

**SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS**  
**OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30**

1. REQUISITION NUMBER <b>81-3107-00</b>	PAGE 1 OF <b>11</b>
2. CONTRACT NO.	3. AWARD/EFFECTIVE DATE
4. ORDER NUMBER	5. SOLICITATION NUMBER <b>N00173-00-R-JR05</b>
6. SOLICITATION ISSUE DATE <b>21 Apr 00</b>	7. FOR SOLICITATION INFORMATION CALL: <b>Mr. Jerry Riles, Contract Specialist</b>
8. OFFER DUE DATE/ LOCAL TIME <b>05/21/00, 4:00pm</b>	b. TELEPHONE NUMBER (No collect calls) <b>(228) 688-4259</b>

9. ISSUED BY  
**PROCURING CONTRACTING OFFICER**  
**NAVAL RESEARCH LABORATORY-SSC**  
**DEPARTMENT OF THE NAVY**  
**CODE 3235:JR, BLDG 1007, RM 47**  
**STENNIS SPACE CENTER. MS 39529-5004**

10. THIS ACQUISITION IS <input type="checkbox"/> UNRESTRICTED <input checked="" type="checkbox"/> SET ASIDE: <b>100%</b> FOR <input checked="" type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> SMALL DISAV. BUSINESS <input type="checkbox"/> 8(A) SIC: <b>1791</b> SIZE STANDARD: <b>\$7.0 MIL</b>	11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input type="checkbox"/> SEE SCHEDULE <input checked="" type="checkbox"/> 13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)
12. DISCOUNT TERMS <b>N/A</b>	13b. RATING <b>DOC9</b>
14. METHOD OF SOLICITATION <input type="checkbox"/> RFQ <input type="checkbox"/> IFB <input checked="" type="checkbox"/> RFP	

15. DELIVER TO CODE	16. ADMINISTERED BY CODE
17a. CONTRACTOR/OFFEROR CODE	17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER <input type="checkbox"/>
FACILITY CODE	18a. PAYMENT WILL BE MADE BY CODE
TELEPHONE NO.	18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	<b>SEE SCHEDULE OF SUPPLIES/SERVICES</b> <b>PAGE 2</b>				
	<b>TOTAL</b> <i>(Attach Additional Sheets as Necessary)</i>				

25. ACCOUNTING AND APPROPRIATION DATA

26. TOTAL AWARD AMOUNT (For Govt. Use Only)

27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, FAR 52.212-4, FAR 52.212-3 AND 52.212-5 ARE ATTACHED.  ARE  ARE NOT ATTACHED

27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4, FAR 52.212-5 IS ATTACHED. ADDENDA  ARE  ARE NOT ATTACHED

28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN  TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN.

29. AWARD OF CONTRACT: REFERENCE \_\_\_\_\_ OFFER  DATED \_\_\_\_\_ YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH

30a. SIGNATURE OF OFFEROR/CONTRACTOR

31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)

30b. NAME AND TITLE OF SIGNER

30c. DATE SIGNED

31b. NAME OF CONTRACTING OFFICER

31c. DATE SIGNED

32a. QUANTITY IN COLUMN 21 HAS BEEN  
 RECEIVED  INSPECTED  ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED

32b. SIGNATURE OF AUTHORIZED GOVT. REPRESENTATIVE

32c. DATE

33. SHIP NUMBER  
 PARTIAL  FINAL

34. VOUCHER NUMBER

35. AMOUNT VERIFIED CORRECT FOR

36. PAYMENT  
 COMPLETE  PARTIAL  FINAL

37. CHECK NUMBER

38. S/R ACCOUNT NUMBER

39. S/R VOUCHER NUMBER

40. PAID BY

41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT

41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER

41c. DATE

42a. RECEIVED BY (Print)

42b. RECEIVED AT (Location)

42c. DATE REC'D (YY/MM/DD)

42b. TOTAL CONTAINERS

**1. CONTINUATION OF THE SF 1449 - SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS**

A. Blocks 19 - 24 are completed as follows:

Item No.	Schedule of Supplies/Services	Quantity	Unit	Unit Price	Amount
0001	Design, Construction, Assembly, Installation, Performance Testing, and Quality Assurance of a turnkey welded steel RF EMI shielded enclosure in accordance with Statement of Work, Attachment (1).			\$	\$
0002	Training			*NSP	*NSP
0003	Reports, Schematics, Drawings, and all other documentation in accordance with Exhibit A.			*NSP	*NSP
	<b>OPTIONAL ITEMS:</b>				
0004	Anechoic Material			\$	\$
0005	Electrical Power			\$	\$
0006	Heating Ventilation and Air Conditioning (HVAC)			\$	\$

**TOTAL FIXED PRICE AMOUNT**

**\$**

B. Block 25 is completed as shown on Page \*

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

**2. ADDENDA TO FAR 52.212-4 CONTRACT TERMS AND CONDITIONS--COMMERCIAL ITEMS (MAY 1999)**

**A. REQUIRED DELIVERY OR PERIOD OF PERFORMANCE**

The required delivery is as follows:

ITEM NO.	QUANTITY	WITHIN MONTHS AFTER DATE OF CONTRACT AWARD
0001 0002 0003	All All All	7 Months Upon Acceptance of CLIN 0001 7 Months
<b><u>Option Items if excercised After Acceptance of CLIN 0001</u></b> 0004 0005 0006	All All All	4 Months After Exercise of Option 3 Months After Exercise of Option 6 Months After Exercise of Option

**B. OPTION(S)**

The Government may require delivery of the optional items by the contracting officer giving written notice any time prior to contract completion.

**C. AUTHORIZED GOVERNMENT REPRESENTATIVE**

\*,Code \*,Telephone number \*, is hereby designated the Authorized Government Representative for inspection and acceptance purposes.

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

**D. YEAR 2000 COMPLIANT INFORMATION TECHNOLOGY**

This requirement applies to information technology (IT) that processes date-related information. All such IT delivered under this contract shall be Year 2000 compliant as defined at FAR 39.002.

**E. 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 11 April 2000 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/home.htm>.

**F. Remittance Address:****3. FAR 52.212-5 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS--COMMERCIAL ITEMS (FEB 2000)**

(a) The Contractor agrees to comply with the following FAR clauses, which are incorporated in this contract by reference, to implement provisions of law or executive orders applicable to acquisitions of commercial items:

- (1) 52.222-3, Convict Labor (E.O.11755).
- (2) 52.225-13, Restrictions on Certain Foreign Purchases (E.O.'s 12722, 12724, 13059, and 13067).
- (3) 52.233-3, Protest after Award (31 U.S.C 3553).

(b) The Contractor agrees to comply with the FAR clauses in this paragraph (b) which the contracting officer has indicated as being incorporated in this contract by reference to implement provisions of law or executive orders applicable to acquisitions of commercial items or components:

*(Contracting Officer shall check as appropriate.)*

- (1) 52.203-6, Restrictions on Subcontractor Sales to the Government, with Alternate I (41 U.S.C.253g and 10 U.S.C.2402).
- (2) 52.219-3, Notice of HUBZone Small Business Set-Aside (Jan 1999)
- (3) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (Jan 1999) *(if the offeror elects to waive the preference, it shall so indicate in its offer)*

- (4) (i) 52.219-5, Very Small Business Set-Aside (Pub. L. 103-403, section 304, Small Business Reauthorization and Amendments Act of 1994)
- (ii) Alternate I to 52.219-5
- (iii) Alternate II to 52.219-5
- (5) 52.219-8, Utilization of Small Business Concerns (15 U.S.C.637 (d)(2) and (3)).
- (6) 52.219-9, Small Business Subcontracting Plan (15 U.S.C.637 (d)(4)).
- (7) 52.219-14, Limitations on Subcontracting (15 U.S.C.637(a)(14)).
- (8) (i) 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323) (if the offeror elects to waive the adjustment, it shall so indicate in its offer)
- (ii) Alternate I of 52.219-23.
- (9) 52.219-25, Small Disadvantaged Business Participation Program - Disadvantaged Status and Reporting (Pub L. 103-355, section 7102, and 10 U.S.C. 2323).
- (10) 52.219-26, Small Disadvantaged Business Participation Program - Incentive Subcontracting (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).
- (11) 52.222-21, Prohibition of Segregated Facilities (Feb 1999)
- (12) 52.222-26, Equal Opportunity (E.O.11246).
- (13) 52.222-35, Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C.4212).
- (14) 52.222-36, Affirmative Action for Workers with Disabilities (29 U.S.C.793).
- (15) 52.222-37, Employment Reports on Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C.4212).
- (16) 52.225-1, Buy American Act – Balance of Payments Program--Supplies (41 U.S.C.10a – 10d).
- (17) 52.225-3, Buy American Act –North American Free Trade Agreement— Israeli Trade Act -- Balance of Payments Program (41 U.S.C.10a –10d, 19 U.S.C.3301 note, 19 U.S.C. 2112 note).
- (ii) Alternate I to 52.225-3.
- (iii) Alternate II to 52.225-3.
- (18) 52.225-5, Trade Agreements (19 U.S.C. 2501, *et seq.*, 19 U.S.C. 3301 note).
- (19) 52.225-15, Sanctioned European Union Country End Products (E.O.12849).
- (20) 52.225-16, Sanctioned European Union Country Services (E.O.12849).

