



RFQ No. DACW67-02-Q-0032

**US Army Corps
of Engineers®**
Seattle District

Project: WELD SHOP RENOVATION

Location: LIBBY DAM, MONTANA

**CONSTRUCTION SOLICITATION
AND SPECIFICATIONS**

Closing Date: 19 MARCH 2002
Closing Time: 2:00 PM LOCAL TIME

REMARKS: Quotes may be faxed to (206) 764-6817, Attention: Susan Newby, or mailed to US Army, Corps of Engineers, Seattle District, Attention: Susan Newby, P.O. Box 3755, Seattle, WA 98124-3755.

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REQUEST FOR QUOTATIONS <i>(THIS IS NOT AN ORDER)</i>		THIS RFQ <input checked="" type="checkbox"/> IS <input type="checkbox"/> IS NOT A SMALL BUSINESS SET-ASIDE			PAGE 1	OF PAGES 45
1. REQUEST NO. DACW67-02-Q-0032	2. DATE ISSUED 07-Feb-2002	3. REQUISITION/PURCHASE REQUEST NO. W68MD9-1306-7050	4. CERT. FOR NAT. DEF. UNDER BDSA REG. 2 AND/OR DMS REG. 1		RATING	
5a. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT P.O. BOX 3755 SEATTLE WA 98124-3755			6. DELIVER BY <i>(Date)</i> SEE SCHEDULE			
5b. FOR INFORMATION CALL: <i>(Name and Telephone no.) (No collect calls)</i> SUSAN F NEWBY 206-764-6780			7. DELIVERY <input checked="" type="checkbox"/> FOB <input type="checkbox"/> OTHER DESTINATION <i>(See Schedule)</i>			
8. TO: NAME AND ADDRESS, INCLUDING ZIP CODE			9. DESTINATION <i>(Consignee and address, including ZIP Code)</i> ADMINISTRATIVE SECTION(LI) 17155 HIGHWAY #37 LIBBY MT 59923-9703 Phone: FAX:			
10. PLEASE FURNISH QUOTATIONS TO THE ISSUING OFFICE IN BLOCK 5a ON OR BEFORE CLOSE OF BUSINESS: <i>(Date)</i> 19-Mar-2002						
IMPORTANT: This is a request for information, and quotations furnished are not offers. If you are unable to quote, please so indicate on this form and return it to the address in Block 5a. This request does not commit the Government to pay any costs incurred in the preparation of the submission of this quotation or to contract for supplies or services. Supplies are of domestic origin unless otherwise indicated by quoter. Any representations and/or certifications attached to this Request for Quotations must be completed by the quoter.						
11. SCHEDULE <i>(Include applicable Federal, State, and local taxes)</i>						
ITEM NO. (a)	SUPPLIES/ SERVICES (b)		QUANTITY (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)
SEE SCHEDULE						
12. DISCOUNT FOR PROMPT PAYMENT		a. 10 CALENDAR DAYS (%)	b. 20 CALENDAR DAYS (%)	c. 30 CALENDAR DAYS (%)	d. CALENDAR DAYS No. (%)	
NOTE: Additional provisions and representations <input type="checkbox"/> are <input type="checkbox"/> are not attached.						
13. NAME AND ADDRESS OF QUOTER <i>(Street, City, County, State, and ZIP Code)</i>			14. SIGNATURE OF PERSON AUTHORIZED TO SIGN QUOTATION		15. DATE OF QUOTATION	
			16. NAME AND TITLE OF SIGNER <i>(Type or print)</i>		TELEPHONE NO. <i>(Include area code)</i>	

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SECTION SF 30 BLOCK 14 CONTINUATION PAGE

RENOVATION TO INSTALL THE HVAC SYSTEM IN THE WELDING SHOP AT LIBBY DAM, MONTANA.

THIS PROJECT IS BETWEEN \$25,000 AND \$100,000.

QUOTES ARE DUE 19 MARCH 2002 AT 2:00PM LOCAL TIME.

THIS IS A FIRM FIXED PRICE CONTRACT.

