor area at the access floor to the penthouse air handler location. However, a 4" cast iron sewer pipe runs vertically through the dedicated return air duct area for each module and must be either relocated, worked around or other arrangements made. In the utility corridor, the design for zones 9 & 10 will maintain a 4' wide space between the new clean room module and the existing utility corridor so that user equipment can be located in the utility corridor against the clean room wall. Provide floor grating at this 3' X 4' part of the depressed floor area to match the floor gratings at the other user equipment areas in the utility corridor. Enclose riser to return air duct with new walls. Air handler supply and return duct openings are in place in the penthouse floor slab however they are sealed with 8" removable concrete caps, which must be removed and disposed of. All mechanical equipment must be located in the mechanical penthouse. Drawings are available on the adjacent work; however, as-builts have not yet been prepared, so all information from the drawings must be field checked. The adjacent work is being performed on:

Building 250 - construction contract N62477-98-C-0042

Outfitting clean rooms 7&8 - design contract N00173-03-D-2400

END OF SECTION

SECTION A20 PROJECT REQUIREMENTS

PART 1 GENERAL

1.1 EXISTING WORK

- a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.
- b. Repair or replace portions of existing work which have been altered during installation operations to match existing or adjoining work, as approved by the Technical Manager. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

1.2 ACTIVITY REGULATIONS

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic and security regulations. Keep within the limits of the work and avenues of ingress and egress. Wear hard hats in the work areas. The Contractor's equipment must be conspicuously marked for identification.

1.3. OCCUPIED AND EXISTING BUILDINGS

The Contractor shall be working around existing buildings which are occupied. Do not enter the buildings without prior approval of the Technical Manager. The contractor will not be allowed in any part of Building 250 other than the immediate work area. He shall install plastic (or better) barricades to keep dust from getting into other parts of the building. Restroom facilities are available in Building A69 immediately to the north of the site. Internal combustion engines will not be allowed inside the building.

1.4 UTILITY CUTOVERS AND INTERRUPTIONS

Interruption to water, service, electric service, air conditioning, heating, fire alarm, nitrogen, and compressed air services that serve existing occupied spaces must be on weekends and government holidays only unless allowed otherwise in writing by the Technical Manager. Advance notice of 14 days in writing is required before the utility outage.

1.5 SECURITY

The Contractor shall be working in highly secured areas. Contractor's personnel will be required to obtain passes daily from NRL Building 72, "Visitor's Center", before entering the site. Personnel scheduled to work on the project for a significant duration may apply for longer term, temporary personnel passes at the discretion of the Technical Manager. A limited number of longer term temporary personnel passes will be provided to the Contractor's personnel, or subcontractor's personnel, who will be working on the project for an extended period of time, to avoid the necessity of obtaining daily passes. Passes must be conspicuously worn at all times.

1.6 CRANE OPERATION

Crane operation must meet the requirements of NAVFAC P-307, Management of Weight Handling Equipment. The top of the crane must have a red and white checkered flag during the day and a red blinking warning light at night.

1.7 COMMISSIONING PLAN

Commissioning plan must be complete and approved before submission of invoice for placement of air handler.

1.8 TEMPORARY BUILDINGS

There is no interior lay-down area available other than the work area. An area adjacent to the east end of Building 250 is available for laydown and trailers. Temporary facilities (including trailers) must be in like new condition. Storage of material/debris under such facilities is prohibited. Contractor shall be responsible for the security of the stored property. The contractor shall not block fire exits from the building. The contractor should install temporary air-tight barriers to prevent installation dust from getting to other parts of the building.

1.9 PREDESIGN CONFERENCE

After award of the contract but prior to commencement of any work at the site, the contractor shall meet with the Technical Manager to discuss and develop a mutual understanding relative to the preparation, shop drawings, and other submittals, scheduling programming, and prosecution of the work. Major subcontractors who will engage in the work must also attend.

1.10 COORDINATION WITH OTHER WORK

Building 250 is being installed on Contract N72477-98-C-0042, NanoScience Research Laboratory. Final acceptance is currently projected for 13 August 2003. That project includes a 5000 SF clean room bay, 3000 SF of which will be outfitted on the 98-C-0042 contract. That project included a detailed design for two clean room modules necessary to outfit the next 1,000 SF of the clean room bay (referred to as modules 7 & 8). A separate requirement for zones 7 & 8 is proceeding separately based on the 98-C-0042 design. The requirement described herein is for design, fabrication and installation of the last 1,000 SF of clean room modules needed to complete the outfitting of the clean room bay (hereafter referred to as modules or zones 9 & 10). The sequence of operations is that neither module requirement contractor will be allowed into the building until after final acceptance on the 98-C-0042 contract. The module 7 and 8 contractor will then need to complete installation of the walls and doors of modules 7 & 8 before the vendor on this requirement for modules 9 & 10 can go into the clean room bay to install the last modules. Installation work in the clean room bays for modules 9 & 10 therefore must not be scheduled to start until the walls and door of modules 7 & 8 have been completed. This is not projected to happen before 1 October 2003. Penthouse work and utility corridor work can start any time after the final acceptance of the 98-C-0042 contract.

1.11 TRAINING

The contractor will provide to the government two orientation training sessions detailing the operation and maintenance of the clean room and its support systems. Each training session must last two (2) hours and will be attended by six (6) NRL employees. One session must explain the operation of the clean room to the end users of the spaces. The other session must explain the operation and maintenance of the support system to operation and maintenance personnel. Training sessions will be scheduled at least seven (7) days after the delivery of the OMSI manuals but before the final acceptance of the clean rooms by the government. The contractor may assume that the attendees will already have experience with clean rooms and their support systems. Training must cover but not be limited to the following:

- Maintenance and operation of Air Handling Units
- Care and maintenance of HEPA filters

Proper use of equipment
Safety and operation procedures
END OF SECTION

SECTION B10 DESIGN SUBMITTAL REQUIREMENTS

DESIGN REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

This section includes after-award requirements for developing and submitting the design portion of the Request For Proposal (RFP) and other instructions for use in the installation of the project designated within the RFP.

1.2 DESIGN REVIEW MEETINGS

The Government will review all submittals. See Project Scheduling for review time. After Government review of each design submittal has been completed, meet with the Technical Manager at NRL for a one-day conference to discuss review comments and the Design/Build team's responses for the specific design submittal. The responses to review comments must be submitted to the Navy in writing one week after receipt of review comments by contractor.

1.3 DESIGN DRAWINGS

Prepare, organize, and present design drawings in the manner considered standard industry practice by the AIA as described in AIA AHPP, except as modified herein. Provide design drawings complete, accurate and explicit enough to show compliance with requirements. Submit PDF files (minimum resolution 300) of all drawings submitted.

1.3.1 DRAWINGS FORMAT

Provide computer aided design (CAD) design drawings on compact disk (CD-ROM) media in an AutoCAD Release 14 "DWG" file format. Prepare 24" X 36", "D" size drawings. Title block layouts for the design drawings will be furnished at the predesign conference. Each design drawing must bear the seal and signature of the registered architect or professional engineer who prepared the design for the specific technical field.

1.3.2 MINIMUM DRAWINGS REQUIRED

1.3.2.1 Architectural - Clean room floor plan and reflected ceiling plan, cross-section, wall sections and wall details.

1.3.2.2 Mechanical - Penthouse and Clean room floor plans showing all piping, longitudinal section that cuts across the penthouse air handling unit and the utility corridors. Show air flow diagram and sequence of operations, mechanical equipment, sound attenuator, and control schedules.

1.3.2.3 Electrical - Floor plans of the penthouse and the first floor that includes one that shows specific locations all home runs to the electrical room. Provide one line diagram for each device. Provide Panel schedule with all circuits labeled. Show transformer/power conditioner vibration isolation detail

1.4 SPECIFICATIONS

Specifications for Project must be prepared using English units and dimensions. The specifications must use the Specs-In-Tact format with SGML (Standardized Generalized Mark-Up Language) and the Navy Guide Specifications.

1.4.1 PRESCRIPTIVE TECHNICAL SPECIFICATIONS

Prescriptive technical specifications contain specific requirements which describe materials, products, systems, sizes, ratios, fabrication, quality of workmanship, method of installation, and other data.

Fabrication and installation submittals identified in these specifications may also be submitted along with the design at the Contractor's option. Include project specification that define the qualitative requirements for products, materials, systems, and workmanship upon which the contract is based. Develop the project specification in accordance with fundamentals and formats described in the latest edition of the Construction Specifications Institute (CSI) Manual of Practice. Specification sections must be numbered to suit the CSI MasterFormat. Specifications must identify the salient features and characteristics of products chosen and contain sufficient information to verify compliance. Submission of product data only to prove compliance, without accompanying specifications, is not acceptable. Include submittal registers in each submission.

1.5 DESIGN ANALYSES & CALCULATIONS

Contractor prepared documents, which contain a written basis of design describing how and why the design was selected and backup calculations for the intended performance. Prepare design analyses consisting of a basis of design and calculations for each design discipline. The design analyses must be a presentation of facts to demonstrate the concept of the project is fully understood and the design is based on sound engineering principles. An acoustical analysis is required with each submission.

1.6 DESIGN SUBMITTALS REQUIRED

a. In progress Design (50%). (8 copies) Incorporate changes from the predesign and include design analyses and drawings for all disciplines.

b. 100% Design. (6 copies) Include updated design analyses, drawings, specifications and manufacturer's data sheets. All documents should be complete at this submittal.

c. Final Design. (3 copies) Incorporate comments on 100% design and submit original design documents. Submit one copy PDF files (minimum resolution 300) and 1 CD-ROM disk with the final drawings on it.

1.7 GOVERNMENT REVIEW TIME FOR THE DESIGN

The project schedule must include Government review time for the Design as follows: Progress Design review 21 days; 100% Design review 21 days; Final Design review 14 days. All review comments must be responded to within 7 calendar days.

1.8 RESTRAINTS

Fabrication cannot be started until a written authorization to commence is received from the Technical Manager. This approval is contingent upon approval of the fabrication and installation submittals.

1.9 OTHER DESIGN CRITERIA

1.9.1 All other clean rooms in Building 250 will be in various stages of operation. The design will reflect that no work will be routed through clean room zones other than 9 & 10. All new work not in zones 9 & 10 will be installed in hallways, utility corridors, the electrical room and the mechanical room.