- (21) Reserved
- (22) 52.232-33, Payment by Electronic Funds Transfer -- Central Contractor Registration (31 U.S.C. 3332).
- (23) 52.232-34, Payment by Electronic Funds Transfer --Other than Central Contractor Registration (31 U.S.C. 3332).
- (24) 52.232-36, Payment by Third Party (31 U.S.C. 3332).
- (25) 52.239-1, Privacy or Security Safeguards (5 U.S.C.552a).
- (26) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (46 U.S.C.1241).

(c) The Contractor agrees to comply with the FAR clauses in this paragraph (c), applicable to commercial services, which the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or executive orders applicable to acquisitions of commercial items or components:

*(Contracting Officer check as appropriate.)*

- (1) 52.222-41, Service Contract Act of 1965, As Amended (41 U.S.C.351, *et seq.*).
- (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (29 U.S.C.206 and 41 U.S.C.351, *et seq.*).
- (3) 52.222-43, Fair Labor Standards Act and Service Contract Act -- Price Adjustment (Multiple Year and Option Contracts) (29 U.S.C.206 and 41 U.S.C.351, *et seq.*).
- (4) 52.222-44, Fair Labor Standards Act and Service Contract Act - Price Adjustment (29 U.S.C.206 and 41 U.S.C.351, *et seq.*).
- (5) 52.222-47, SCA Minimum Wages and Fringe Benefits Applicable to Successor Contract Pursuant to Predecessor Contractor Collective Bargaining Agreement (CBA) (41 U.S.C.351, *et seq.*).
- (6) 52.222-50, Nondisplacement of Qualified Workers (Executive Order 12933).

(d) *Comptroller General Examination of Record.* The Contractor agrees to comply with the provisions of this paragraph (d) if this contract was awarded using other than sealed bid, is in excess of the simplified acquisition threshold, and does not contain the clause at 52.215-2, Audit and Records -- Negotiation.

(1) The Comptroller General of the United States, or an authorized representative of the Comptroller General, shall have access to and right to examine any of the Contractor's directly pertinent records involving transactions related to this contract.

(2) The Contractor shall make available at its offices at all reasonable times the records, materials, and other evidence for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in FAR Subpart 4.7, Contractor Records Retention, of the other clauses of this contract. If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement. Records relating to appeals under the disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are finally resolved.

(3) As used in this clause, records include books, documents, accounting procedures and practices, and other data, regardless of type and regardless of form. This does not require the Contractor to create or maintain any record that the Contractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c) or (d) of this clause, the Contractor is not required to include any FAR clause, other than those listed below (and as may be required by an addenda to this paragraph to establish the reasonableness of prices under Part 15), in a subcontract for commercial items or commercial components --

- (1) 52.222-26, Equal Opportunity (E.O.11246);
- (2) 52.222-35, Affirmative Action for Special Disabled and Vietnam Era Veterans (38 U.S.C.2012(a));
- (3) 52.222-36, Affirmative Action for Workers with Disabilities (29 U.S.C.793); and
- (4) 52.247-64, Preference for Privately-Owned U.S.- Flag Commercial Vessels (46 U.S.C.1241) (flow down not required for subcontracts awarded beginning May 1, 1996).

**4. 252.212-7001 -- CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS APPLICABLE TO DEFENSE ACQUISITIONS OF COMMERCIAL ITEMS. (SEP 1999)**

- (a) The Contractor agrees to comply with the Defense Federal Acquisition Regulation Supplement (DFARS) clause 252.247-7023, Transportation of Supplies by Sea, which is included in this contract by reference to implement 10 U.S.C.2631.
- (b) The Contractor agrees to comply with any clause that is checked on the following list of DFARS clauses which, if checked, is included in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items or components.

- 252.205-7000 Provision of Information to Cooperative Agreement Holders (10 U.S.C.2416).
- 252.206-7000 Domestic Source Restriction (10 U.S.C.2304).
- 252.219-7003 Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DOD Contracts) (15 U.S.C.637).

- 252.225-7001 Buy American Act and Balance of Payment Program (41 U.S.C.10 a-10d, E.O. 10582).
- 252.225-7007 Buy American Act -Trade Agreements - Balance of Payments Program (41 U.S.C. 10a-10d, 19 U.S.C.2501-2518, and 19 U.S.C. 3301 note).
- 252.225-7012 Preference for Certain Domestic Commodities.
- 252.225-7014 Preference for Domestic Specialty Metals (10 U.S.C.2241 note).
- 252.225-7015 Preference for Domestic Hand or Measuring Tools (10 U.S.C.2241 note).
- 252.225-7021 Trade Agreements (19 U.S.C. 2501-2518 and 19 U.S.C. 3301 note).
- 252.225-7027 Restriction on Contingent Fees for Foreign Military Sales (22 U.S.C.2779).
- 252.225-7028 Exclusionary Policies and Practices of Foreign Governments (22 U.S.C.2755).
- 252.225-7029 Preference for United States or Canadian Air Circuit Breakers (10 U.S.C.2534(a)(3)).
- 252.225-7036 Buy American Act -- North American Free Trade Agreement Implementation Act.-- Balance of Payment Program (Alternate I) (41 U.S.C. 10a-10d and 19 U.S.C. 3301 note).
- 252.227-7015 Technical Data -- Commercial Items (10 U.S.C.2320).
- 252.227-7037 Validation of Restrictive Markings on Technical Data (10 U.S.C.2321).
- 252.243-7002 Requests for Equitable Adjustment (10 U.S.C. 2410).
- 252.247-7024 Notification of Transportation of Supplies by Sea (10 U.S.C.2631).

(c) In addition to the clauses listed in paragraph (e) of the Contract Terms and Conditions Required to Implement Statutes or Executive Orders-Commercial Items clause of this contract, the Contractor shall include the terms of the following clause, if applicable, in subcontracts for commercial items or commercial components, awarded at any tier under this contract:

252.225-7014 Preference for Domestic Specialty Metals, Alternate I (10 U.S.C.2241 note).

**DFARS:**

252.204-7004 Required Central Contractor Registration (MAR 1998)

**5. CONTRACT DOCUMENTS, EXHIBITS OR ATTACHMENTS:**

Attachment (1) - Statement of Work – 22 Pages, With Exhibit A - DD Form 1423, Contract Data Requirements List, 3 pages.

Attachment (3) - Accounting and Appropriation Data – Page\*  
(\* To be included at time of award)

**6. FAR 52.212-2 - EVALUATION - COMMERCIAL ITEMS (JAN 1999)**

(a) The Government will award a contract resulting from this solicitation to the responsible offeror whose offer conforming to the solicitation will be most advantageous to the Government, price and other factors considered. Proposals will be evaluated in accordance with the following criteria. The technical factor is more important than the cost or price factor. Technical subfactor (1) is of greater importance than technical subfactors (2) and (3). Technical subfactors (2) and (3) are of equal importance

**1. TECHNICAL CAPABILITIES****A. BUILDING, SAFETY, AND FIRE CODES**

The shielded enclosure will be evaluated on the offeror's conformance to all local, state, and federal building, safety, and fire codes. The proposal will be evaluated on:

- a. Structure designed to uniform building codes
- b. Loading requirements for the walls, ceiling, and floors designed to code
- c. Fire alarm and fire suppression system designed to code
- d. Conformance of anechoic materials to fire and safety codes
- e. Doors emergency access and egress of shielded enclosure
- f. Electrical and grounding system designed to code
- g. HVAC system design to provide required ventilation, temperature, and humidity control
- h. Lighting system to provide safe working environments

**B. CONSTRUCTION, MATERIAL, AND DESIGN**

The shielded enclosure will be evaluated on:

- a. Material and type of construction. Type and thickness of steel, and the welding process used in the design and construction.
- b. Floor plan and size of the shielded enclosure. Usable volume of the main chamber and antechamber.
- c. Doors, pneumatic type using compressed air for RF sealing. Sliding type for the exterior doors and hinge type for the interior door. Size and clear opening of exterior doors. Repetitive use of doors for personal access. Ramps and thresholds for equipment access.
- d. Maintainability and service life of shielded enclosure and ancillary equipment
- e. Corrosion control and finish of metal surfaces

### **C. SHIELDED ENCLOSURE**

The proposal will be evaluated on shielding design performance, to include:

- a. Selection of materials and individual components meet performance requirements prior to installation. These include power line filters, power isolation transformers, doors, vents, panels, and other penetrations into the shielded enclosure
- b. Installation and construction techniques maintain shielding performance requirements

The proposal will be evaluated on anechoic material design performance, to include:

- a. Minimum RF absorption requirements and continuous electric field intensity exposure requirements
- b. Integration of anechoic material installation design with the electric, lighting, HVAC, fire alarm, and sprinkler system designs in the main chamber
- c. Usable volume of the main chamber
- d. Personnel and equipment access and egress through doors after anechoic material installation. Clear opening of doors
- e. Portable ferrite tile pallet installation and removal process to convert chamber from semi-anechoic to full anechoic design

### **2. COMPANY EXPERIENCE**

The proposals will be evaluated on the offerors demonstrated corporate experience and technical base, both general and task specific, in performance of the SOW requirements. A specific item of evaluation will be whether the company is regularly engaged in the design and installation of all metal welded shielded enclosures.