THIS PROJECT IS SET-ASIDE FOR EMERGING SMALL BUSINESS.

BONDING REQUIREMENTS:

FOR AWARDS GREATER THAN \$25,000.00, THE CONTRACTOR SHALL PROVIDE ONE OF THE FOLLOWING WITHIN FIVE (5) DAYS OF THE AWARD:

- A. PAYMENT BOND WILL BE FOR 100% PERCENT OF THE TOTAL AWARD AMOUNT.
- B. IRREVOCABLE LETTER OF CREDIT FOR 100% OF THE TOTAL AWARD AMOUNT.

AWARD SHALL BE MADE TO THE RESPONSIVE AND RESPONSIBLE OFFEROR WITH THE LOWEST OFFER.

PROSPECTIVE OFFERORS: THE DIRECTOR OF DEFENSE PROCUREMENT HAS ISSUED A FINAL RULE AMENDING THE DEFENSE FEDERAL ACQUISITION REGULATION SUPPLEMENT (DFARS) THAT REQUIRES CONTRACTORS TO BE REGISTERED IN THE DOD CENTRAL CONTRACTOR REGISTRATION (CCR) FOR AWARDS RESULTING FROM SOLICITATION ISSUED AFTER MAY 31, 1998.

THIS RULE EFFICIENTLY IMPLEMENTS THE DEBT COLLECTION IMPROVEMENT ACT OF 1996 AS IT REQUIRES CONTRACTORS TO BE REGISTERED IN CCR FOR CONSIDERATION OF FUTURE SOLICITATIONS, AWARDS AND PAYMENT. REGISTRATION IS REQUIRED PRIOR TO AWARD OF ANY CONTRACT, BASIC AGREEMENT, BASIC ORDERING AGREEMENT OR BLANKET PURCHASE AGREEMENT FROM A SOLICITATION ISSUED AFTER MAY 31, 1998. NO CONTRACT AWARD WILL BE MADE TO AN UNREGISTERED CONTRACTOR. INTERNET ACCESS ALLOWS YOU TO REGISTER BY COMPLETING AN ELECTRONIC ON-LINE REGISTRATION APPLICATION FROM CCR HOMEPAGE AT <http://www.ccr2000.com/>. FOR FURTHER ASSISTANCE IN COMPLETING YOUR ON-LINE REGISTRATION, CONTACT THE NEAREST PROCUREMENT TECHNICAL ASSISTANCE CENTER (PTAC) NEAR YOU (<http://www.rcacwv.com/ptac.htm>).

CONTRACTOR MUST PROVIDE DUN AND BRADSTREET NUMBER: _____

If contractor does not have DUNS number, contractor may register in CCR to retrieve a number, or you may call 888-333-0505.

PERIOD OF PERFORMANCE: CONTRACTOR SHALL COMMENCE 10 CALENDAR DAYS AFTER RECEIVING NOTICE TO PROCEED AND WILL BE COMPLETED WITHIN 150 CALENDAR DAYS AFTER NOTICE TO PROCEED.

NOTE Seattle District will accept Non-Facnet and Facnet responses. This Request for Quotations (RFQ) is considered for Emerging Small Business before considering Small Business Set-Aside Only; Large Business will not be considered (see FAR clause 52.219-20, Notice of Emerging Small Business Set-Aside)

Upon requesting a copy of the RFQ, the point of contact is:

SUSAN NEWBY, Contract Specialist
CONTRACTING WEB ADDRESS: <http://www.nws.usace.army.mil/index.cfm>
(Click on Contract and Bid Information)
E-MAIL: Susan.F.Newby@nws02.usace.army.mil
TEL: (206) 764-6780
FAX: (206) 764-6817

Representations and Certifications contained herein must be completed by offerors and returned with offers. Markings of quote envelopes, to be submitted to this office, shall be plainly marked as follows:

QUOTE FOR: Renovation of Weld Shop, Libby Dam, MT
REQUEST FOR QUOTATION NUMBER DACW67-02-Q-0032

If there are amendments that will follow, the Amendments will be accepted until the time and date of closing. Amendments must be acknowledged by signing the front page of the Standard Form (SF) 30, Amendment of Solicitation/Modification of Contract.