1.9.2 All labs in Building 250 are designed to provide the low vibration, low noise, and low EMI environment required to allow studies

in nanoscience (at the atomic and molecular levels). This design must preserve the existing environment by incorporating precautions at least as effective as measures employed in the rest of the building including:

- a) NOTHING will be attached to the masonry walls on the side of the utility corridors opposite the clean rooms.
- b) Labs on the opposite side of the clean rooms are to achieve an EMI level of less than .3mG peak to peak for 60 Hz. To achieve this:
 - All conduit run in the utility corridor will be held as tight as practical to the clean room side of the corridor
 - All power and power feeds will be run in GRC with wire mechanically twisted or run as galvanized steel jacketed MC type cable.
 - Power conditioners will be hung from the ceiling on the clean room side of the utility corridor only.
 - GROUND FAULT TESTING - The design and installation of Building 250's electrical system includes all measures to minimize the potential for net-current conditions including balancing of loads, use of full size neutrals, avoidance of ground loops, etc. To that end include performance tests that demonstrate that the contractor has not introduced any net-current conditions because of his installation methods. The minimum criteria for this test is that as each electrical device and circuit is energized or switched on/off, there will not be a .08 mG jump in 60 Hz EMI peak to peak measured at the nearest quiet lab wall (on the other side of the utility corridor) when monitored with a gaussmeter with a resolution of at most .04 mG. For VFD's, motors and other devices that normally cause a spike in 60 Hz radiated, the .08 mG limit is above that which is supposed to be radiated from a properly wired, grounded, and operating device. Rewire and correct all cases of circuits out of tolerance with the above at no cost to the government.
 - Design new equipment to not generate any 60Hz EMI level greater than the equipment in the rest of the building.
- c) Vibration criteria in existing labs is as important as EMI criteria. The design must incorporate, as a minimum, the following measures to preserve the low vibration aspects of the existing labs:
 - AHU internal isolation isolators and housekeeping pads are required with a 1.5" minimum deflection for AHU fans.
 - Vibration isolators are required on all hung equipment like VAV boxes and power conditioners.
 - Flexible pipe and duct connections are required to all the above vibration isolated equipment
 - Conduit running down the utility corridor will be as isolated as the rest of the conduit in the area
 - Duct penetrations through building construction will have resilient sleeves/seals
 - Ducts off of vibration isolated equipment will be isolated from the building structure by type FN, PFC, or HN isolators that achieve a .1" minimum static deflection.

END OF SECTION

SECTION B30 INSTALLATION SUBMITTALS

1. GENERAL

1.1 DEFINITIONS

1.1.1 Submittal

Shop drawings, product data, samples, and administrative submittals presented for review and approval.

1.1.2 Types of Submittals

a. Shop drawings: As used in this section, drawings, schedules, diagrams, and other data prepared specifically for this contract, by contractor or through contractor by way of subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate portion of work. Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work. Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the contractor for integrating the product or system into the project. Drawings prepared by or for the contractor to show how multiple systems and interdisciplinary work will be coordinated.

b. Product data: Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate portion of work, but not prepared exclusively for this contract. Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work. Clearly mark on each catalogue cut - which specific item is being presented for approval.

c. Samples: Physical examples of products, materials, equipment, assemblies, or workmanship that are physically identical to portion of work, illustrating portion of work or establishing standards for evaluating appearance of finished work or both.

d. Administrative submittals: Data presented for reviews and approval to ensure that administrative requirements of project are adequately met but not to ensure directly that work is in accordance with design concept and in compliance with contract documents.

e. Test Reports Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.) Report which includes findings of a test required to be performed by the contractor on an actual portion of the work or prototype prepared for the project before shipment to job site. Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation. Final acceptance test and operational test procedure.

f. Certificates: Statements signed by responsible officials of

manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project. Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications. Confined space entry permits.

g. Manufacturer's Instructions Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

1.2 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data/Manuals which are specifically applicable to this contract and a complete and concise depiction of the provided equipment or product. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include:

1.2.1 Operating Instructions Include specific instructions, procedures, and illustrations for the following phases of operation:

1.2.1.1 Operator Prestart

Include procedures required to set up and prepare each system for use.

1.2.1.2 Startup, Shutdown, and Postshutdown Procedures

Provide narrative description for each operating procedure including control sequence for each.

1.2.1.3 Normal Operations

Provide narrative description of normal operating procedures. Include control diagrams with data to explain operation and control of systems and specific equipment.

1.2.1.4 Emergency Operations

Include emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.

1.2.1.5 Operator Service Requirements

Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and gage reading recording.

1.2.1.6 Environmental Conditions

Include a list of environmental conditions (temperature, humidity, and other relevant data) which are best suited for each product or piece of equipment and describe conditions under which equipment should not be allowed to run.

1.2.2 Preventive Maintenance

Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair.

1.2.2.1 Lubrication Data

A table showing recommended lubricants for specific temperature ranges and applications; Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities; and a lubrication schedule showing service interval frequency.

1.2.2.2 Preventive Maintenance Plan and Schedule

Include manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance and repair. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

1.2.3 Corrective Maintenance (Repair)

Include manufacturer's recommendations on procedures and instructions for correcting problems and making repairs.

1.2.3.1 Troubleshooting Guides and Diagnostic Techniques

Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.2.3.2 Wiring Diagrams and Control Diagrams

Wiring diagrams and control diagrams must be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation numbering.

1.2.3.3 Maintenance and Repair Procedures

Include instructions and list tools required to restore product or equipment to proper condition or operating standards.

1.2.3.4 Removal and Replacement Instructions

Include step-by-step procedures and list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions must include a combination of text and illustrations.

1.2.3.5 Spare Parts and Supply Lists

Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead time to obtain.

1.2.3.6 Corrective Maintenance Work-Hours

Include manufacturer's projection of corrective maintenance work-hours including craft requirements by type of craft. Corrective maintenance that requires participation of the equipment manufacturer must be identified and tabulated separately.

1.2.4 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.2.4.1 Parts Identification

Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing must show the index, reference, or key number which will cross-reference the illustrated part to the listed part. Parts shown in the listings must be grouped by components, assemblies, and subassemblies. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as a master parts catalog, in accordance with the manufacturer's standard commercial practice.

1.2.4.2 Warranty Information

List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force. Include warranty information for primary components such as the compressor of air conditioning system.

1.2.4.3 Personnel Training Requirements

Provide information available from the manufacturers to use in training designated personnel to operate and maintain the equipment and systems properly.

1.2.4.4 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

1.2.4.5 Contractor Information

Provide a list that includes the name, address, and telephone number of the Contractor and each subcontractor installing the product or equipment. Include local representatives and service organizations most convenient to the project site. Provide the name, address, and telephone number of the product or equipment manufacturers.

1.3 OMSI MANUAL FOR DESIGN BUILD

1.3.1 Section Includes

This section includes requirements for developing an Operation and Maintenance Support Information (OMSI) Manual for the equipment being installed. The purpose of the OMSI Manual is to provide operating and maintenance personnel factual, concise and comprehensive as-built information that describes the efficient, economical and safe operation, maintenance, and repair of the facility. It includes all information submitted in the Operation and maintenance data submission.

The OMSI Manual must contain detailed as-built information that describes the efficient, economical and safe operation, maintenance, and repair of the facility. The OMSI Manual must be factual, concise, comprehensive and written to be easily used by operating and maintenance personnel. Descriptive material and theory must include technical details that are essential for a comprehensive understanding of the operation, maintenance and repair of the actual products, equipment and systems built into the facility. Ensure that changes to products,

equipment and systems made during fabrication and installation are reflected in the Manual. Provide manual on 8 ½" X 11" pages in a durable binder. Include copies of all warranty information. Include a table that lists the quantity, type, size, and location of each HVAC filter. Include information on each type of lighting fixture bulb and ballast being provided.

1.4 Closeout submittals

1.4.1 As-built drawings - During fabrication and installation, the Contractor shall utilize one layer in Auto CAD drawings files to record as-built conditions. Upon completion of the work, deliver Auto CAD files and one set of the reproducible Mylar's to the Technical Manager. CAD format is PDF files with a minimum resolution 300. All the above must become the property of the Government upon final approval.

1.4.2 Equipment/product warranty tags/certificates

1.4.3 Record of test results - The contractor is responsible to perform any tests required to comply with the lab specifications called for in the RFP including but not limited to: Class 100 measurements, Acoustic measurements, and EMI measurements.

1.5 MECHANICAL TESTING AND BALANCING

All contract requirements of sections relating to "Space Temperature Control Systems," and "Direct Digital Control Systems," must be fully completed, including all testing, prior to contract completion date. In addition, all contract requirements of sections relating to "HVAC Testing/Adjusting/Balancing," must be fully completed, including testing and inspection, prior to contract completion date, except as noted otherwise. The time required to complete all work and testing as prescribed by these sections is included in the allotted calendar days for completion.

1.6 SUBMITTALS

1.6.1 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Contract number.
- c. Section number of the specification section by which submittal is required.

1.6.2 Procedures for Submittals

Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 20 working days for submittals for Technical Manager approval. Period of review for each resubmittal is the same as for initial submittal.

1.6.3 Actions Possible

Submittals will be returned with one of the following notations:

- a. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by contractor or for being

incomplete, with appropriate action, coordination, or change.

b. Submittals marked "approved" "approved as submitted" authorize contractor to proceed with work covered.

c. Submittals marked "approved as noted" or "approved except as noted; resubmission not required" authorize contractor to proceed with work as noted provided contractor takes no exception to the notations.

d. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and must be resubmitted with appropriate changes. No work must proceed for this item until resubmittal is approved.

1.6.4 QUANTITY OF SUBMITTALS

1.6.4.1 Number of copies of product data - 6

1.6.4.2 Number of copies of shop drawings - 4

1.6.4.3 Number of samples - 2

1.6.4.4 Number of copies of administrative submittal - 2

1.6.4.5 Number of copies of test reports - 4

1.6.4.6 Number of copies of operation and maintenance data - 5

1.6.4.7 Number of copies of OMSI manuals - 4

1.6.5 SUBMITTALS

As a minimum, submit the following for approval:

1.6.5.1 - Shop drawings:

Clean room walls

Clean room ceilings

Air Handler

Humidifier

VAV box

EMCS system

Control sequence

1.6.5.2 - Certifications/test results

TVSS

Power conditioners

Fire ratings of doors

Acoustic ratings of walls

1.6.5.3 Product data/catalogue cuts:

Clean room ceiling components

Clean room walls

Clean room doors

Sound Attenuating Devices.