### **3. PAST PERFORMANCE**

The proposal will be evaluated on the offerors past performance will be evaluated on the basis of the quality of the work performed, timeliness of performance, and business relations. The evaluation will be based on the information provided pursuant to this, and other sources if available. 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. .

Offerors shall submit the following information as part of their proposal. List the last five (5) projects completed during the past ten (10) years for services similar in nature to this requirement. Include in the five (5) any projects 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

Technical and past performance, when combined, are approximately equal to cost or price. Proposals will be evaluated in accordance with the following criteria. Technical subfactor (1) is of greater importance than technical subfactors (2) and (3). Technical subfactors (2) and (3) are of equal importance. Under technical subfactor (1), technical sub-subfactor (A) is of greater importance than technical sub-subfactor (B) and (C). Technical sub-subfactors (B) and (C) are of equal importance.

(b) Options. The Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. The Government may determine that an offer is unacceptable if the option prices are significantly unbalanced. Evaluation of options shall not obligate the Government to exercise the option(s).

(c) A written notice of award or acceptance of an offer, mailed or otherwise furnished to the successful offeror within the time for acceptance specified in the offer, shall result in a binding contract without further action by either party. Before the offer's specified expiration time, the Government may accept an offer (or part of an offer), whether or not there are negotiations after its receipt, unless a written notice of withdrawal is received before award.

## 8. OFFEROR REPRESENTATIONS AND CERTIFICATIONS

Offeror must complete and submit with its proposal, FAR 52.212-3 (FEB 2000) *Offeror Representations and Certifications--Commercial Items* and DFARS 252.212-7000 *Offeror Representations and Certifications--Commercial Items.*, which are available electronically in full text at : [HTTP://HERON.NRL.NAVY.MIL/CONTRACTS/REPS&CERTS.HTM](http://HERON.NRL.NAVY.MIL/CONTRACTS/REPS&CERTS.HTM)

**STATEMENT OF WORK**  
**CONSTRUCTION OF AN RF EMI SHIELDED ENCLOSURE**

**1. INTRODUCTION**

This specification establishes the design, construction, and quality assurance requirements of a turnkey welded steel shielded enclosure. The shielded enclosure consists of two chambers (a main chamber, and an antechamber), along with all the necessary ancillary equipment for a complete, functional Electromagnetic Compatibility test facility. In addition, the main chamber is lined with anechoic material on all the walls and on the ceiling, and with a conductive floor surface for a semi-anechoic design. Portable floor panels with anechoic material allows the main chamber to be converted to a fully anechoic design.

**2. BACKGROUND**

Over the past several years, electronic complexity and sensitivity has lead to an extreme need to verify the Electromagnetic Compatibility of the space and terrestrial military electronics developed at the Naval Research Laboratory (NRL). The shielded enclosure is necessary for large test articles requiring the capability of testing at the constantly lower levels of Electromagnetic Interference over higher frequency ranges. Current existing facilities do not meet physical size or EMI attenuation levels.

Reliability to maintain high shielding effectiveness for long term usage with minimum maintenance shall be stressed throughout the design, construction and erection of the specified shielded enclosure. Particular attention shall be paid to the total project so that the installation of the door, electrical services, power line filters, ventilation and connector panels do not degrade the required shielding effectiveness. The enclosure will be subject to varying movable live floor loads, highly repetitious use of the shielded access door and continuous use of the ventilation system and AC power line filters. Adequate structural strength and permanent RF sealing of all seams is required to meet the total specification and usage.

**3. SCOPE**

The contractor shall be responsible for the design, construction, assembly, installation, performance testing, documentation, materials, and labor for a complete, functional shielded enclosure. The shielded enclosure shall be subject to typical EMI testing use including varying and movable floor loads, repetitious use of the access door, and continuous duty cycle of all ancillary equipment.

The shielded enclosure shall include the following tasks, as a minimum:

- Welded steel shielded enclosure
- Lighting
- Penetrations – Doors, Ventilation, Connector Panels

Optional items:

- Option 1: Anechoic Material
- Option 2: Electrical Power
- Option 3: Heating Ventilation and Air Conditioning (HVAC)

#### **4. APPLICABLE DOCUMENTS**

The following documents of the issue in effect on the date of contract award, form a part of this specification.

##### **4.1 MILITARY STANDARDS**

Mil-Std-220A Method Of Insertion-Loss Measurement  
MIL-STD-285 Attenuation Measurement for Enclosures, Electromagnetic Shielding  
for Electrical Test Purposes, Method of

##### **4.2 MILITARY SPECIFICATIONS**

MIL-F-15733E Filters, Radio Interference

##### **4.3 COMMERCIAL STANDARDS**

###### **4.3.1. American Institute Of Steel Construction (Aisc) Publications**

S303 Code of Standard Practices for Steel Buildings and Bridges  
S335 Specification for Structural Steel Buildings  
9<sup>th</sup> ed. Allowable Stress Design (ASD), Manual of Steel Construction

###### **4.3.2. American Society Of Civil Engineers (Asce) Publications**

ASCE 7-95 Minimum Design Loads for Buildings and Other Structures

###### **4.3.3. American Welding Society (Aws) Publications**

AWS D1.1 Structural Welding Code – Steel  
AWS D1.3 Structural Welding Code – Sheet Steel  
AWS B2.1 Specification for Welding Procedure and Performance Qualification

###### **4.3.4. International Conference Of Building Officials (Icbo) Publications**

1997 Ed. Uniform Building Code

###### **4.3.5. National Fire Protection Association (Nfpa) Publications**

70-1998 National Electrical Code

###### **4.3.6. Underwriters' Laboratories, Inc. Publications**

UL 486A Standard for Safety; Wire Connectors and Soldering Lugs for use with Copper  
Conductors  
UL 1283 Standard for Safety; Electromagnetic Interference Filters

**4.3.7. National Electrical Manufacturers Association (Nema)**

250-1997 Enclosures For Electrical Equipment( 1000 Volts Maximum)

Sg 5-1995 Power Switchgear Assemblies

Wd 1-1983 General Requirements For Wiring Devices

Wd 6-1996 Wiring Devices – Dimensional Requirements

**5. TECHNICAL REQUIREMENTS**

**5.1. GENERAL**

**5.1.1. Work Site**

The work site for this contract is located within Building A59 of NRL. Contractor personnel shall be restricted to the designated work area and shall not be allowed in adjoining rooms without prior approval of the government representative in charge of construction. The Government will designate an area for storage of all contractor materials and equipment and the contractor shall provide adequate environmental protection for all stored materials. The contractor shall maintain a clean work area upon completion of the days work

**5.1.2. Available Floor Space**

The shielded enclosure shall consist of two chambers (main chamber and antechamber), side by side sharing a common wall (see figure 1 and figure 2). The floor space for the main chamber is nominally 23 (l) x 23 (w) feet with an overhead clearance of 20 feet minimum. The floor space available for the antechamber is nominally 20 (l) x 23 (w) feet with an overhead clearance 10 feet. The RF enclosure shall be positioned in the available floor space of Bldg A59 as shown in figure 1. The floor of the parent building is concrete.