Ensure that all pages that have been written and signed on are submitted to this office. Faxed quotes or phoned quotes shall be accepted before closing. EDI contractors MUST request for the specifications and wage determination. Failure to do so will result in rejection of offers.

AWARD SHALL BE MADE TO THE RESPONSIVE AND RESPONSIBLE OFFEROR WITH THE LOWEST OFFER.

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Weld Shop Renovation, Libby Dam, Mt.

SITE VISIT: There will be a site visit scheduled for March 12, 2002, at 1:00PM at Libby Dam. Due to Security Constraints, each contractor is strongly advised to contact Gerald Day, at (509) 244-5571, extension 244, for arrangements on the site visit. From this site visit, each contractor can then form their own opinions on the extent of level of effort required to meet the performance requirements of this contract.

SAFETY REQUIREMENTS: Construction shall be conducted in accordance with the requirements of EM 385-1-1, "Safety and Health Requirements Manual", dated 3 September 1996. This manual is part of all contracts which include references to Federal Acquisition Regulation (FAR) Clause 52.236-13. The latest version and changes to EM 385-1-1 are available at http://www.hq.usace.army.mil/soh/hqusace_soh.htm. Contractors shall be responsible for complying with the current edition and all changes posted on the web as set forth in this solicitation.

DAVIS-BACON WAGE RATE NO. MT010008, modification Number 1, dated August 31, 2001, is incorporated herein. There may not be any Davis-Bacon covered employees required under this award.

Seattle District Army Corps of Engineers has provided the Wage Rates at the following internet site:
<http://www.nws.usace.army.mil/davisbacon/mt/2001/mt010008-1.htm>.

Contractor can access wage rates at this internet site. If contractor does not have access to internet, contractor may request a faxed copy of the wage rates by faxing request to Susan Newby at (206) 764-6817, or calling at (206) 764-6780, before solicitation closing date and time. When requesting, contractor shall provide name, phone and fax number, and solicitation number for which wage rates are being requested. If you are awarded a contract, you will be responsible for complying with the wage decision and posting it on the jobsite.

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Weld Shop Renovation, Libby Dam, Mt.

SECTION B Supplies or Services and Prices

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001		1.00	Lot		
	RENOVATION OF WELD SHOP VENTILATION SYSTEM				
	FFP - See Drawings and Specifications of the Renovation of the Weld Shop at Libby Dam, Montana.				
	PURCHASE REQUEST NUMBER W68MD9-1306-7050				
				NET AMT	

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SECTION C Descriptions and Specifications

This project is the renovation of the Weld Shop ventilation system in the Power house at Libby Dam, Montana. The current system does not sufficiently exhaust smoke produced during some of the heavier duty welding processes. Work includes the demolition and removal of the existing duct work, hoods and fan, installation of new duct work, welding-smoke removal hoods, fan and door grille. A portion of the existing ventilation system is buried beneath the Libby Dam Power House Parking Lot and will require saw cutting of the existing bituminous road surface and excavation. Excavation will be back filled and asphalt surface will be replaced. All work will be in accordance with the plans and specifications: See Drawings, File Number E-53-11-189, 7 drawings.

Drawing number **Brief description of Drawings**

G-1	Project location maps (vicinity map and Libby dam area map) and drawing index
M-1	Abbreviations, general notes and paving & base course notes
M-2	Demolition
M-3	Mechanical schedules (air distribution device schedule, exhaust, supply, return fan schedule and Exhaust fan EF-1 starter)
M-4	Enlarged HVAC plan (includes drawings, HAVAC notes and electrical notes)
M-5	HVAC details (includes swing arm flume exhaust system, duct terminal details, and typical gooseneck details)
M-6	Seismic details (includes seismic details for sway bracing and typical seismic restraint of mechanical equipment)

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SECTION 01001
SUPPLEMENTARY REQUIREMENTS

1. CONDUCT OF WORK

1.1 COORDINATION AND WORK HOURS

1.1.1 Coordination with using agencies shall be made through the Contracting Officer to assist the Contractor in completing the work with a minimum of interference and inconvenience.