Vibration isolators

Lights

HEPA filters

Urethane gel

TVSS

Panelboards

Power conditioners

Fan performance curves

Harmonic trap filters & reactors, & confirmation of compatibility with motors being served

VFD's

DDC components

Control sequence

Humidifiers

1.6.5.4 Other required submittals:

Commissioning plan including performance tests and electrical test procedures

VFD test results

Clean room certification

1.7 COMPLETION INSPECTIONS

Final Acceptance Inspection The superintendent or other primary contractor management personnel, and the Technical Manager's representative will be in attendance at this inspection. Additional Government personnel may be in attendance. The final acceptance inspection will be formally scheduled by the Technical Manager. Notice must be given to the Technical Manager at least 14 days prior to the final inspection stating that all specific items previously identified to the Contractor as being unacceptable, along with all the remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. The contractor is responsible for having all laboratory/clean room performance tests completed by an independent testing company prior to notification of the final inspection. The contractor is responsible for all tests required to comply with the lab specifications called for in the RFP including but not limited to: Class 100 measurements, Acoustic measurements, and EMI (ground fault) measurements.

END OF SECTION

SECTION C10 INTERIOR WORK

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

1.1.1 The key to a successful clean room fabrication and installation project is to maintain a clean environment throughout all phases of installation. The nature of the project requires special attention to minimizing potential contamination of the fully developed clean room environment. Daily cleanup and vacuuming of the work area are essential to the ongoing control of contaminants, starting with the first day that work starts in the clean room area. Work area in the penthouse will be wiped down for dust once a week when work is being performed. Vacuum and mop down the entire penthouse when work is complete.

1.2.4 Products containing the follow compounds must be prohibited from use in this project if traces (3PPB of air borne contaminates) will appear (i.e. off gassing):

R1-1 Acids

- Hydrofluoric
- Sulfuric
- Hydrochloric
- Nitric
- Phosphoric
- Hydrobromic

R1-2 Bases

- Ammonia (ammonium hydroxide)
- Tetramethylammonium hydroxide
- Trimethylamine
- Triethylamine
- Trimethylsilazane
- NMP
- Cyclohexylamine
- Diethylaminoethanol
- Methylamine
- Dimethylamine
- Ethanolamine
- Morpholine

R1-3 Condensables

- Silicone(boiling point >150°C)
- Hydrocarbon(boiling point >150°C)

R1-4 Dopants

- Boron (usually as boric acid)
- Phosphorous (usually as organophosphates)
- Arsenic

2. SYSTEM COMPONENTS

2.1 General finishes

2.1.1 Colors and finishes must match that in the existing clean rooms in Building 250

2.2 Signage

2.2.1 Provide signage similar to that in the rest of the building.

2.2.1.1 Sign at double door to zone 9 must read "Room 105" with two changeable message strips below it, one of which says "Electron Beam Lithography", the other is left blank. Sign at single exit door to read "Emergency Exit Only" Provide a sign on the inactive leaf with a reversible message strip, one side of which says "Work in progress - do

not enter", the other side of which is blank. Install a deadbolt on the door opposite this sign.

2.2.1.2 Sign at double door to zone 10 must read "Room 106" with two changeable message strips below it, one of which says "Focused Ion Beam "lab", the other is left blank. Sign at single exit door to read "Emergency Exit Only" Provide a sign on the inactive leaf with a reversible message strip, one side of which says "Work in progress - do not enter", the other side of which is blank. Install a deadbolt on the door opposite this sign.

2.3 Raised (floating) floor system must be provided by a single source provider and must include floor panels, support system, conduit or raceway for cables, and accessories suitable for a Class 100 Clean Room and designed to isolate vibrations from the building structure. The floating floor system must be provided with a combination of solid and tunable (with dampers) perforated panels (600 by 600 mm) designed to achieve the air volume and pressure differential required for a Class 100 Clean Room. Floor panel system must be capable of withstanding concentrated loads of 3,000 lbs., uniform static loads of 350 lbs. per sq. ft., and rolling loads of 455 kg (1000 lbs). Floor panels for floating floor must be covered with static dissipative and conductive vinyl tile to match vinyl sheet flooring. Floating floor system must be supported on manufacturer's standard bolted stringer system bonded to the building ground from the adjacent clean room bay with an existing #3/0 insulated copper conductor with 4' of slack in it (one per zone).
END OF SECTION

SECTION D10 CLASS 100 CLEAN ROOM

PART 1 GENERAL

1.1 DESCRIPTION

All labor, materials, equipment and services necessary to fabricate, furnish and erect the demountable metal framing system for clean room vertical wall panels. System must be a seamless type with panel joints sealed by gaskets and not sealants. Work must include but is not necessarily limited to the following:

A. Universal reusable steel framing system, including all items such as clips, anchors, screws, attachments, supports, etc., incorporating steel factory-finished panels.

B. Provide all reinforcing blocking and gasketing necessary to maintain the structural and acoustical requirements of the partition for all items included.

C. All finish materials, including adhesives necessary to install the finishes, must be non off-gassing.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM) - ASTM E72.

B. U.S. Federal Standard 209, Class 100 Air Cleanliness Limits.

C. American National Standards Institute, Inc. - ANSI/BHMA A156.1-1988

1.3. TESTS

Provide necessary test results for sound ratings, structural requirements, fire ratings, and as outlined in the following:

1. Sound Ratings for Steel-Faced Partition-Honeycomb Core.

Sound transmission loss ratings of 40 for all walls. Perform tests in accordance with ASTM E-90 test procedures.

2. Structural requirements for Steel-Faced Partition-Honeycomb Core:

a. Fracture test: No visual damage when subjected to a 1½" diameter 8-ounce steel ball dropped from a height of 18" onto a horizontal panel three times.

b. Impact test: Perform impact load tests on an assembled partition in accordance with ASTM E 72. Perform tests on three duplicate specimens. Point of impact must be on panel midway between studs. From a drop of 3'- 0", instantaneous deflection of upper face not to exceed 15/16". Set not to exceed 3/32".

c. Uniform load test: Calculate or test partitions to prove they will resist 35 lbs. per square foot in bending and that deflection will not

exceed L/360 with a 10 lbs. per square foot load, with not more than .006" permanent set. Test procedure to be ASTM E-72.

d. Moment load test: Using full-height partition sample, attach to face of a single panel two adjustable shelf standards. Shelf standard attachments will not protrude into opposite face of partition, and be fastened to panel unit verticals. Test panel will not be reinforced. At vertical mid-point of panel, attach three 10" shelves 12" apart. Load shelves to a total weight of 1000# per panel plate on one side only. Panels must not open visibly at joints and deflection of panels in any direction must be less than .032" while loaded.

3. Fire rating requirements for steel-faced partition: Provide independent laboratory certification that wall system has been tested for fire endurance and hose-stream in accordance with ASTM E119 and certify results.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Provide all demountable partitions specified in this section from the same manufacturer.

B. Demountable partitions must be one-half inch (1/2") minimum, forty-eight inch wide (48") maximum thickness. Demountable partitions must be metal honeycomb core, metal backed.

C. Demountable partition type is specified to establish standard of quality.

2.2 CONSTRUCTION AND MATERIALS FOR WALL SYSTEMS

A. Partition components must assemble into a rigid structure with tight straight-line joints. Completed installation must be free of exposed bolts, nuts and rivets. All units must be readily removable from either side without disturbing adjacent units. Three-way and four-way intersections must be made at any point without regard to module.

B. It must be possible for solid steel partition runs to intersect each other at two-, three- and four- way conditions with clean full panel connections that must not require the use of wall channels or any other external trim extending beyond the face of the partition. All door frames must be locked into the system by means of standard floor-to-floor deck above vertical framing members occurring in both jambs.

C. Partition studs for metal panels. Extend studs from floor to floor above and adjust to variation in height by means of an 8" long, 20-gauge upper stud extension. Form studs of two 24-gauge steel members clinched together and punched 6" on center to accommodate the passage of utility lines. Form each stud to provide a positive continuous mechanical interlock with the panel units. Studs at door jambs and head must be two 18-gauge steel.

D. Partitions extended from sub-floor of access floor to concrete slab of floor of deck above the ceiling. Studs must provide continuous mechanical interlock for metal panels and provide continuous gasket in the mechanical interlock. Provide accessible walls below finished ceiling without disturbing panels above or below.

E. Accessible Steel Panels Units: Steel panels must be ½" thick minimum by 48" wide maximum and available in the following constructions for initial and future application. Steel panels must consist of a 24-gauge metal face laminated to metal honeycomb core, metal-backed.

Provide standard panels, which assemble into a partition with tight single-line joints. If required, fill outside face of all joints with manufacturer's approved clear silicone sealant. Panels secured to the framing system by battens are acceptable but must be free of exposed bolts, nuts and rivets. Horizontal cut-down of panels to accommodate lower elevations must be possible. Panels must be 48" wide maximum, with an allowable width tolerance of ±.005". Thickness ½" nom. with an allowable thickness tolerance of +.018", -.018". Length as required, with an allowable length tolerance of ±1/16". All panels of the same type must be interchangeable in the field without damage to adjoining panel units.

PART 3 EXECUTION

3.1 INSTALLATION

A. All installation methods must be in accordance with the latest recommendations of the manufacturer and in conformance with this specification and approved shop drawings as stated in Section B20, 1.1.2(a). Floor track must be accurately aligned at floor in accordance with plans, and securely anchored. Position studs vertically, spaced as required. Locate studs adjacent to door frames, partition intersections and corners. Lock wall panels securely to studs, flush with adjacent panels.

B. Install door, hardware and seals, and adjust for proper operation.

C. Should the successful offeror be awarded both modules, where the two modules about each other can be one common wall - a separate module wall for each module is not required at the common wall.

END OF SECTION

SECTION D20 PLUMBING SYSTEMS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The contractor shall design, construct, test, adjust, and balance the plumbing systems in accordance with the criteria and applicable codes and standards. Capacities were designed into each Building utility system to accommodate extension into zones 9 and 10.

B. The plumbing system design must address the concerns of noise and vibration requirements described elsewhere in the RFP.

1.3 SPECIAL REQUIREMENTS - UTILITY SPINE

A. Locate all plumbing and utility piping in the Utility Spines immediately adjacent to the proposed clean rooms.

B. For compressed air and nitrogen gas, extend each from the main in the utility corridor into each clean room module and terminate with a valve and pressure regulator with filter.