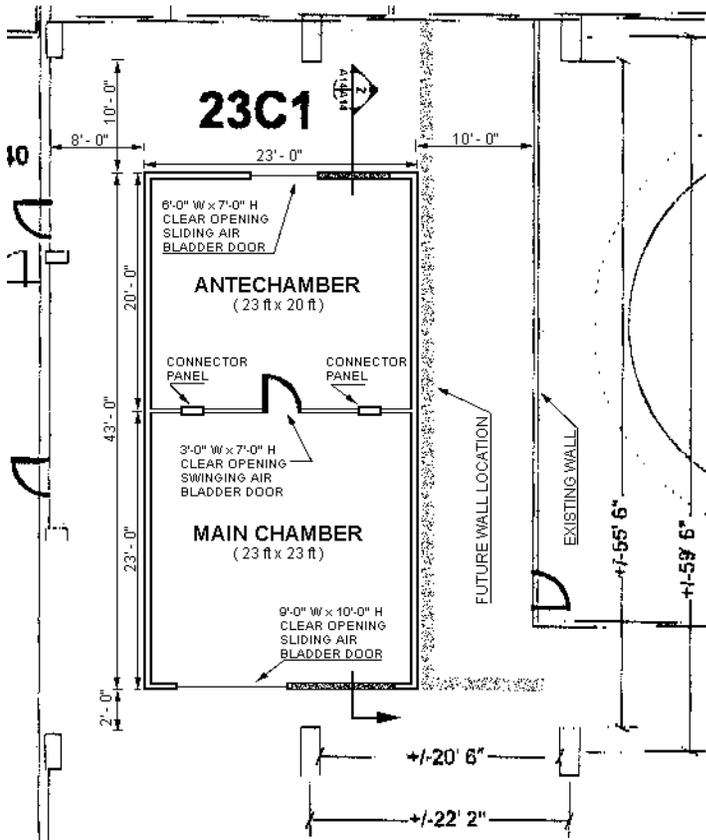
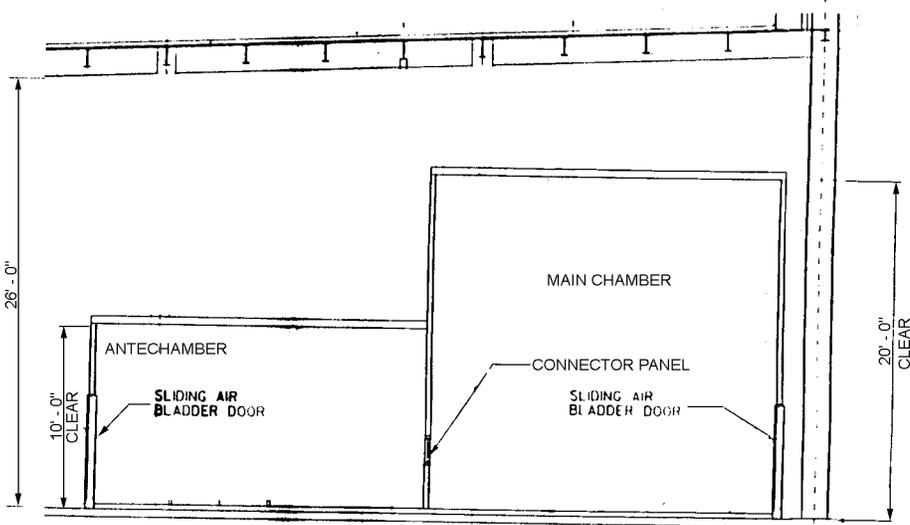


FIGURE 1: Floor Plan (Top View)

SHIELDED ENCLOSURE 1  
A1/A14



SECTION 2  
A1/A14

FIGURE 2: Floor Plan (Side View)

**5.1.3. Ancillary Equipment Location**

The location of all ancillary equipment, both mechanical and electrical, shall be designed in accordance with applicable local, state, and federal building, fire, and safety codes and shall permit easy access for maintenance and repair.

A wall will be constructed by the government after the completion of this contract abutting the east side of the shielded enclosure (see figure 1). No ancillary equipment shall be located along this wall.

**5.1.3. Shielding Effectiveness: Performance Requirement**

The minimum attenuation values specified below shall be obtained throughout the entire frequency range and at all test locations. When tested by use of the procedures specified in MIL-STD-285, the completed enclosures and the chamber-to-chamber isolation shall demonstrate minimum shielding (attenuation), in accordance with the following.

Frequency	Type of Field	Shielding Effectiveness (dB)
30 Hz	Magnetic	6
60 Hz	Magnetic	10
100 Hz	Magnetic	15
400 Hz	Magnetic	40
1 kHz	Magnetic	70
5 kHz	Magnetic	120
1 MHz	Magnetic	120
10 kHz	Electric	120
100 kHz	Electric	120
1 MHz	Electric	120
10 MHz	Electric	120
100 MHz	Plane Wave	120
1 GHz	Plane Wave	120
18 GHz	Plane Wave	120
20 GHz	Microwave	100
50 GHz	Microwave	100

**5.1.4. Kick-Off Meeting**

A kick-off meeting shall be held at the government facility 7 days after contract award. The agenda for the meeting will be provided by the government. The government will provide the contractor with the parent building mechanical and electrical drawings.

### **5.1.5. Critical Design Review (Cdr)**

A Critical Design Review (CDR) between the contractor architect-engineers and the government representatives shall be held at the governments facility 45 days after contract award. The agenda for the meeting will be provided by the government. At this time the contractor shall provide the following documentation in accordance with Exhibit (A): (a) construction schedule, (b) outline shop drawings, (c) equipment design and performance objectives, (d) electrical circuit schematics, (e) a bill of material for all major components, (f) and the Quality Assurance Control Plan. The purpose of the design review is to assess if specified requirements have been properly and fully interpreted and followed, and if conforming to a convenient mechanical configuration. The contractor shall provide all the CDR documentation for review, comments, and approval.

### **5.1.7. Contractor Furnished Equipment (Cfe)**

The contractor shall be responsible for supervising the quality of workmanship during all phases of shielding construction and installation of penetrations, with particular attention to quality of welding.

The contractor shall supply the cranes, compressed air, and all other special facilities to construct, assemble, and install the RF enclosure. Single phase 115 Volt, 60 Hz electrical power shall be made available to the contractor at the construction site. The contractor shall inform the Contracting Officer in writing if there are any additional electrical power requirements necessary during construction.

## **5.2. SHIELDED ENCLOSURE**

### **5.2.1. General Shielded Enclosure Requirements**

The shielded enclosure shall be a fully welded freestanding structure, with no structural support from the parent building. The structure shall meet all local, state, and federal building, fire, and safety codes. Type of construction shall be an all-steel frame, lined or covered with steel sheets that provide the required shielding effectiveness equal to or greater than the minimum requirements stated herein. The shielding effectiveness requirement shall apply to the attenuation from the outside of the structure to all of the interior compartments, and the shielding effectiveness shall also apply to the attenuation from main chamber to antechamber. The shielded effectiveness requirements apply to the finished structure, with all electrical and mechanical penetrations installed and operating.

The shielded enclosure shall be constructed for a useful lifetime of at least thirty (30) years when maintained in accordance with the procedures supplied by the contractor.

The contractor shall provide a design to allow movement of the shielded enclosure due to settling and thermal expansion. The contractor shall provide protection to the shielded enclosure from any moisture accumulating between the shielded enclosure floor and the floor of the parent building.

#### **5.2.1.1. Welding**

Metal Electrode Inert Gas (MIG) process or other method approved by the contracting officer shall be used. The contractor shall use welding rods that are structurally and electrically compatible with the steel framing and sheets. The completed welds shall be free of slag, gas pockets, inclusions, wormholes, cracks, or incomplete fusion. The steel sheets shall be free of any buckling caused by the welding process.

The steel sheets shall be assembled into an RF tight shield by continuous welding of all seams, joints, and corners. Full penetration butt welds or lap welds shall be used as appropriate. Where backing material is required, it shall overlap by at least 1" on both sides of the weld location. Corner joints that connect floors, walls, and ceilings shall be formed by a steel angle of heavy gauge steel with an overlap of at least 1 in. Three-way corners may be prefabricated off-site to minimize on-site welding and assembly difficulty, and to maintain seam integrity.

#### **5.2.1.2. Material**

All materials, parts, mechanical and electrical assemblies used in the installation of the shielded enclosure shall be new, undamaged and of a quality consistent with the usage of the shielded enclosure. Certificates shall be submitted to the COR attesting that the materials used in the shielded enclosure fabrication meet the requirements specified herein. If requested, material samples shall be provided.

The basic material for the shielded enclosure shall be low-carbon steel sheets conforming to the requirements of the American Iron and Steel Institute. Minimum acceptable thickness shall be US standard 7 gauge; however the contractor's use of this particular gauge shall not relieve him of responsibility for the full specified shielding effectiveness requirement. Before assembly, all steel shall be free of loose scale and rust.

#### **5.2.1.4. Shielded Enclosure Penetrations And Attachments**

The contractor shall make all the required penetrations in the shielded enclosure. For work performed by subcontractors, the contractor shall either provide the attachment joints and brackets, or provide instructions to the subcontractor involved, in writing, to ensure that attachments do not degrade the shielding effectiveness of the shielded enclosure.

**5.2.1.5. Interior Floors**

The finished floors between the antechamber and the main chamber shall be at the same height.

The finished floor in each chamber shall be flush. The underlying steel floor in the each chamber shall be finished with suitable material to provide support for the finished floor. The finished floor shall be covered with 1/8 inch commercial grade vinyl tile. The contractor shall provide protection from any moisture accumulating between the underlying steel floor and the finished floor in each chamber.\

**5.2.1.6. Ground Stud External To The Shielded Enclosure**

The grounding system external to the shielding enclosure shall be designed to provide for safety of personnel in accordance with the National Electrical Safety Code. The contractor shall provide a ground stud welded to the exterior wall, northeast corner, of the shielded enclosure to electrically connect the shielded enclosure to earth ground. The government will provide the earth ground.

**5.2.1.7. Ground Stud Internal To The Shielded Enclosure**

The grounding system internal to the shielding enclosure shall be designed to provide for safety of personnel in accordance with the National Electrical Safety Code. The contractor shall provide a ground stud welded to the interior wall in the southwest corner of the main chamber. The contractor shall provide a second ground stud welded to the interior wall in the southwest corner of the antechamber.