1.1.2 Work hours in the construction area will be restricted to 6:30 a.m. to 5:00 p.m. daily, Monday through Thursday, excluding holidays. The Contractor shall not access the construction area before 6:30 a.m. and shall be off site before or by 5:00 p.m. Requests for alternate work schedules may be considered, but will be approved only by the Contracting Officer. Alternate work schedules will not be approved if a Government quality assurance inspector is not available to be on site full time during all hours outside those previously stated.

1.2 GENERAL ACCESS REQUIREMENTS

Access to the powerhouse and dam structures will be controlled at an entrance guard station. Incoming traffic will be restricted from entering the controlled area until proper identification is provided. Access during other than established working hours will be in accordance with the provisions above.

1.2.1 Contractor's Vehicles

Contractor's vehicles shall only park in approved areas in accordance with the parking plan provided by the Contracting Officer.

1.3 CONTRACTOR SECURITY

The Corps of Engineers will not be responsible for providing security for Contractor-owned/controlled equipment, supplies, or materials. The Contractor shall provide those necessary security measures.

1.4 KEYS

Keys are required for access to the construction area and will be provided by the Contracting Officer. The Contractor shall be responsible for Government-owned keys issued for this contract. Upon completion of the work, or upon request of the Contracting Officer, key or keys shall be returned. Should the Contractor lose a key:

- a. The Contracting Officer shall be notified, in writing, within three (3) working days after the loss is discovered, and
- b. Should the key not be found before final acceptance, the final contract payment shall be reduced by \$100.00 for re-keying.

1.5 Refuse Disposal and Cleanup

1.5.1 Refuse Disposal

The cost of refuse disposal, such as transportation, handling, dumping fees as applicable, and similar cost, shall be included in the Contract price. Refuse shall be disposed of offsite at the Contractor's expense.

1.5.2 Fire Hazard

Cloths, cotton waste, and other combustible materials that might constitute a fire hazard shall be placed in closed metal containers and placed outside or destroyed at the end of each day.

1.5.3 Restrictions

The Contractor will not be permitted to deposit refuse in existing garbage cans or refuse dumpsters. Cleaners shall not be poured, drained, or washed into plumbing fixtures or sanitary or storm sewers. Debris, dirt, dust, and strains attributable to or resulting from the work effort shall be removed, cleaned, or effaced by the Contractor to the satisfaction of the COR prior to final acceptance of the job.

1.5.4 Particulates

Dust particles, aerosols, and gaseous byproducts from construction activities, processing, and preparation of materials shall be controlled at all times, including weekends, holidays, and hours when work is not in progress. Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to Federal and state allowable limits at all times.

2. PERSONNEL IDENTIFICATION

2.1 EMPLOYEE LISTING

The Contractor shall submit a complete listing of Contractor personnel, including job title and identification credential number, who will be working on the project. This listing shall be updated as needed to insure that the Government has been notified of any changes of Contractor Personnel in advance of new personnel engaging in work on the project. The Government will allow access to the controlled areas of only the Contractor Personnel authorized in advance and included on the employee listing.

2.2 Identification Credentials

Contractor personnel shall either be issued a photo identification card (ID) by the Contractor or agree to provide their individual vehicle driver's license as an appropriate identification credential. In either case, the identification number shall be included on the listing required above. If the Contractor determines to issue ID cards to its employees, the following information shall be included:

Contractor Identification and Card Number Indicating Employees:

- | | |
|--|--|
| <ul style="list-style-type: none">o Full Nameo Current Addresso Birth Dateo Recent Photograph | <ul style="list-style-type: none">o Heighto Weighto Hair Coloro Eye Color |
|--|--|

2.3 Employee Termination

If a Contractor employee resigns or is terminated the Contracting Officer, or designated representative shall be so notified at the earliest opportunity, but in no case later than the start of the succeeding workday.