PART 2 - SYSTEM COMPONENTS

2.1 High Purity Nitrogen Gas

Provide high purity nitrogen piping and valves per NFPA 99, medical grade, nitrogen purged, tested and certified. Soldering is not allowed. Filter to less than 25 microns with shut-off valve in each lab zone. Provide pressure reducing regulator capable of reducing the 110 PSI main pressure to any pressure down to 30 PSI or less. Provide medical grade copper tubing: ½" ASTM B 88, Type L for aboveground piping with Swagelok type compression fittings. Clean piping in compliance with CGA G-4.1 and ASTM G-93.

2.2 High Purity Compressed Air

Provide copper tubing: ½" ASTM B 88, Type L for aboveground piping, clean for oxygen service. Silver solder brazed joints. Filter to less than 25 microns with shut-off valve in each lab module. Provide pressure reducing regulator capable of reducing the 110 PSI main pressure to any pressure down to 30 PSI or less.

--END OF SECTION---

SECTION D30 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) SYSTEMS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The contractor shall design, install, test, adjust, balance, and commission the heating, ventilation, and air-conditioning (HVAC) systems for the spaces mentioned in this document.

B. It is critical that the HVAC systems design complies with the specified noise criteria, close tolerances for the inside space temperature and relative humidity, permissible time governed swings in the inside temperatures and humidity specified in the RFP. To meet this objective, the contractor shall ensure that his/her design team includes professionals with extensive experience in designing similar complex systems for Clean Rooms. Ensure compliance of the DDC control systems including but not limited associated air balance for each zone, pressure differential control between various spaces, and operations of the variable air volume systems.

C. Certification Requirements: The contractor shall obtain the services of a qualified testing organization to perform testing and balancing work for all HVAC systems specified herein. The testing organization must be independent of the installing contractors and equipment suppliers for this project. The testing agency responsible for certifying the Class 100 Clean rooms must be AABC/ NEEB certified and must meet the qualifications outlined in IEST-RP-CC019 (Qualifications for Agencies and Personnel Engaged in the Testing and Certification of Clean Rooms and Clean Air Devices). After the completion of testing, the contractor shall issue a certificate to the Technical Manager stating unequivocally that the entire installation has met the intent of the design and the applicable documents.

D. Commissioning of the HVAC systems must be an integral part of the project starting from design development to installation to TAB and ending into the training and receipt of the owning and operating manuals.

1.2 SPECIAL REQUIREMENTS (CLEAN ROOMS)

A. Each Clean Room (Typical for two and each referred to as a zone hereafter) must be designed in Class 100 (Federal Standard FS209E), vertical, unidirectional configuration with following specific requirements:

(a) The minimum, supply air volume not less than 305 L/s per Square Meter - SM (60 CFM per Square foot - SF).

(b) The ceiling coverage with HEPA filters (99.99% efficiency) must be 100% complete.

B. The HVAC design must employ the system configuration shown in Figure 2 in Chapter 15 (Page 15.4) of 1999 ASHRAE Application Handbook. Provide a dedicated secondary supply, cooling and filtration air unit for each zone. The capacity of each unit must be 30,000 CFM. Basis of Design: YORK AP660. Provide a variable frequency drive to enable the user to reduce the supply air volume, for any zone, to any lower speed and to compensate for varying filter bank resistance. Two

existing variable air volume make-up air-handling units (one 100% standby) provide cooling & heating for outside air for all zones. The dehumidified (or heated) make-up is delivered to within 10 feet of each of Zones 9 and 10. Provide two DDC controlled, pressure independent air terminal units, each equipped with a hot water reheat coil. The primary, dehumidified (or heated) make-up air must blend with the return air entering the dedicated, zone circulation unit. Provide mixing box to ensure that there is uniform mixing of the two air streams. Provide dedicated space temperature control for each zone in flexible conduits whose positions can be changed to be at 5 feet above the floor. Provide volumetric controls as described in Part 2.

C. The room air from each Clean Room must be drawn at the floor level and must be compatible with the arrangement for the existing zones. Draw return air through the raised floor tiles and through the additional floor grilles, as required. Provide under-floor water sensors for each zone to give an alarm signal at the DDC controls in the event of any leak detection.

D. Provide the following to meet the space relative humidity in winter season as follows:

1. The first stage of humidification must be derived from the existing, central, steam humidifiers, installed in the existing make-up air units. The make-up air must be able to raise the space humidity to 30% RH. The make-up air must be introduced into the respective zone air-handling unit by means of the two air terminal units described in Paragraph B, above. The capacity of each air terminal unit must be 500 CFM.

2. Provide two terminal humidifiers, one for each zone, to raise the space humidity from 30% to 45%. Label terminal humidifiers H9 and H10
E. The room air pressure gradient of the existing (Zones 1 through 8) and new (Zones 9 and 10) Clean Room zones must be such that zones 9 and 10 must be at highest pressure followed by zones 7 and 8, which, in turn, must be maintained at higher pressure compared to zones 1 through 6. Provide necessary controls (modulating relief air dampers, and pressure-differential switches) and instrumentation to demonstrate compliance.

1.3 ADDITIONAL REQUIREMENTS

A. Energy efficiency of the HVAC systems and components must comply with the requirements outlined in the ASHRAE Standard 90.1. Specifically, provide high-efficiency motors, variable frequency drives, and equipment performance per ASHRAE Standard 90.1.

B. Provide insulated, double-wall (solid) casings and insulated, double sloping, stainless steel drain pans for all air-handling units serving Class 100 Clean Rooms.

C. Do not use the acoustic sound lining in the supply air ducts. Means other than sound lining must be included in the HVAC design to meet the specified noise levels.

D. DDC control system must be compatible with, and connected to, the existing SIEMENS DDC control system.

E. Points of connection to existing piping and ductwork: Chilled water supply and return, cooling coil condensate drain, hot water supply and return, low-pressure steam & gravity-return condensate for each humidifier, and fresh air make-up duct are all terminated 10'

horizontally from the air handler location. Capacities are built into these systems to handle the new modules. The steam, chilled water, and hot water piping have tees and isolation valves for the taps for Zones 9 and 10.

1.4 APPLICABLE REFERENCES

Federal Standard FS 209E dated September 11, 1992 for Airborne Particulate Cleanliness Classes in Clean Rooms and Clean Zones.

2. SYSTEM COMPONENTS

2.1 AIR-HANDLING SYSTEMS

A. All air-handling units must be AMCA/ARI certified.

B. All air-handling units must be equipped with 30% pre-filters and 85 to 90% after filters. The air must be distributed into Zones 9 and 10 by means of a perforated ceiling, which must be covered fully with 99.99% HEPA filters.

C. Provide an access section between pre-filter section and pre-heat coil section, and between pre-heat coil section and cooling coil section of 400mm (15.75-inch) minimum width. Provide hinged full size access doors to allow maintenance to unit components. Provide same materials and finishes as housing. Provide glass view port in access doors. Provide lighting in each access section and fan sections.

D. The cooling coil face velocity must not exceed 2.54 m/s (8.33 ft/sec) and the number of aluminum fins must not exceed 132 fins per 305 mm (1-foot).

E. Humidifiers: Provide stainless steel manifold assembly with dispersion tubes. Maximum absorption length to be 1 meter (3.3 ft) Humidifiers must be located within all air-handling units and in supply ductwork of make-up air units serving clean rooms (see 1.2 E). Provide sloping, stainless steel ductwork for at least 2 meters (6.56 ft) on the downstream of the duct-mounted humidifiers. Provide 18-mm (3/4-inch) drain from the bottom face of the ductwork and connect it to the plumbing drain.

F. Select the preheat coil face velocity not in excess of 3.30 m/s (650 feet/minute)

2.2 PIPING

1. Connect AHU to existing nearby closed-loop Chilled and Hot Water with ASTM A53, Schedule 40, seamless or ERW black steel or Type L, hard drawn, copper.

2. Connect humidifiers to existing nearby low-pressure steam with ASTM A106, Schedule 40, seamless or ERW black steel for high and low pressure steam. The steam supply comes from an existing steam generator that uses softened water to produce the steam.

3. Connect humidifiers to existing nearby gravity steam (Low and High Pressure) Return and Pumped Condensate with ASTM A106, Schedule 80, black-steel (seamless).

4. Connect AHU condensate to existing nearby drain piping using Copper or PVC.

5. The minimum pipe size must not be less than 20-mm (0.8 inch).

6. Use dielectric fittings for connection between two dissimilar metals.

7. Provide ball valves up to 50-mm (2.0 inch) size and low-leakage butterfly valves larger than 50-mm (2.0 inch) size for closed-loop hydronic piping.

8. Provide gate valves for all steam and condensate applications.

2.3 IDENTIFICATION

Provide identification for all valves. Identify each valve service by prefix letters. Provide identification marker for piping (by service) and major equipment. Mark pipes at all take-offs and intervals not exceeding 10 meters (33.0 feet).

2.4 AIR TERMINAL UNITS (VAV BOXES)

Provide ARI 880 certified, pressure independent boxes that carry ARI seal. Provide a direct digital controller compatible with the existing building DDC control system. The casing construction and internal insulation must be selected to minimize the transmitted and radiated sound power noise levels. Provide multi-port center averaging velocity sensors with maximum possible signal accuracy required to meet the close space temperature tolerances from zero to 750 kPa (zero to 3-inches) variation in the static pressure at the inlet to the boxes. Provide hot water reheat coils (ARI 410) constructed from copper coils and aluminum fins.

2.5 DUCTWORK

A. General: Design, fabricate, and install all ductwork, supports, and hangers in accordance with the following criteria and the SMACNA HVAC Duct Construction Standards - Metal and Flexible (DCS). In the event of any specific stringent recommendation by the noise and/or vibration consultants, the more specific and stringent criteria must apply.

B. Materials:

1. Galvanized steel ASTM A 653/A 653M G90 galvanized coating must be used for all supply, return, and make-up air ductwork.

2. All low-pressure ductwork must be sized at a duct velocity not exceeding 7.6 m/s (1,500 fpm) and the maximum static pressure drop of 0.66 Pa/m (.08 in wg/100 feet).

3. All medium pressure duct must be sized at a duct velocity not exceeding 12.7 m/s (2,500 fpm) and the maximum static pressure drop of 1.64 Pa/m (0.2 in wg/100 feet).

C. Duct Pressure Classifications: To meet the intent of the design it is critical that the all ductwork is leak-proof. The complete ductwork, regardless of its pressure classification or the provisions of SMACNA, must be pressure tested to ensure that it is leak-proof. Leaks, if any must be fixed with necessary repair or replacement. Supply ductwork between VAV air handling unit and the VAV box must be positive 1,000 Pa (4 inches). Return air ductwork must be 750 Pa (3 inches) negative.