**5.2.1.8. Finish Paint And Corrosion Control**

After all welding has been completed, all exposed steel shall be cleaned of welding slag and loose scale, and shall be primed with a corrosion inhibiting zinc-rich metal primer. All surfaces, which will become inaccessible after assembly, shall be primed with a zinc-rich metal primer before they are covered up.

The outside of the shielded enclosure and the interior of the antechamber shall be finished in semi-gloss synthetic off-white enamel. The interior finish of the main chambers walls and ceiling shall be suitable for the application of anechoic materials. Surfaces requiring metal-to-metal contact shall not be painted nor primed.

**5.2.1.9. Loading**

The shielded enclosure ceiling shall be capable of supporting loads in accordance with ASCE and UBC requirements.

The shielded enclosure walls shall be capable of supporting loads in accordance with ASCE and UBC requirements.

The shield room steel sub-floor, when suitably supported by the parent-building floor, shall be capable of supporting a minimum floor load of 1000 pounds per square foot. The finished floor shall be capable of supporting loads of 1000 pounds per square foot and point loads of 1,000 pounds on suitable casters.

The shielded enclosure shielding effectiveness shall not be affected by the specified loading of the ceiling, wall, and floor panels.

**5.2.2. Main Chamber Size**

The main chamber dimensions shall be 23 feet (l) x 23 feet (w) x 20 feet (h) as shown in fig. 1 and fig. 2.

**5.2.2. Antechamber Size**

The antechamber dimensions shall be 20 feet (l) x 23 feet (w) x 10 feet (h) as shown in fig 1 and fig 2.

**5.2.3. In-Process Testing**

The contractor shall test all welds of the shielded enclosure in accordance with the approved procedure of the quality assurance control plan. The contractor shall repair all deficiencies identified, and shall retest the repaired welds. The contractor shall provide a test report detailing, as a minimum, all the test data, deficiencies, repairs, and retest results.

**5.2.4. Completed (Empty) Shielded Enclosure Performance Testing**

Upon completion of the enclosure, but prior to priming, covering any metal, or starting any interior finish work, prime contractor shall perform a test of all welded seams, penetrations, doors, and vent peripheries in accordance with the approved procedure of the quality assurance control plan. Any deficiencies identified shall be repaired before starting any interior work. The contractor shall provide a test report detailing, as a minimum, all the test data, deficiencies, repairs, and retest results.

### **5.3. ELECTRICAL POWER**

#### **5.3.1. General**

The contractor shall provide all materials and labor to wire the shielded room for electrical power and lighting in accordance with National Electrical Safety Code. The work includes, but is not limited to furnishing and installing all wiring, conduits, wiring devices, lighting fixtures, switches, receptacles, filters, isolation transformers, distribution panels, breakers, fuses, together with any and all other equipment and accessories indicated, specified or necessary for a complete shielded enclosure installation. This includes all installation wiring inside and outside of the shielded enclosure.

Minimum wire size shall be number 12 AWG. All wiring shall be routed inside conduit.

#### **5.3.2. Material And Workmanship**

Complete wiring schematics of all electrical work along with the detailed engineering drawings certified by a registered electrical engineer for compliance to the National Electric Code, shall be submitted to the COR for approval. NRL will inspect all electrical work prior to the final connection to the supply power of the parent building.

#### **5.3.3. Parent Building Supply Power**

The contractor shall make all power connections inside and outside the shielded enclosure up to the supply power of the parent building. The contractor shall notify the COR to have the government electrical trades make the final connection to the parent building supply power.

#### **5.3.4. Breaker Panels**

The contractor shall supply the electrical distribution panels, circuit breakers, and all hardware required by the installation drawings to distribute electrical power and lighting power to the main chamber and the antechamber. The materials shall be installed and rated in accordance with the National Electrical Safety Code.

#### **5.3.5. Identification Of Circuits**

The contractor shall identify and label all circuit breakers, switches, receptacles, with adhesive type labels. Labels shall be marked with panel numbers and circuit number.

### **5.3.6. Power line Filter Units**

The contractor shall provide power line filter units for operation on 60 Hz electric power lines with voltage and current ratings as indicated. The power line filter units shall be designed for the reduction of conducted RF energy, and shall provide an insertion loss from the load side of the filter to the supply side as specified herein, and tested in accordance with MIL-F-15733 and UL 1283.

The power line filter units shall be mounted on the exterior walls of the shielded enclosure. The location shall allow easy access for maintenance and repairs.

A separate filter unit shall be used for each type of power, and one (1) individual filter enclosed in the filter unit shall be used for each phase conductor and neutral conductor of the power line. Each power line filter unit shall consist of a filter unit enclosure and individual filters.

#### **5.3.6.1. Markings For Filter Units, Enclosures And Individual Filters**

Each filter enclosure, and individual filters shall be durably marked by the manufacturer with the rated current rated voltage, operating frequency, nomenclature, number of phases for which it is designed, and with the manufacturer's name. The filter enclosure markings shall be visible without removing cover plates or disturbing the interior parts or wiring. The nameplates and warning labels shall be permanently attached.

In addition, the individual filter and the filter enclosures shall be durably marked by the manufacturer with the following: "WARNING: Before working on circuits connected to power line filters, the circuits must be temporarily grounded to ensure discharge of capacitors." The contractor may use an equivalent warning.

#### **5.3.6.2. Filter Unit Enclosure**

The filter unit enclosures shall be NEMA Type 1 enclosures made of steel of not less than 14 gauges with welded seams. The filter unit enclosure shall meet the shielding effectiveness requirement of the overall shielded enclosure. The filter unit enclosures shall be galvanized or electroplated after fabrication and welding, or the enclosures shall be finished with a corrosion-inhibiting primer and two coats of finish enamel of the manufacturer's standard color. All unpainted surfaces shall be protected by highly conductive corrosion-resistant plating.

### **5.3.6.3. Internal Configuration**

Each filter unit enclosure shall be divided into two compartments. The power input compartment shall be separated from the power output compartment by a solid steel RF barrier plate of the same gage as the filter unit enclosure extending across the entire width of the enclosure. A ground stud shall be welded on each side of the RF barrier plate for power line safety ground connections.

The power input compartment shall house the individual filters and the input terminals of the filters. The power output compartment shall house the output terminals of the individual filters.

### **5.3.6.4. Access Openings And Cover Plates**

Access to the power input compartment and the power output compartment shall be from the front of the filter unit enclosure. Two access cover plates shall be provided. One plate shall cover the access opening to the power output terminal compartment only and shall, when secured in place, provide an RF tight seal with the compartment it covers. The second access cover plate shall cover the power input compartment, and may abut or overlap the cover plate for the power output terminal compartment. A RF gasket shall be provided for the power input terminal compartment cover plate. The cover plate shall be secured by bolts with spacing necessary to maintain the required shielding effectiveness stated herein. Access cover plates finish shall be the same as specified for the enclosure. These plates shall be attached in a manner to provide for easy removal and replacement.

The access opening for the power input compartment shall provide clear access to the filter input terminals and the standoff insulator terminals or insulated terminal blocks specified herein, and shall also allow easy removal of the individual filters from the filter unit enclosure.

The power output compartment opening shall provide clear access to the filter power output terminals and the standoff insulator terminals or insulated terminal block specified herein.

### **5.3.6.5. Filter Unit Conduit Connection To Enclosures**

The power output compartments shall have no knockouts and each compartment shall have a single threaded conduit hub that is seam welded in place, sized and located as required for the conduit connection. All conduits from the conduit hub to the penetration into the shielded enclosure shall be circumferentially welded.

#### **5.3.6.6. Individual Filter Attachments**

The load end of the individual filter case shall be attached to the RF barrier plate. An RF-tight seal shall be provided between the individual filter case and the barrier plate. The output terminals of the individual filters shall protrude into the power output compartment.

The individual filter cases shall be mechanically attached to the filter unit enclosure to prevent stresses being applied to the RF seal.

Individual filters within a unit shall be equipped with insulated terminals and shall incorporate suitably sized flexible leads from the insulated filter terminals to standoff insulator terminals or insulated terminal blocks. The standoff insulator terminals or insulated terminal blocks shall be mounted in the terminal compartments. Solderless lugs shall be provided for connecting the phase and neutral wires to the filter units. The lugs shall be of the hex head bolt or screw type and shall conform to NEMA standards. Spacing of live parts shall be in accordance with the National Electrical Code.

#### **5.3.6.7. Individual Filter Construction**

Individual filters shall be designed and manufactured to UL Listed standards. The individual filter shall be filled with a nonflammable impregnating or potting compound meeting the requirements of MIL-F-15733, and hermetically sealed. The filters shall either be finished with a corrosion-resistant plating or one coat of corrosion-resistant primer and two coats of finish enamel. Surfaces requiring metal-to-metal contact shall be clean and free of paint and insulating material.

#### **5.3.6.8. Electrical Requirements**

The insertion loss of the individual filters shall be equal to or greater than 100 dB from 14 kHz to 50 GHz, at 10% to 100% of rated load when tested in accordance with MIL-STD-220A.