2.4 Access Control

Contractor personnel shall be instructed to present identification credential upon request by proper authority as established by the Contracting Officer.

3. UTILITY OUTAGES

Contractor shall coordinate utility outages with the Contracting Officer at least 7 days in advance. Outages shall be kept to a minimum and any one outage shall not last more than 2 hours.

4. SUBMITTALS

Submittals shall be as specified in Section 01330 SUBMITTAL PROCEDURES.

5. WARRANTY OF CONSTRUCTION (APR 1984) (FAR 52.246-21)

5.1 In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph 5.9 of this Clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

5.2 This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession.

5.3 The Contractor shall remedy at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damage to Government-owned or controlled real or personal property, when that damage is the result of:

- a. the Contractor's failure to conform to contract requirements or
- b. any defect of equipment, material, workmanship, or design furnished.

5.4 The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

5.5 The Government will notify the Contractor, in writing or by telephone, after the discovery of any failure, defect or damage and the Contractor shall respond and be on-site to correct the problem within 1 working day after notification.

5.6 If the Contractor fails to remedy any failure, defect, or damage within a reasonable time as determined by the Government, after receipt of notice, the Government will have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

5.7 With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:

- a. obtain all warranties that would be given in normal commercial practice;
- b. require all warranties to be executed in writing, for the benefit of the Government, if directed by the Contracting Officer; and
- c. enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

5.8 Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

5.9 This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects or fraud.

6. AVAILABILITY OF UTILITY SERVICES

6.1.1 Water

The Government will make available to Contractor, from existing outlets and supplies, reasonable amounts of potable water without charge. Contractor shall reasonably conserve potable water furnished. Contractor, at its own expense, shall install and maintain necessary temporary connections and distribution lines and shall remove the connections and lines prior to final acceptance of construction.

6.1.2 Electricity

Subject to available supply, reasonable amounts of electric current will be made available by the Government, without charge, to the Contractor for performing work at the work area. The Contractor shall carefully conserve electricity furnished. The Contractor, at its own expense and in a workmanlike manner satisfactory to the Contracting Officer, shall extend the existing electrical distribution system (overhead and underground) for temporary electrical service to the worksite, shall install and maintain necessary temporary connections, and shall remove the same prior to final acceptance of the construction.

7. SANITARY PROVISIONS

Public accommodations available for use of Contractor's employees are available within the construction area as designated. Contractor shall leave facilities in a neat and sanitary condition after use.

8. TEMPORARY ELECTRIC WIRING

8.1 Temporary Power and Lighting

The Contractor shall provide construction power facilities in accordance with the safety requirements of the National Electric Code NFPA No. 70 and the SAFETY AND HEALTH REQUIREMENTS MANUAL EM 385-1-1. The Contractor, or its delegated subcontractor, shall enforce the safety requirements of electrical extensions for the work of subcontractors. Work shall be accomplished by skilled electrical tradesmen.

8.2 Construction Equipment

In addition to the requirements of EM 385-1-1, SAFETY AND HEALTH REQUIREMENTS MANUAL, temporary wiring conductors installed for operation of construction tools and equipment shall be either Type TW or THW contained in metal raceways, or shall be hard usage or extra hard usage multiconductor cord. Temporary wiring shall be secured above the ground or floor in a workmanlike manner and shall not present an obstacle to persons or equipment. Open wiring may only be used outside of buildings, and then only in accordance with the provisions of the National Electric Code.

9. FIRE PROTECTION

During construction period, the Contractor shall provide fire extinguishers in accordance with the safety requirements of the SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1. The Contractor shall remove the fire extinguishers at the completion of the contract.