D. Provide manual volume dampers in the duct branches and takeoffs, wherever required, to balance the systems. Provide supply air diffusers, registers, grilles, linear diffusers etc. as required to ensure uniform air distribution without drafts. Select the outlets and inlets to meet the noise considerations. Provide diffusers with integral volume control

dampers.

E. Provide access doors in duct to gain access to the smoke detectors, automatic dampers, and any other duct-mounted devices where access is required.

F. Sound Attenuators: Provide duct-mounted sound attenuators, as required, and recommended by the acoustic consultants to meet the RFP requirements. Protect the glass fiberfill material with Mylar film to make it suitable for the Clean Room use. The attenuators must be rated in accordance with ASTM E 477. The attenuators may follow the existing design and configuration if the acoustic requirements are met.

G. Acoustical Lining: Provide non-friable, anti-microbial, acoustical lining (ASTM C1071) with Mylar film for return air ducts.

2.6 INSULATION

A. Insulate all supply and return ductwork with mineral fiber blanket insulation complete with vapor barriers and jackets and with minimum insulation thickness in accordance with 10 CFR 435 but not less than 25 mm thickness. Use board material in place of blanket for exposed ductwork in mechanical spaces.

B. Insulate all steam, gravity condensate, pumped condensate, heating hot water and chilled water piping, drain piping, and equipment. The insulation thickness must be in accordance with 10 CFR 435 but not less than 25 mm (1 inch). Provide insulation, vapor barriers, and jackets conforming to the applicable ASTM standards.

2.7 HVAC CONTROLS

A. General:

1. Compatible with existing direct digital control (DDC) system (by Siemens).

2. Provide a complete input/output (I/O) sheet identifying all analog and digital input and output points, detailed sequences of operation for all control systems and subsystems with the capability of changing the set points and reading the actual measured values to make a complete and workable system.

B. Use electric and electronic actuators for the automatic control valves and motorized dampers.

C. HVAC systems must be equipped with control devices (motorized dampers and pressure differential assemblies) to prevent over pressurization in the spaces.

D. Provide hard-wired connections for the duct-mounted smoke detectors.

E. Provide at least one DDC control panel for each air-handling unit and air terminal units.

F. The selection of the temperature and humidity sensors must meet the precision and high accuracy requirements outlined herein.

G. Provide current transducers to monitor the status of the fans.

H. Provide a differential pressure sensor across each filter bank to provide an alarm for the scheduled filter replacement.

I. Provide a volumetric panel for each zone to measure and control the make-up air volume and circulating air volume.

J. Provide all wiring in accordance with the National Electric Code and using all UL listed components. Use EMT or conduit for exposed control wiring.

K. Provide the following minimum capabilities with the capability of adjusting the set points, where applicable, and the ability to read the actual values.

1. Supply, return, and mixed air temperatures at each **zone** air-handling unit.

2. Variable frequency drive status

3. Smoke detector status & alarm

4. Filter actual and set point readings and alarm status

5. Unit-mounted humidifier status and alarm

6. Supply air fan status and alarm

7. Airflow measuring stations reading the air volumes for each air-handling unit

8. Supply air volume of each air terminal unit

9. Relocate the existing pressure differential assembly for the secondary chilled water system to be in the chilled water piping serving Zones 9 and 10

10. Operation of the variable frequency drives for the supply air fans

11. Unoccupied cooling and heating modes

12. Zone temperature and humidity sensors for monitoring and alarm conditions

L. Ensure coordination between the TAB contractor and the control contractor so that the set points of the water pressure differential assembly is based on the actual measurements to be provided by the TAB contractor. Also, ensure that the HVAC systems are tested and balanced on the basis of simulated dirty filter conditions so that the design airflow is maintained even with dirty filters.

2.8 EQUIPMENT LOCATIONS & ACCESS

A. Penthouse: All HVAC systems will be located in the penthouse. Provide isolating devices to maintain the vibration and sound levels. Provide maintenance access to the equipment per manufacturers' recommendations and published data.

3 TESTING

3.1 DUCT TESTING

Test ductwork and all air-handling units for leakage in accordance with the SMACNA DALT. Repair all defective joints and seams. Test ductwork in return air chases before enclosing the chases.

3.2 CONTROLS TESTING

Demonstrate compliance of the heating, ventilating, and air conditioning DDC and other control systems with the RFP documents. Testing must include the field tests and the performance verification tests. Field tests must demonstrate proper calibration of input and output devices, and the operation of specific equipment. Performance verification test must ensure proper execution of the sequence of operation and proper tuning of control loops.

3.3 COMPLETION

Before equipment installation, all building spaces are to be "dried -in" per clean room installation practices.

3.4 HVAC AND OTHER SYSTEMS COMMISSIONING

A. It is intended that all HVAC systems and components be verified to be in conformance with the requirements of this RFP and the design intent before the project is turned over to the Government. The Contractor shall perform commissioning of the HVAC systems in accordance with ASHRAE Guideline 1, "Guideline for Commissioning of HVAC Systems", and 1995 ASHRAE Applications Handbook Chapter 39, "Building Commissioning"; except as modified herein. The Contractor must perform the Pre-Design, Design and Construction Phases (including Acceptance Procedures) as prescribed in ASHRAE Guideline 1 and 1995 ASHRAE Application Handbook Chapter 39 and provide all documentation to the Technical Manager.

B. The commissioning plan must include all field tests required to complete the work including those not on the HVAC system including:

1. Duct detectors and air sampling devices
2. Nitrogen and compressed air pressure test to 200 PSI for 24 hours
3. Class 100 clean room performance tests. Measure at center of room, 5' off of the access floor.
4. Acoustic performance testing of clean rooms. Measure at center of room, 5' off of the access floor.
5. Electrical ground fault testing. See sect B20
6. For electrical equipment and devices - check, test and demonstrate that systems and equipment are in good operating condition and properly performing the intended function. Perform Acceptance Tests in accordance with the manufacturer's recommendations, NFPA 70B, NETA, ATS, and pertinent ANSI and NEMA standards.
7. Voice/data/fiber system: Conduct tests for proper functioning and performance per EIA/TIA standards and guidance. Test UTP per standards; Test fibers by optical time domain reflectometer (OTDR) in both directions.

C. The contractor shall provide a commissioning plan for each phase of testing before beginning testing that phase. The plan must include phase-specific detailed instructions and an advance written notification (minimum 15 working days) for the Government approval to conduct these tests. Prior to performing the tests the contractor shall furnish a written verification to the Government that the instrumentation and the control devices, such as, temperature and humidity sensors and other input/output devices, have been calibrated and a trail test has been performed.

D. The Contractor shall prepare a specification entitled "Commissioning of HVAC Systems" which must become part of the project specification. The specification must provide for a commissioning process, which must include procedures and methods for documenting and verifying the performance of the HVAC systems so that systems operate in conformity to the design intent. The specification must cover all phases of the design build process and specify a commissioning process that includes the Pre-design, Design and Installation Phases.

---END OF SECTION---

SECTION D40 FIRE PROTECTION SYSTEMS

1. SPRINKLER SYSTEM

A. The existing space is sprinklered. Shorten the existing wet-pipe sprinkler drops as needed to be compatible with the new ceiling. Provide extension with new head to meet NFPA 318 to cover the space above the new ceiling. The sprinkler system must be in strict accordance with the required and advisory provisions of NFPA 13 and NFPA 20. Sprinkler pipe and fittings must be metal. Steel piping must be Schedule 40 for sizes 250 mm and less, and may be Schedule 10 for pipe sizes 65 mm and larger. Plain end fittings with mechanical couplings and fittings that use steel gripping devices to bit into the pipe must not be permitted. Rubber gasketed grooved-end pipe and fittings with mechanical couplings must be permitted in pipe sizes 50 mm and larger. The same manufacturer must supply fittings, mechanical couplings, and rubber gaskets. Steel piping with wall thickness less than Schedule 40 must not be threaded. Side outlet tees using rubber gasketed fittings must not be permitted.

B. Sprinkler design parameters: Laboratories: 8.15 l/s m² over an area of 280 m². Provide density of .2 GPM/SF, not to exceed 130 sf/head. Sprinkler system in clean rooms is Ordinary Hazard Group 2. Provide upright, quick response ordinary temperature heads in the space above the clean room HEPA ceiling. Provide concealed quick response ordinary temperature heads in the ceiling track to cover the clean room below the HEPA ceiling.

C. Hydrostatically test the system at minimum of 1379 kPa (gage) for at least a 2 hour period with no leakage or reduction in pressure. Flush piping with potable water in accordance with NFPA 13. Test system before installation of HEPA clean room ceiling.

2. DUCT DETECTORS

Provide a duct detector in each air handling unit. Provide air sampling sensor in each clean room. Provide units able to interface with and tied to existing analog addressable fire alarm and detection system for the facility located in the first floor electrical room located approximately 110' horizontally west of the Zone 9 & 10 site.

3. FIRE AND SMOKE DAMPERS

A. Description: Provide fire and smoke dampers at all fire rated construction as required by NFPA 90A.

B. Requirements: All fire smoke dampers must be UL listed or FM approved. Each system must have a minimum rating of the wall, floor, ceiling, or roof assembly it is protecting.

---END OF SECTION---

SECTION D50 ELECTRICAL AND VOICE/DATA/FIBER SYSTEMS

PART 1 - GENERAL

1.1 SYSTEMS DESCRIPTION

Electrical System: All Electrical Systems must comply with, at minimum, the applicable portions of the following Codes and Standards:

NFPA 70, National Electrical Code (1999)

NFPA 101, Life Safety Code

ANSI, C2, National Electrical Safety Code (1997)

NFPA 70B, Electrical Equipment Maintenance

NETA ATS

IEEE 241, Electric Power Systems in Commercial Buildings

IEEE 142, Grounding Industrial and Commercial Power Systems

EIA/TIA 568A, Commercial Building Telecommunications Wiring Standard

EIA/TIA 569, Commercial Building Standard for Telecommunications Pathways and Spaces

EIA/TIA 607, Commercial Building Ground and Bonding Requirements for Telecommunications

ANSI/IEEE Standards as referenced below

1.2 ELECTRICAL LOAD CALCULATIONS

A. Electrical loads will be calculated using the following assumptions concerning laboratory clean room zone equipment loads:

1. Loads within a zone are concurrent (non-diverse).
2. Overall laboratory clean room zone loads have a demand factor of 0.4.
3. Module Heat Gain (Equipment & Plug Load) - 279W/SM (26W/SF)

2. SYSTEM COMPONENTS

2.1 TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS)

All panelboards must be protected by panel-mounted (integral) TVSS units. The total unit (not merely the components or modules) as installed must be UL 1449 Listed. The TVSS must come standard with not less than a 10-year warranty. The TVSS must have direct, "true all modes" protection in L-N, L-G, N-G, L-L impulse protection. All leads must be as short as possible.