The individual filters shall be designed with a passband for use with DC to 60 Hz power.

The minimum voltage-rating requirement of the individual filters shall be 277 volts line-to-ground and 480 volts line-to-line. The 60 Hz ac voltage within the resistive load variations of 10 to 100% rated load shall not vary more than  $\pm 1\%$  of the rated line voltage at unity power factor. The dc resistive drop shall not exceed 0.5 volts when operated at rated current.

The current rating of the individual filters shall be greater than or equal to the current rating of the circuit specified for the shielded enclosure.

All individual filters shall be provided with bleeder resistors to drain the stored charge from the capacitors when power is shut off. Drainage of stored charge shall be in accordance with the National Electrical Code.

#### **5.3.6.9. Temperature Rise**

All components of the individual filters shall be suitable for continuous full load operation in an ambient temperature of 65°C. The temperature rise of the hottest filter, when mounted in the filter unit enclosures, shall not exceed 40°C at full rated load. All components of the individual filter shall be suitable for continuous full rated load operation at 125°C without derating.

#### **5.3.7. Power line Safety Ground And Neutral Conductor Connections**

The power line safety ground wire shall be routed through the filter enclosure and connected to the ground stud welded on each side of the RF barrier plate. The safety ground wire shall be grounded to all conduit, lighting fixtures and receptacles per the National Electrical Safety Code.

The neutral conductor shall be filtered. The neutral conductor shall be attached to ground per the National Electrical Safety Code.

#### **5.3.8. Copper Bus Bar**

A copper bus bar 3/8 inch x 1½ inch wide shall be permanently applied directly to the steel framing inside the shielded enclosure. The steel framing consists of a 1½-inch wide steel channel bar welded to the shielded enclosure wall. The copper bus bar shall be routed around each wall of both chambers directly above the electrical power raceways. The different sections of the copper bus bar, routed throughout the chamber, shall be permanently bonded together to form an electrically continuous ground system.

The bus bar shall be tapped with ¼"-20 holes centered every 12 inches. The bus bar shall be electrically bonded to the internal ground stud.

#### **5.3.9. Conduit**

All conduits are a part of the shielding circuitry of the shielded room. All conduits from the power line filters to the penetration through the RF shielded enclosure shall be circumferentially welded.

The conduit, conduit fittings, junction boxes shall be galvanized rigid metal conduit conforming to NEMA standards. The conduit, all fittings and boxes, must be well grounded to the shielded room wall without penetrating the RF shielding. If mechanical penetration is necessary for structural reasons to support the conduit, these penetrations shall be welded closed with the same MIG welding procedures used to make all seams RF tight. All conduits shall be parallel to or at right angles to the shielded enclosure walls, floors and ceilings.

### **5.3.10. Main Chamber Power**

The following isolated and filtered power shall be provided inside the main chamber:  
120/208 volt, 100 amp, 3-phase 4-wire WYE power

The contractor shall integrate the design and installation of the power distribution, receptacles, and outlets with the design and installation of the anechoic material in the main chamber. The design and installation shall be in accordance with National Electrical Codes.

The 120/208 volt service shall be used to supply three (3) 120 volt, 20 amp, 1-phase circuits. Standard NEMA configured straight blade receptacles shall be used. The circuits shall be wired to evenly distribute the 1-phase load on the 3-phase service. The circuits shall be routed along each wall in conduit, or in a raceway, in accordance with National Electrical Codes. Power outlet boxes shall be located every four feet with 4 receptacles per outlet.

Two (2) 208 volt, 30 amp 3-phase 4-wire circuits shall be routed along each wall in conduit, or in a raceway, in accordance with National Electrical Codes. Four (4) standard NEMA configured locking receptacles shall be evenly distributed in the chamber, preferably one on each wall. The four receptacles shall be wired to evenly distribute the load between the two circuits.

### **5.3.11. Antechamber Power**

The following isolated and filtered power shall be provided inside the antechamber:  
120/208 volt, 100 amp, 3-phase 4-wire WYE power

The design and installation of the power distribution, receptacles, and outlets in the antechamber shall be in accordance with National Electrical Codes.

The 120/208 volt service shall be used to supply three (3) 120 volt, 20 amp, 1-phase circuits. Standard NEMA configured straight blade receptacles shall be used. The circuits shall be wired to evenly distribute the 1-phase load on the 3-phase service. The circuits shall be routed along each wall in conduit, or in a raceway, approximately 40 inches above the floor. Power outlet boxes shall be located every four feet with 4 receptacles per outlet.

Two (2) 208 volt, 30 amp 3-phase 4-wire circuits shall be routed along each wall in conduit, or in a raceway, approximately 40 inches above the floor. Four (4) standard NEMA configured locking receptacles shall be evenly distributed in the chamber, preferably one on each wall. The four receptacles shall be wired to evenly distribute the load between the two circuits.

## **5.4. LIGHTING**

The contractor shall design and install the lighting system in accordance with National Electrical Safety Code. The contractor shall use incandescent type lighting in the shielded enclosure. The work includes supplying and installing all wiring, conduits, wiring devices, lighting fixtures, switches, receptacles, together with any and all other equipment and accessories indicated, specified or necessary for a complete shielded enclosure lighting system installation. All wiring shall be routed inside conduit

In the main chamber, the contractor shall integrate the design and installation of the lighting system with the design and installation of the anechoic material. The design and installation shall be in accordance with National Electrical Codes.

### **5.4.1. Lighting Control**

The lighting in the main chamber shall be controlled from two (2) locations. A switch shall be located inside the main chamber near the exterior access door, and a second switch shall be located on the opposite wall, inside the main chamber near the interior door. The switch at either location shall activate or deactivate all lighting in the main chamber.

The lighting in the antechamber shall be controlled from a single location on the inside wall of the antechamber near the exterior access door. The lights in the antechamber shall be evenly separated to provide three (3) zones of lighting: front, middle, and back of the antechamber. Three (3) switches shall control the three (3) separate banks of lights.

All switches for the lighting system shall be mounted approximately 54" above the finished floor and located on the same side as the door handle is to be mounted on.

## **5.5. PENETRATIONS**

### **5.5.1 General**

All penetrations of the RF shielded enclosure shall be protected in a manner which preserves the integrity of the shield. The term "shielding penetration" or "penetration" as used herein, specifically includes any fastener or supporting device passing through the shielding material, passing from compartment to compartment, as well as penetrations required for doors, ventilation, utilities, and communications.

All penetrations, wave-guides, honeycomb filters, RF connector panels may be prefabricated off-site with large flanges around the device. The flange shall have a minimum 2-inch overlap to prevent heat buildup during on-site welding. All penetrations, pipe joints, flanges shall be circumferentially welded.

## **5.5.2. Doors**

The contractor shall supply the doors, door control panels, pneumatic systems, and all the hardware necessary for the door installation and operation. The pneumatic system consists of all the valves, piping, and hardware to regulate, filter, and control 120 psi shop air supplied by the parent building. The door shall meet all local, state, federal, safety, and fire codes.

### **5.5.2.1. Exterior Doors**

Two (2) steel, shielded, exterior doors shall be located and dimensioned as shown on the drawings. The exterior doors shall be a pneumatic slide type using compressed air for sealing, and shall have fully automatic operation from either side. They shall be accurately positioned in the frame to affect an RF tight metal-to-metal seal when pressure is applied to the sealing device. RF gasket materials or contact fingers shall not be used. The RF tight seal shall be accomplished by a 4-inch minimum lap of the sealing surface around the entire periphery and on both faces of the door.

The exterior doorsills shall be flush with the finished interior floors of the chambers. Two (2) lightweight, removable threshold covers, one for each door, shall be supplied for easy equipment transport when the doors are open. Two (2) lightweight removable ramps, one for each door, shall be provided on the exterior side of the doors to transition the finished door threshold to the parent building concrete floor. The loading requirements of the ramps and threshold covers shall meet or exceed the loading requirements of the shielded chamber floor.

Each exterior door shall have a two (2) control panels, one on each side of the door opening. Each control panel shall activate the fully automatic door opening and door closing process by a push button control. A red indicating light shall be provided on each side of the door to show when the door is in a sealed condition. Each exterior door shall have a panic release button for emergency exit access. The sealing device shall "fail safe" upon loss of pneumatic pressure allowing manual operation of the door.

The exterior doors shall be designed and installed to allow for door removal and pneumatic system access. The design shall include bolted inspection cover plates for adjustments, repairs, and maintenance of the doors.

### **5.5.2.2. Interior Door**

The steel, shielded, interior door shall be located and dimensioned as shown on the drawings. The door shall be a pneumatic hinged type using compressed air for latching and sealing, and shall have fully automatic operation from either side. The interior doors shall be accurately positioned in the frame to affect an RF tight metal-to-metal seal when pressure is applied to the sealing device. RF gasket materials or contact fingers shall not be used. The RF tight seal shall be accomplished by a 4-inch minimum lap of the sealing surface around the entire periphery and on face of the door.

The interior door shall have a two (2) control panels, one on each side of the door opening. Each control panel shall activate the fully automatic door latching, sealing process and door unlatching, deflating process by a push button control. A red indicating light shall be provided on each side of the door to show when the door is in a sealed condition. Each door shall have a panic release button for emergency exit access. The sealing device shall "fail safe" upon loss of pneumatic pressure allowing manual operation of the door.

The shielded doors shall be designed and installed to allow for door removal and pneumatic system access. The design shall include bolted inspection cover plates for adjustments, repairs, and maintenance of the shielded doors.

### **5.5.2.3. Qualification Of Shielded Door**

The contractor shall submit evidence of shielding performance of the interior and exterior doors. As a minimum, such evidence shall include a test report showing compliance which meets or exceeds shielding requirements of the shielded enclosure. The shielding effectiveness shall not degrade below the requirements stated herein over a time period of greater than 3 years when maintained in accordance with the procedures supplied by the contractor.

The installation of the doors shall not degrade the performance of the door. The contractor shall verify that the installed doors meet or exceed the shielding effectiveness requirements specified herein during the final acceptance tests of the shielded enclosure.

### **5.5.3. Rf Connector Panel**

Two (2) connector panels with removable panel inserts shall be installed on the common wall between main chamber and antechamber. The connector panels shall be 2 (w) feet x 2 (h) feet. The connector panels shall be located on each end of the common wall between the chambers, approximately three (3) feet in from their respective corners, and positioned 48 inches above the floor. The connector panels shall be identical in design, and the removable panels inserts shall be interchangeable.

The contractor shall supply four (4) removable panel inserts. The contractor shall install RF type feedthrough connectors on the two (2) of the panel inserts. Each of the two-panel insert shall have the following connectors installed equally spaced on the panel: four (4) SMA connectors, four (4) N-Type connectors, and four (4) fiber optic connectors. The two (2) other panel inserts shall be have no feedthrough connector installed. Each of these panels shall have anechoic material permanently installed on the side facing the main chamber.

The connector panels with removable panel inserts having the RF type feedthrough penetrations shall be designed and installed in such a manner so as not to degrade the shielding effectiveness requirements of the shielded enclosure.

#### **5.5.4. Shielded Vents**

The contractor shall design and install the air conditioning and heating ducts through the walls and ceiling of the shielded enclosure. The contractor shall use specially constructed vents with suitable RF shielded wave guide-beyond-cutoff (honeycomb) material, a minimum of 1 inch thick. The sizes and locations of the shielded vents shall be as shown on the shop drawings.

In the main chamber, the contractor shall integrate the design and installation of the shielded vents with the design and installation of the anechoic material.

The honeycomb material shall be factory mounted in a steel frame. The steel frame shall be field welded continuously around its frame periphery to the shielded enclosure. The contractor shall design the frame so that the field welding process does not damage the vent. The shielding effectiveness of the vents shall meet or exceed the requirements of the shielded enclosure.

All vents shall be designed to ensure proper attachment to the HVAC ductwork. Each air vent input shall have a deflector mounted in such a way as to deflect the airflow out the sides instead of straight down to the floor.

### **5.6. FIRE ALARM AND FIRE SUPPRESSION SYSTEMS**

#### **5.6.1. Fire Alarm**

The contractor shall install a fire alarm system in the shielded enclosure in accordance with local, state, and federal building, fire, and safety codes. The fire alarm system shall be a self-contained zone, capable of tying into the existing parent building alarm system as a separate zone. The fire alarm system shall have, as a minimum, an annunciating device, pull alarm station, heat detectors, and smoke detectors.

#### **5.6.2. Fire Suppression System**

The contractor shall install a fire suppression system in the shielded enclosure in accordance with local, state, and federal building, fire, and safety codes. The fire suppression system shall consist, as a minimum, of a water sprinkler system, piping, valves, and sprinkler heads. The sprinkler heads in the main chamber shall be heat activated, retractable type and be incorporated into the anechoic material design. The sprinkler heads in the antechamber shall be heat activated type.

## **6. TRAINING**

The contractor shall provide a minimum of 8 hours instruction time to designated government personnel. The instruction shall include operational requirements, maintenance, sliding door adjustment and repair and such other matters as may be pertinent to realization of the maximum operating potential of the shielded enclosure installation.

## **7. DOCUMENTATION:**

All reports, schematics, drawings, manuals, etc, shall be provided in accordance with Exhibit A.

### **7.1 Maintenance And Users Manual**

The contractor shall provide a user and maintenance manual for the shielded enclosure, doors, and all ancillary equipment needing routine maintenance. The manuals shall describe the procedure in detail to maintain the shielded enclosure under the contractors warranty.

### **7.2 Monthly Reports**

The contractor shall provide monthly status reports. The status report shall, at a minimum, indicate the schedule of the design and installation tasks, upcoming critical milestones and dates, pending construction or design issues, and possible future problem areas.

### **7.3 Critical Design Review (CDR) Reports:**

The following reports shall be provided by the Contractor during the CDR meeting: (a) construction schedule, (b) outline shop drawings, (c) equipment design and performance objectives, (d) electrical circuit schematics, (e) a bill of material for all major components, (f) and the Quality Assurance Control Plan. All reports shall be reviewed and approved by the Government. Final reports will be required for applicable reports.

### **7.3 Final Shop Drawings And Electrical Diagrams**

The contractor shall provide the contracting officer the as-built shop drawings and electrical drawings for the completed shielded enclosure.

### **7.4 Final Acceptance Testing**

After completion of the RF shielded enclosure, installation of all penetrations and doors, installation and checkout of all electrical and mechanical subsystems, the contractor shall demonstrate compliance with the shielding effectiveness requirements in accordance with the approved test procedures of the Quality Assurance Plan. The warranty period shall commence on the successful completion of this final acceptance test.

## **7.5 Final Acceptance Test Report**

The contractor shall provide the contracting officer the final acceptance test report, including all the original data, for the completed shielded enclosure. Pass or failure of the requirements shall be clearly stated and the proposed resolution of any unacceptable performance shall be presented.

### **OPTION 1**

## **8. ANECHOIC MATERIAL INSTALLATION**

The contractor shall design and install anechoic material in the main chamber of the shielded enclosure for a semi-anechoic chamber configuration. The contractor shall design and install portable pallets of ferrite tile absorber over the floor area to provide the ability of the main chamber to convert to a full anechoic configuration.

The main chamber shall have anechoic material shall be permanently installed on all walls, ceiling, doors, and penetrations. The contractor shall integrate the design of the anechoic material with the design electrical systems, lighting systems, heating and ventilation system, and the fire alarm and fire sprinkler system. The anechoic material shall be fire retardant.

The anechoic material shall be resistant to moisture and shall meet all fire, safety, and health codes. The anechoic material shall be capable of safely withstanding a continuous field intensity of 200 volts per meter at all frequencies.

### **8.6. CONSTRUCTION**

The contractor shall design the anechoic material installation to not impede the operation of the doors, nor restrict the clear opening area of the doors, nor shall the installation impede the flow of air to or from the ventilation system. The anechoic material shall be protected from any excess heat from the lighting fixtures, and shall allow easy access to the fixtures for bulb replacement.

The anechoic material installed on the walls and ceiling shall consist of a wide band absorbers, ferrite tiles, or a hybrid of both. The ends of absorber material shall be protected with white end caps to prevent damage to the tips or tapers.

The portable pallets of ferrite tile absorber material shall create flush floor surface when installed in the main chamber. The portable pallets shall be capable of supporting floor loads equal to or greater than the underlying finished floor. The portable pallet absorber material shall be protected from damage during installation and removal process, and also during normal use.

**8.7. ANECHOIC MATERIAL ABSORPTION REQUIREMENTS**

The minimum performance of the anechoic material installed on the walls and ceiling shall be as specified:

Frequency	Minimum Absorption of Anechoic Material (dB)
30 MHz – 2 GHz	20
2 GHz – 50 GHz	30

The minimum performance of the portable pallets of ferrite tile absorber material shall be as specified:

Frequency	Minimum Absorption of Ferrite Tiles (dB)
20 MHz – 200 MHz	10
200 MHz – 1 GHz	20

The contractor shall submit evidence of absorption performance of the anechoic material and ferrite tile. As a minimum, such evidence shall include a test report showing compliance which meets or exceeds minimum absorption requirements specified. The minimum absorption shall not degrade below the requirements stated herein over a time period of greater than 10 years when maintained in accordance with the procedures supplied by the contractor.

**OPTION 2**

**9 POWERLINE ISOLATION TRANSFORMERS**

The contractor shall provide the materials and labor to install power line isolation transformers, with disconnect switches and fuses, between the parent building supply power and the power line filter units of the shielded enclosure. Separate isolation transformers shall be used for each type of power, and separate isolation transformers shall be used for the main chamber and the antechamber. The installation shall be in accordance with National Electrical Safety Code.

### **9.1. MAIN CHAMBER POWER**

The following isolated and filtered power shall be provided inside the main chamber:  
120/240 volt, 60 amp, 1-phase 3-wire power (using center tap transformer)

The contractor shall integrate the design and installation of the power distribution, receptacles, and outlets with the design and installation of the anechoic material in the main chamber. The design and installation shall be in accordance with National Electrical Codes.