2.2 LIGHTING

A. General - Building interior lighting must be fluorescent with energy saving lamps (e.g., F32T8, etc) and electronic ballasts (minimum flicker, etc). Requirements for lighting control must at minimum comply with Federal Energy Policy Act and Energy Star Program.

B. Clean Zone lighting will be designed specifically to meet Clean Room specifications. Dust shedding design fixtures will be required. All laboratory modules will have lighting controlled at room entrance doors except for one row of lights in front of the exit door which will be unswitched. Provide yellow color that meets requirements for semiconductor manufacturing. Provide fluorescent lights with 5% maximum total harmonic distortion on ballasts.

C. Lighting Levels (Minimum Requirements): 750 lux

D. Feed lighting circuit from the spare breakers in panelboard LP in the electrical room approximately 110' west of the new module location.

E. Provide LCD exit light for each module. Hook onto the existing exit light circuit within the zone.

2.3 NO ALUMINUM WIRING

2.4 DISTRIBUTION WITHIN ZONES: At a minimum, each clean room zone must be provided with the following:

A. 100A 208Y/120-volt 3 phase 4 wire minimum 30 pole with main breaker, surge suppressed and filtered panelboard served by a dedicated, K-13 rated transformer for conditioned power. Mount panel on the zone wall in the utility corridor. Power conditioners and transformers are to be hung in the utility corridor ceiling close to the clean room wall. Run feeder for the power conditioners back to the distribution panelboards in the electrical room approximately 110' to the west of the new clean rooms. Provide new breaker for zone 9 in distribution panelboard CLDP1 and label it "PC21". For zone 10, put the new breaker in distribution panel CLDP2 and label it "PC22". Power conditioners must be at least 30 KVA with an input 480V 3 phase 3W, output 208/120V 3 phase 4W.

B. Provide a separate 225A panel 208Y/120-volt 3-phase, 4-wire minimum 42 pole surge suppressed laboratory grade (house) power from a dedicated panelboard mounted on the zone wall in the utility corridor. Provide breaker and feed from distribution panelboard HPDP in the Building 250 electrical room approximately 110' west of the new clean rooms. Label the breaker and panel for zone 9 "HPC9" and for zone 10 "HPC10"

C. 120V fed from generator source for use by 2 Government furnished UPS units in each zone. One must be fed from the junction box behind the adjacent clean room zone. Connect to phase B behind module 8 and phase A behind module 7. The other, needed to power op a 6,000 VA PS, must be fed from a new breaker in panelboard ELEPP in the electrical room, approximately 110' to the east of the clean room module site. These larger units have an input requirement of 22.6A at 200-240V nominal. Provide disconnects mounted in the utility service corridor for all UPS units. UPS will be located in the clean room under the access floor.

D. Distribution from panelboards/UPS disconnects is to be the following. They are to be provided in a below-floor surface mounted raceway in each clean room lab except for the outlets in the utility corridor which are to be mounted on the utility corridor wall outside each zone:

DESCRIPTION/LOCATION	NUMBER OF OUTLETS	NUMBER OF CIRCUITS
250V 3W grounding type 30A house power	1	1
125V 3W 30A grounding type house power	1	1
120V 20A conditioned power	4	2
30A 2P 120V 3W grounding type NEMA 5-30R (UPS)	1	1
20A 250V 2P 3W grounding type house power	6	3
20A duplex 120V house power	10	5
20A 120V 1P house power in utility spine	6	2
20A 208V 1P in utility spine	2	2
6000VA UPS circuit	1	1

2.5 Power for air handling units must be from spaces reserved for these zones in panelboards PHPP2 and PHPP1 located in the penthouse approximately 71' from where the air handlers for zones 9 & 10 are to be located. The circuits reserved are number 13 in each panelboard. Provide new bolt on breakers. The space reserved is 3 pole.

2.6 GENERAL RULES

A. Design for optimum energy efficiency, minimizing distribution system losses while maintaining voltage quality.

B. Select delivered voltages and number of phases to maximize energy efficiency and to minimize capital costs and losses of transformation equipment; connect equipment at highest delivered feasible voltage and quantity of phases (e.g., motors greater than 370 w, and lighting). Phases must be balanced.

C. Include protection against under-voltage and phase loss damage for motors rated 740 w and above. Provide means to prevent automatic restart damage (e.g., time-adjustable restart). For packaged equipment, the manufacturer shall be responsible to provide aforementioned features.

D. Motors must operate at full capacity with voltage variation of plus or minus 10 percent of motor voltage rating. Single-phase fractional-horsepower alternating-current motors must be high efficiency types corresponding to the applications listed in NEMA MG

E. Poly-phase motors must be selected based on high efficiency characteristics relative to the applications as listed in NEMA MG

F. Additionally, poly-phase squirrel-cage medium induction motors with continuous ratings must meet or exceed energy efficient ratings in accordance with Table 12-6C of NEMA MG.

G. Magnetic motor starters, motor starting switches and VFDs must be 480 volt three phase for motors $\frac{3}{4}$ HP and above.

H. Wiring must be installed concealed in finished spaces. Use of flat conductor cables, and nonmetallic sheath cable, are not acceptable wiring techniques. Do not weld conduits or pipe straps to steel structures; raceway systems must be vibration- and shock-resistant. Install pull lines in all empty conduits (e.g., conduits in which wire is to be installed by others, whether power or voice/data/fiber). Wires must be minimum size #12, manufactured no more than 12 months prior to date of delivery to site. Wires must be color-coded to match existing scheme at site.

I. Wiring devices (power & voice/data/fiber) must be installed flush in walls to the maximum extent possible. Light switches must be quiet type. Receptacles must be commercial specification grade quality for general use and industrial specification grade in laboratory spaces. Dimming devices must limit lamp filament hum, and include "off" position that de-energizes dimmer circuitry.

J. Voltage drop must not exceed 5 percent total (i.e., 2 percent for feeders, and 3 percent for branch circuits at the farthest distance). Ensure that large motors and compressors do not create electrical flicker throughout the facility.

K. A major objective is attaining electrical systems that

- (1) do not generate undesirable harmonics (e.g., from electronic ballasts, light fixture dimming circuits, variable frequency drives, and other switching power supplies which degrade electrical service, and
- (2) are resistant to/tolerant of undesirable harmonics generated by the franchised utility company and any Government-furnished plug loads (e.g., UPSs, copiers, experimental equipment etc).

L. Homerun raceways/conduits should not be filled to NFPA 70 capacity

limits; leave additional space to facilitate replacement of conductors, upgrading of conductors.

M. Provide manufacturer nameplates affixed by manufacturer at minimum to high voltage equipment, transformers, protective device enclosures, motors, and lighting fixtures/ballasts. Provide permanent safety warning signs.

N. Provide separate continuous green grounding conductor throughout entire system (all raceways (except empty), MC cable, etc). Conduit or MC cable sheaths must not be utilized as the solitary equipment grounding conductor. Neutral conductors and busses (in panelboards, etc.) must be sized at minimum same as associated phase conductor and bus.

O. Provide protective breakers for Government furnished UPS.

P. Provide fire-stopping system capable of maintaining an effective barrier against flame and gases and must be compatible with class 100 clean room fabrication and installation. System must be UL listed and at minimum comply with ASTM E 814. Seal openings around electrical and voice/data/fiber penetrations through fire resistance-rated walls, partitions, floors, and ceilings utilizing proper fire-stopping materials to maintain fire resistive integrity.

Q. Identify all circuits at each circuit breaker, switch, receptacle and point of use.

2.7 PROTECTIVE DEVICE EQUIPMENT

A. Contractor shall determine the maximum short circuit interrupting and withstand ratings of all protective device equipment provided. Panelboards (PNLBDS) and other electrical distribution system equipment provided must be capable of withstanding and interrupting the maximum available short circuit current (SCC) at their location, without (1) dependence upon current limiting protective devices (circuit breakers and fuses) in series with and on the source side of the equipment; (2) reactors; (3) nonstandard, high transformer impedances. Service entrance panel or switchboard main breaker, must not be current limiting breaker. All low voltage breakers must have minimum rating of 10,000A at 208 volts and 14,000A at 480 volts. Contractor shall determine settings for adjustable circuit breakers and devices, and set the devices.

B. Panelboards (PNLBDS), busway, and transformers must be 3 phase, 4 wire. All low voltage PNLBDS must be circuit breaker type. Circuit breakers must be bolt-in type, 3 3/8" deep, 6" high and 1 3/8" wide (per pole). The spaces not filled to meet requirements must have 50% spare breakers and 50% spare spaces. Provide all copper buses and separate neutral bus and separate ground bus in each PNLBD. Neutral busses must be sized at minimum same as associated phase bus. Each PNLBD must have integral main breaker. Provide typed directories. Minimum breaker size must be 20 A, 1 Pole. PNLBRDS must be surface mount. Provide a 1/16" steel shielding plate mounted behind each new panelboard that extends 18" beyond the panelboard in each direction. Finish to match panelboard. PNLBRDS must have locking features, and be constructed for ease of access/opening of front panels and doors.

2.8 LOW VOLTAGE TRANSFORMERS:

A. Transformers must be NEMA design, dry or encapsulated, delta primary, wye secondary.

B. K-rated transformers will meet K-13 requirements and will be

installed with double sized neutral secondary conductors and double sized neutral panelboards.

C. Provide with sufficient voltage taps that enable great flexibility to adjust for wide variations in delivered voltages; design must be based on transformers operating at the center tap. Install to minimize sound transmission. Do not locate in corridors, lobbies, stairwells, or near sound sensitive areas. Provide minimum 20% spare capacity.

2.9 VARIABLE FREQUENCY DRIVES (VFD) SYSTEMS

A. VFD must be furnished by pump, air handling unit/fan or cooling tower manufacturer who must assume undivided responsibility for proper matching of VFD with motor of driven equipment.