The 120/240 volt service shall be used to supply two (2) 120 volt, 30 amp, 1-phase circuits. Four (4) standard NEMA configured straight blade receptacles shall be evenly distributed in the chamber, preferably one on each wall. The circuits shall be routed along each wall in conduit, or in a raceway, in accordance with National Electrical Codes. The circuits shall be wired to evenly distribute the 1-phase load on the center tap transformer of the 120/240 volt service.

Two (2) 240 volt, 30 amp 1-phase circuits shall be routed along each wall in conduit, or in a raceway, in accordance with National Electrical Codes. Four (4) standard NEMA configured locking receptacles shall be evenly distributed in the chamber, preferably one on each wall. The four receptacles shall be wired to evenly distribute the load between the two circuits.

### **9.2. ANTECHAMBER POWER**

The following isolated and filtered power shall be provided inside the antechamber:  
120/240 volt, 60 amp, 1-phase 3-wire (using center tap transformer)

The design and installation of the power distribution, receptacles, and outlets in the antechamber shall be in accordance with National Electrical Codes.

The 120/240 volt service shall be used to supply two (2) 120 volt, 30 amp 1-phase circuits. Four (4) standard NEMA configured straight blade receptacles shall be evenly distributed in the chamber, preferably one on each wall. The circuits shall be routed along each wall in conduit, or in a raceway, approximately 40 inches above the floor. The circuits shall be wired to evenly distribute the 1-phase load on the center tap transformer of the 120/240 volt service.

Two (2) 240 volt, 30 amp 1-phase circuits shall be routed along each wall in conduit, or in a raceway, approximately 40 inches above the floor. Four (4) standard NEMA configured locking receptacles shall be located in the chamber, preferably one on each wall. The four receptacles shall be wired to evenly distribute the load between the two circuits.

**OPTION 3**

**10 HEATING VENTILATION AND AIR CONDITIONING (HVAC)**

The contractor shall install a stand alone, package unit HVAC system in accordance with local, state, and federal building and safety codes. The HVAC system shall include, as a minimum, the HVAC package unit, the air handler, ductwork, filters, and all controls. The HVAC shall provide heating, ventilation, and air conditioning with sufficient capacity for typical heat loads in the main chamber and antechamber. The HVAC as shall also provide humidity control by steam reheating coils (dehumidification). The steam will be supplied by the parent building. No humidification is necessary. The contractor shall install a humidistat to monitor the humidity in the main chamber and the antechamber. The ductwork shall provide fresh outside air, and exhaust outside the parent building.

# CONTRACT DATA REQUIREMENTS LIST

Approved  
Order No. 0704-0188

Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

<b>A. CONTRACT LINE ITEM NO.</b> 0002/0004/0006/0008		<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____	
<b>D. SYSTEM / ITEM</b> EMI Sheilded Enclosure			<b>E. CONTRACT / PR NO.</b> N00173-00-R-JR05		<b>F. CONTRACTOR</b> TBD
<b>1. DATA ITEM NO.</b> A001	<b>2. TITLE OF DATA ITEM</b> Maintenance and Users Manuals			<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>		<b>5. CONTRACT REFERENCE</b> SOW- Sec. 7.1		<b>6. REQUIRING OFFICE</b> Naval Research Laboratory	
<b>7. DD 250 REQ</b> N/A	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> OTIME	<b>12. DATE OF FIRST SUBMISSION</b> Accept of CLIN 0001	<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>	<b>11. AS OF DATE</b> Acceptance of CLIN0001	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>	<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
				Draft	Final
				Reg	Repro
<b>16. REMARKS</b>				Code 8131/TR	1
				15. TOTAL →	1
<b>1. DATA ITEM NO.</b> A002	<b>2. TITLE OF DATA ITEM</b> Monthly Report			<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>		<b>5. CONTRACT REFERENCE</b> SOW- Sec 7.2		<b>6. REQUIRING OFFICE</b> NRL	
<b>7. DD 250 REQ</b> N/A	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> Each 30 Day Period	<b>12. DATE OF FIRST SUBMISSION</b> 35 DAC	<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>	<b>11. AS OF DATE</b> 35 DAC	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> Each 35 day period	<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
				Draft	Final
				Reg	Repro
<b>16. REMARKS</b>				Code 8131/TR	1
				15. TOTAL →	1
<b>1. DATA ITEM NO.</b> A003	<b>2. TITLE OF DATA ITEM</b> Construction Schedule			<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>		<b>5. CONTRACT REFERENCE</b> SOW 5.1.6		<b>6. REQUIRING OFFICE</b> NRL	
<b>7. DD 250 REQ</b> N/A	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> OTIME	<b>12. DATE OF FIRST SUBMISSION</b> See Blk 16	<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>	<b>11. AS OF DATE</b> See Blk 16	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> See Blk 16	<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
				Draft	Final
				Reg	Repro
<b>16. REMARKS</b> During Critical Design Review (CDR), to be held approximately 45 days after contract award				Code 8131/TR	1
				15. TOTAL →	1
<b>1. DATA ITEM NO.</b> A004	<b>2. TITLE OF DATA ITEM</b> Outline Shop Drawings			<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>		<b>5. CONTRACT REFERENCE</b> SOW - 5.1.6		<b>6. REQUIRING OFFICE</b> NRL	
<b>7. DD 250 REQ</b> N/A	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b>	<b>12. DATE OF FIRST SUBMISSION</b> See Blk 16	<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>	<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> See Blk 16	<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
				Draft	Final
				Reg	Repro
<b>16. REMARKS</b> The Contractor shall provide a draft copy of the Online Shop Drawings during the CDR				Code 8131/TR	1
				15. TOTAL →	1
<b>G. PREPARED BY</b> Code 3235		<b>H. DATE</b>	<b>I. APPROVED BY</b>		<b>J. DATE</b>

<b>17. PRICE GROUP</b>
<b>18. ESTIMATED TOTAL PRICE</b>

<b>17. PRICE GROUP</b>
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F Approved  
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<b>A. CONTRACT LINE ITEM NO.</b> 0002/0004/0006/0008		<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM: _____ OTHER _____		
<b>D. SYSTEM / ITEM</b> EMI Shielded Enclosure			<b>E. CONTRACT / PR NO.</b> N00173-00-R-JR05		<b>F. CONTRACTOR</b> TBD	
<b>1. DATA ITEM NO.</b> A009	<b>2. TITLE OF DATA ITEM</b> Final Shop Drawings and Electrical Schematics			<b>3. SUBTITLE</b>		
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW- Sec.7.3		<b>6. REQUIRING OFFICE</b> Naval Research Laboratory	
<b>7. DD 250 REQ</b> N/A	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> OTIME	<b>12. DATE OF FIRST SUBMISSION</b> See Blk 16		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>	<b>11. AS OF DATE</b> See Blk 16	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> See Blk 16		<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
				Draft	Final	
					Reg	
					Repra	
<b>16. REMARKS</b> The Contractor shall provide a final draft of the drawings and schematics upon review and approval of the drafts by the Government rep.					Code 8131/TR	
					1	
					15. TOTAL →	
					1	
<b>1. DATA ITEM NO.</b> A010	<b>2. TITLE OF DATA ITEM</b> Final Acceptance Test Reort			<b>3. SUBTITLE</b>		
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW- Sec 7.5		<b>6. REQUIRING OFFICE</b> NRL	
<b>7. DD 250 REQ</b> N/A	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> OTIME	<b>12. DATE OF FIRST SUBMISSION</b> See Blk 16		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>	<b>11. AS OF DATE</b> See Blk 16	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> See Blk 16		<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
				Draft	Final	
					Reg	
					Repra	
<b>16. REMARKS</b> The Contractor shall provide the final acceptance test report upon completion of final testing of the shielded enclosure.					Code 8131/TR	
					1	
					15. TOTAL →	
					1	
<b>1. DATA ITEM NO.</b>	<b>2. TITLE OF DATA ITEM</b>			<b>3. SUBTITLE</b>		
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b>		<b>6. REQUIRING OFFICE</b>	
<b>7. DD 250 REQ</b>	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b>	<b>12. DATE OF FIRST SUBMISSION</b>		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>	<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
				Draft	Final	
					Reg	
					Repra	
<b>16. REMARKS</b>					15. TOTAL →	
<b>1. DATA ITEM NO.</b>	<b>2. TITLE OF DATA ITEM</b>			<b>3. SUBTITLE</b>		
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b>		<b>6. REQUIRING OFFICE</b> NRL	
<b>7. DD 250 REQ</b>	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b>	<b>12. DATE OF FIRST SUBMISSION</b>		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>	<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
				Draft	Final	
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					Repra	
<b>16. REMARKS</b>					15. TOTAL →	
<b>G. PREPARED BY</b> Code 3235		<b>H. DATE</b>		<b>I. APPROVED BY</b>		<b>J. DATE</b>

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