B. Provide frequency drive to control the speed of induction motor(s). The VFD must include the following minimum functions, features and ratings. VFD must be the standard product of a firm regularly engaged in the manufacture of this product with a record of at least 5 years successful installations of VFD similar in size and type to those required for this project; VFD manufacturer must be recommended and approved by pump, air handling unit/fan or cooling tower manufacturer to assure proper matching of VFD with motor of driven equipment. VFDs and associated filters for all applications on the project must be of the same manufacturer. Per 47 CFR 15, must be certified to comply with the requirements for class A computing devices and labeled as set forth in part 15.

C. VFD controller must be guaranteed to have an efficiency, including all internal losses, of not less than 96% at any motor speed; to maintain power factor of 0.95 or better at all loads and throughout speed range; to start into a rotating load in either direction; to adhere to restriction of generated harmonics (as defined in this spec) on the electrical system so that other electrical equipment is not adversely affected; not to cause premature motor failure; not to cause overheating or excessive vibration or require de-rating of the driven motor when operating down to 25% of design motor speed; not to increase audible noise from the motor by more than 5 dab (at a distance of 5 feet from the motor) above the noise level of the motor when operated from a sinusoidal power source. Provide isolation transformers, line filters, multiple frequency harmonic trap filters, dc link chokes, sound reducing features, as may be required to meet guarantee without additional cost to the Government.

D. VFD must include a converter stage per UL 508 that must change fixed voltage, fixed frequency, AC line power to a fixed dc voltage. The converter must utilize a full wave bridge design incorporating diode rectifiers (to prevent input line notching). Silicon controlled rectifiers (SCR) are not acceptable. The converter must be insensitive to three phase rotation of the ac line and must not cause displacement power factor of less than 0.95 lagging under any speed and load condition.

E. VFD must include an inverter stage that must change fixed dc voltage to variable frequency, variable voltage, AC for application to a squirrel cage induction motor. The inverter must be switched in a manner to produce a sine coded pulse width modulated (PWM) output waveform. Drive must be PWM type utilizing insulated gate bipolar transistors (IGBT)

F. VFD must comply with IEEE 519 at the point of common coupling (nearest switchboard, panel or MCC which directly serves each VFD) of each VFD.

G. Design VFD to limit the harmonic distortion generated by the VFDs on the electrical distribution system. The total harmonic distortion (THD) on the VFD supply bus must not exceed 10% current THD and 5% voltage THD with all VFDs operating at full load, and also with all VFDs operating at half load. (e.g., consider harmonic trap filters, reactors, dc link chokes, etc). The entire VFD package must be UL listed. Label VFD's for air handles as #9 and #10.

H. Provide any additional shielding and filtering required to prevent the operation of the VFD from interfering with the functioning of the laboratory, especially the introduction of EMI/RFI and mechanical noise.

I. Electrical and electromechanical components of the Variable Frequency Drive (VFD) must not cause electromagnetic interference to adjacent electrical or electromechanical equipment while in operation.

J. Provide surge protection per IEEE C62.41, IEEE 519, included to protect the VFD system from damaging transient voltage surges. Fuses must not be used for surge protection.

K. Protection of power semiconductor components must be accomplished without the use of fast acting semiconductor output fuses. Subjecting the controllers to, at minimum, any of the following conditions must not result in component failure: Overloads, short circuits, & open circuits at controller output; input under-voltage & over-voltage; loss of input phase; phase reversal; AC line switching transients; over- temperature.

L. Provide critical speed lockout circuitry to prevent operating at frequencies with critical harmonics that cause resonant vibrations.

M. Include diagnostic features, and operator control and monitoring features.

N. Provide properly sized NEMA rated by-pass and isolation contactors to enable operation of motor in the event of VFD failure. Mechanical and electrical interlocks must be installed between the by-pass and isolation contactors. Provide a selector switch and transfer delay time capabilities.

2.10 COMMUNICATIONS SYSTEM:

A. Provide voice/data/fiber communications systems for the facility as follows:

1. Provide complete interior voice/data/fiber system, both copper and fiber optic, system from modular outlets to the termination points in the control room (room 102) 80 feet to the west of the site. System to include all cabling. Outside of zones 9 & 10, system is run in existing conduit. System and devices must be EIA/TIA 568A, 569 & 607 Compliant. Provide all cross-connecting jumper cables, including 100% connection capability for all new patch cords. Run from clean room to standard 480 mm racks in room 120 for mounting all data equipment and patch panels. All communications cables for the inside plant must be terminated: (a) terminate fiber using ST connectors and terminate on patch panels; (b) terminate copper cable on protected terminals.

2. All telephone/voice cabling must be punched down on 110 type punch-down blocks located on telephone backboards in the telephone closets, each with C-4 clips used for horizontal cable terminations and C-5 clips used for riser/backbone cables. Minimum size backboard is 1200 mm by 2400 mm. All cabling must be punched down and cross connected. Telephone outlets must be activated with cross-connect

jumper cables between the backbone cable punch-down blocks and the horizontal cable punch-down blocks. The backbone cable must be activated with cross-connect jumper cables between the entrance protectors and backbone cable punch-down blocks.

3. Terminate all copper data cabling on existing enhanced Category 6 type data patch panels with new jacks. Terminate all fiber optic cabling using ST connectors on existing data patch panels. Data outlets must be activated with new cross-connect jumper cables between the backbone cable patch panels and the horizontal cable patch panels. Existing patch panels and equipment are rack mounted.

4. Provide interior system for concealed voice/data/fiber wires/cables Consisting of extension of the existing two 1" conduits stubbed through the wall of the adjacent clean room zone to a new outlet box at least 10' into each new zone. Provide wires/cables running from the box back to the point of connection in Room 102, approximately 80 feet to the west of the new clean room zones. Include terminal, outlet box and jacks.

5. Horizontal Cabling (from local TC to outlet): Each data outlet bank location must be served with, at minimum, two 4 pair enhanced Category 6 UTP which each terminated in Category 6, RJ-45, 8 position jacks, two single mode fiber optic strands each terminated in (ST) jacks and two multi mode fiber optic strands each terminated in (ST) jacks. Each voice outlet must be served with a 4 pair enhanced Category 6 UTP which is terminated in Category 5E, RJ-45, 8 position jack

2.11 SEALANTS

Seal all penetrations with approved non-offgassing (RTV silicone) sealant. All sealants must be amine-free

---END OF SECTION---

ROOM DATA SHEET	
CLEAN ROOM CLASS 100- NANOLITH ZONE #9	
Space Function	
Clean Room Class 100 Located within Ballroom style Clean Room	
Number and Area; Occupancy	
1 Zone at 46.5 NSM (500 NSF) 2 people average; 3 people maximum	

Environmental Conditions	
Temperature Range and Drift	20°C±0.1°C<0.1°C /hr
Humidity Range and Drift	45%± 2.5%<0.5%/hr
Minimum Supply Air Volume	305 L/s/SM (60CFM/SF)
Heat Gain (Equipment and Plug Load)	279 W/SM (26W/SF)
Structural Issues	
Vibration (micro inches/sec)	None
Acoustics (sound pressure level)	See NRL Req'ts
Heavy Loads/Min. Live Load	1000 lb rolling concentrated load. 3000 lb static concentrated load, 350 lb uniform static load
Raised Floor/Depressed Slab	See Spec C10
Security/Safety	
Access Control at Entrance	See Electrical D50
Eyewash (Domestic Cold Water)	None
Alarm (Monitored from the Control Monitor Room)	Pressure; Humidity; Temperature; Fire; Toxic/Haz Gas; Low Oxygen; N2 Purge; moisture in depressed slab area
Lighting	
General	See Electrical D50
Special Lighting	Yellow, See D50
Telecommunications	
Data/LAN/Ethernet Jacks/Zone	2-Multi Mode Fiber 2-Single Mode Fiber 2-Cat6 UTP data jacks
Voice per Zone	1-Cat6 UTP data jack

Room Description
This is one of the two Nanolith Zones. Dimensions: 6.1 M x 7.6 M (20'x25') Zone is to be free of internal columns and bearing walls. Provide access/adjacency to Utility Spine. Match the size of Utility Spine to existing. Zone 9 should be isolated from Zones 7 and 8.

Pressure Services (Central)	
Vacuum	None
Clean Compressed Air	Central
DI Water (closed-loop) Continuous Circulation	None
Process Chilled Water	10 C (50 F) @ 19 L/min. Provided by others
Dry Nitrogen	Central
Liquid Nitrogen	None
Hot/Cold Water	Existing to remain in utility spine
Empty Feedthru Piping	2, 50 mm (2-in.) Under Raised Floor
Finishes/Room Data	
Wall:	Alum.Composite Panel
Floor:	Raised floor panel system; See also Spec C10
Ceiling: Lay-In Perforated	Class 100-610 mm
Ceiling Height	3050 mm (10')
Shielding (EMI)	None
Door Width-Minimum	3'
Door Height	6'-8"
Electrical	
110/120 V	See Elec. D50
208/220/480 V	See Elec. D50
Panel Board (Amps)	See Elec. D50
Ground	See Elec. D50
Other	
Acoustic/Noise Level	60dB spl
Local 10 baseT cables	See Elec. D50
Demountable partition at ea. Zone	Isolate from Zone 7 & 8

ROOM DATA SHEET	
CLEAN ROOM CLASS 100- NANOLITH ZONE #10	
Space Function	
Clean Room Class 100 Located within Ballroom style Clean Room	
Number and Area; Occupancy	
1 Zone at 46.5 NSM (500 NSF) 2 people average; 3 people maximum	

Environmental Conditions	
Temperature Range and Drift	20°C±0.1°C<0.1°C /hr
Humidity Range and Drift	45%± 2.5%<0.5%/hr
Minimum Supply Air Volume	305 L/s/SM (60CFM/SF)
Heat Gain (Equipment and Plug Load)	279 W/SM (26W/SF)
Structural Issues	
Vibration (micro inches/sec)	None
Acoustics (sound pressure level)	See NRL Req'ts
Heavy Loads/Min. Live Load	1000 lb rolling concentrated load. 3000 lb static concentrated load, 350 lb uniform static load
Raised Floor/Depressed Slab	See Spec C10
Security/Safety	
Access Control at Entrance	See Electrical D50
Eyewash (Domestic Cold Water)	None
Alarm (Monitored from the Control Monitor Room)	Pressure; Humidity; Temperature; Fire; Toxic/Haz Gas; Low Oxygen; N2 Purge; moisture in depressed slab area
Lighting	
General	See Electrical D50
Special Lighting	Yellow, See D50
Telecommunications	
Data/LAN/Ethernet Jacks/Zone	2-Multi Mode Fiber 2-Single Mode Fiber 2-Cat6 UTP data jacks
Voice per Zone	1-Cat6 UTP data jack

Room Description
This is one of the two Nanolith Zones. Dimensions: 6.1 M x 7.6 M (20'x25') Zone is to be free of internal columns and bearing walls. Provide access/adjacency to Utility Spine. Match the size of Utility Spine to existing. Zone 10 should be isolated from Zones 7 and 8.

Pressure Services (Central)	
Vacuum	None
Clean Compressed Air	Central
DI Water (closed-loop) Continuous Circulation	None
Process Chilled Water	10 C (50 F) @ 19 L/min. Provided by others.
Dry Nitrogen	Central
Liquid Nitrogen	None
Hot/Cold Water	Existing to remain in utility spine
Empty Feedthru Piping	2, 50 mm (2-in.) Under Raised Floor
Finishes/Room Data	
Wall:	Alum.Composite Panel
Floor:	Raised floor panel system; See also Spec C10
Ceiling: Lay-In Perforated	Class 100-610 mm
Ceiling Height	3050 mm (10')
Shielding (EMI)	None
Door Width-Minimum	3'
Door Height	6'-8"
Electrical	
110/120 V	See Elec. D50
208/220/480 V	See Elec. D50
Panel Board (Amps)	See Elec. D50
Ground	See Elec. D50
Other	
Acoustic/Noise Level	60dB spl
Local 10 baseT cables	See Elec. D50
Demountable partition at ea. Zone	Isolate from Zone 7 & 8

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A. CONTRACT LINE ITEM NO. 0002		B. EXHIBIT A		C. CATEGORY: TDP _____ TM- _____ OTHER _____	
D. SYSTEM / ITEM			E. CONTRACT / PR NO. N00173-03-R-MS08		F. CONTRACTOR
1. DATA ITEM NO. A001	2. TITLE OF DATA ITEM Commissioning Plan			3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE SOW Section A20 1.7		6. REQUIRING OFFICE Code 6300.10	
7. DD 250 REQ NO	9. DIST STATEMENT REQUIRED	10. FREQUENCY 1TIME	12. DATE OF FIRST SUBMISSION 210DAC	14. DISTRIBUTION	
8. APP CODE N/A	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	a. ADDRESSEE	b. COPIES	
	N/A			Draft	Final
				Reg	Repro
16. REMARKS Commissioning plan must be complete and approved before submission of invoice for placement of air handler.			Code 6300.10	1	
			15. TOTAL →	1	
1. DATA ITEM NO. A002	2. TITLE OF DATA ITEM Architectural Drawings			3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE SOW Section B10, 1.3.2.1		6. REQUIRING OFFICE Code 6300.10	
7. DD 250 REQ NO	9. DIST STATEMENT REQUIRED	10. FREQUENCY 1TIME	12. DATE OF FIRST SUBMISSION 130DAC	14. DISTRIBUTION	
8. APP CODE N/A	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	a. ADDRESSEE	b. COPIES	
	N/A			Draft	Final
				Reg	Repro
16. REMARKS			Code 6300.10	1	
			15. TOTAL →	1	
1. DATA ITEM NO. A003	2. TITLE OF DATA ITEM Mechanical Drawings			3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE SOW Section B10, 1.3.2.2		6. REQUIRING OFFICE Code 6300.10	
7. DD 250 REQ NO	9. DIST STATEMENT REQUIRED	10. FREQUENCY 1TIME	12. DATE OF FIRST SUBMISSION 130DAC	14. DISTRIBUTION	
8. APP CODE N/A	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	a. ADDRESSEE	b. COPIES	
	N/A			Draft	Final
				Reg	Repro
16. REMARKS			Code 6300.10	1	
			15. TOTAL →	1	
1. DATA ITEM NO. A004	2. TITLE OF DATA ITEM Electrical Drawings			3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE SOW Section B10, 1.3.2.3		6. REQUIRING OFFICE Code 6300.10	
7. DD 250 REQ NO	9. DIST STATEMENT REQUIRED	10. FREQUENCY 1TIME	12. DATE OF FIRST SUBMISSION 130DAC	14. DISTRIBUTION	
8. APP CODE N/A	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	a. ADDRESSEE	b. COPIES	
	N/A			Draft	Final
				Reg	Repro
16. REMARKS			Code 6300.10	1	
			15. TOTAL →	1	
G. PREPARED BY Code 6300.10		H. DATE	I. APPROVED BY		J. DATE

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			N00173-03-R-MS08		
1. DATA ITEM NO.	2. TITLE OF DATA ITEM			3. SUBTITLE	
A005	Design Submittals			In Progress Design	
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE
			SOW Section B10, 1.6(a)		Code 6300.10
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION
NO		1TIME	60DAC		
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE
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					Repro
16. REMARKS					Code 6300.10
					8
15. TOTAL					8
1. DATA ITEM NO.	2. TITLE OF DATA ITEM			3. SUBTITLE	
A006	Design Submittals			100% Design	
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE
			SOW Section B10, 1.6(b)		Code 6300.10
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION
NO		1TIME	100DAC		
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE
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					Repro
16. REMARKS					Code 6300.10
					6
15. TOTAL					6
1. DATA ITEM NO.	2. TITLE OF DATA ITEM			3. SUBTITLE	
A007	Design Submittals			Final Design	
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE
			SOW Section B10, 1.6(c)		Code 6300.10
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION
NO		1TIME	130DAC		
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE
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					Final
					Reg
					Repro
16. REMARKS					Code 6300.10
					3
15. TOTAL					3
1. DATA ITEM NO.	2. TITLE OF DATA ITEM			3. SUBTITLE	
A008	Shop Drawings				
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE
			SOW Section B30, 1.1.2(a)		Code 6300.10
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION
NO		1TIME	130DAC		
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE
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16. REMARKS					Code 6300.10
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15. TOTAL					4
G. PREPARED BY			H. DATE	I. APPROVED BY	
Code 6300.10					
				J. DATE	

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1. DATA ITEM NO. A009		2. TITLE OF DATA ITEM Product Data				3. SUBTITLE																							
4. AUTHORITY (Data Acquisition Document No.)				5. CONTRACT REFERENCE SOW Section B30, 1.1.2(b)		6. REQUIRING OFFICE Code 6300.10																							
7. DD 250 REQ NO		9. DIST STATEMENT REQUIRED		10. FREQUENCY 1TIME		12. DATE OF FIRST SUBMISSION 130DAC																							
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1. DATA ITEM NO. A010		2. TITLE OF DATA ITEM Samples				3. SUBTITLE																							
4. AUTHORITY (Data Acquisition Document No.)				5. CONTRACT REFERENCE SOW Section B30, 1.1.2(c)		6. REQUIRING OFFICE Code 6300.10																							
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1. DATA ITEM NO. A011		2. TITLE OF DATA ITEM Administrative Submittals				3. SUBTITLE																							
4. AUTHORITY (Data Acquisition Document No.)				5. CONTRACT REFERENCE SOW Section B30, 1.1.2(d)		6. REQUIRING OFFICE Code 6300.10																							
7. DD 250 REQ NO		9. DIST STATEMENT REQUIRED		10. FREQUENCY 1TIME		12. DATE OF FIRST SUBMISSION 100DAC																							
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						15. TOTAL →		2																					
1. DATA ITEM NO. A012		2. TITLE OF DATA ITEM Test Reports				3. SUBTITLE																							
4. AUTHORITY (Data Acquisition Document No.)				5. CONTRACT REFERENCE SOW Section B30, 1.1.2(e)		6. REQUIRING OFFICE Code 6300.10																							
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						15. TOTAL →		4																					
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D. SYSTEM / ITEM			E. CONTRACT / PR NO.		F. CONTRACTOR		
			N00173-03-R-MS08				
1. DATA ITEM NO.	2. TITLE OF DATA ITEM			3. SUBTITLE			
A013	Certificates						
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE		
			SOW Section B30, 1.1.2(f)		Code 6300.10		
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION		
NO		1TIME	240DAC				
8. APP CODE	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE	b. COPIES		
A	N/A				Draft	Final	
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16. REMARKS					Code 6300.10	2	
15. TOTAL					2		
1. DATA ITEM NO.	2. TITLE OF DATA ITEM			3. SUBTITLE			
A014	Manufacturer's Instructions						
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE		
			SOW Section B30, 1.1.2(g)		Code 6300.10		
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION		
NO		1TIME	ASGEN				
8. APP CODE	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE	b. COPIES		
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16. REMARKS					Code 6300.10	4	
15. TOTAL					4		
1. DATA ITEM NO.	2. TITLE OF DATA ITEM			3. SUBTITLE			
A015	Operating Instructions						
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE		
			SOW Section B30, 1.2		Code 6300.10		
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION		
NO		1TIME	ASGEN				
8. APP CODE	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE	b. COPIES		
N/A	N/A				Draft	Final	
					Reg	Repro	
16. REMARKS					Code 6300.10	5	
15. TOTAL					5		
1. DATA ITEM NO.	2. TITLE OF DATA ITEM			3. SUBTITLE			
A016	Operation and Maintenance Support Infor Manual						
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE		
			SOW Section B30, 1.3		Code 6300.10		
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION		
NO		1TIME	ASGEN				
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15. TOTAL					4		
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Code 6300.10							

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1. DATA ITEM NO.	2. TITLE OF DATA ITEM				3. SUBTITLE			
A017	Close Out Submittals							
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE			
			SOW Section B30, 1.4		Code 6300.10			
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY		12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION		
DD		1TIME		240DAC				
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16. REMARKS						Code 6300.10	2	
15. TOTAL						2		

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4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE			
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY		12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION		
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16. REMARKS							0	
15. TOTAL						0		

1. DATA ITEM NO.	2. TITLE OF DATA ITEM				3. SUBTITLE			
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE		6. REQUIRING OFFICE			
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY		12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION		
8. APP CODE		11. AS OF DATE		13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE	b. COPIES	
							Draft Final	
						Reg	Repro	
16. REMARKS							0	
15. TOTAL						0		

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						Reg	Repro	
16. REMARKS							0	
15. TOTAL						0		

G. PREPARED BY		H. DATE	I. APPROVED BY		J. DATE	
Code 6300.10						

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

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