10. AS-BUILT FIELD DATA

10.1 General

The Contractor shall keep at the construction site a complete set of full size blue-line prints of the contract drawings, reproduced at Contractor expense. During construction, these prints shall be marked to show all deviations in actual construction from the contract drawings. The color red shall be used to indicate all additions and green to indicate all deletions. The drawings shall show the following information but not be limited thereto:

- a. The locations of any changes within the building or structure.
- b. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including, but not limited to, fabrication erection, installation, and placing details, etc.
- c. All changes or modifications from the original design and from the final inspection.

These deviations shall be shown in the same general detail utilized in the contract drawings. Marking of the prints shall be pursued continuously during construction to keep them up to date. In addition, the Contractor shall maintain full size marked-up drawings, survey notes, sketches, nameplate data, pricing information, description, and serial numbers of all installed equipment. This information shall be maintained in a current condition at all times until the completion of the work. The resulting field-marked prints and data shall be referred to and marked as "As-Built Field Data," and shall be used for no other purpose. They shall be made available for inspection by the COR whenever requested during construction and shall be jointly inspected for accuracy and completeness by the COR and a responsible representative of the Contractor prior to submission of each monthly pay estimate.

10.2 Submittal of the As-Built Field Data

The As-Built Field Data shall be submitted to the Contracting Officer for review and approval a minimum of 10 calendar days prior to the date of final inspection. If review of the preliminary as-built drawings reveals errors and/or omissions, the drawings will be returned to the Contractor for corrections. The Contractor shall make all corrections and return the drawings to the Contracting Officer within 5 calendar days of receipt.

11. HOUSEKEEPING AND CLEANUP

Contractor shall remove all debris from the work area daily.

12. PROTECTION OF PROPERTY

The Contractor shall protect all Government property. Protection shall include, but is not limited to protection from construction generated dust, debris, water, and vibration.

13. CORRESPONDENCE

13.1 All correspondence shall be addressed to the Contracting Officer, shall be serially numbered commencing with Number 1, with no numbers missing or duplicated and shall be furnished with an original and one copy. Enclosures attached or transmitted with the correspondence shall also be furnished with an original and one copy. Each serial letter shall make reference to the contract name, contract number and shall have only one subject.

13.2 All correspondence from the Contracting Officer will be also serially numbered with no numbers missing or duplicated.

14. STAGING AREA

Contractor will be provided adequate open staging area as directed by the Contracting Officer. Area is unsecured, and Contractor shall make provisions for its own security.

15. SAFETY REQUIREMENTS

Operations shall be in accordance with all requirements of Corps of Engineers Manual, EM 385-1-1, "Safety and Health Requirements Manual," dated September 1996.

16. HARD HAT SIGNS

The Contractor shall provide 24 by 24 inch square Hard Hat Area signs at each entry to the project or work area as directed by the Contracting Officer. A minimum of two signs will be required. Signs shall be in accordance with the sketch at the end of this section.

17. COMMENCEMENT AND COMPLETION OF WORK:

Contractor shall begin work within 10 calendar days of purchase order award and complete all work ready for use by 1 August 2002. The date of award will be no later than 1 April 2002. The time stated for completion includes final cleanup of the premises.

18. Work shall conform to the following specifications and drawings:

18.1 Specifications:

<u>Section No.</u>	<u>Section Title</u>
01001	Supplementary Requirements (contained herein)
01330	Submittals

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Weld Shop Renovation, Libby Dam, Mt.

05502 Metals: Miscellaneous, Standard Articles, Shop Fabricated Items
 15895 Air Supply, Distribution, Ventilation, and Exhaust System
 15950 Heating, Ventilating and Air Conditioning (HVAC) Control System
 15990 Testing, Adjusting, and Ballancing of HVAC Systems

18.2 Drawings:

FILE NUMBER	SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
Libby Dam Weld Shop Renovation, Kootenai River near Libby, MT					
E-53-11-189	1	G-1	Cover Sheet, Vicinity Map and Drawing Index		01JUL30
	2	M-1	Demolition Plan		01JUL30
	3	M-2	Abbreviations and General Notes		01JUL30
	4	M-3	Mechanical Schedules		01JUL30
	5	M-4	HVAC Plan		01JUL30
	6	M-5	HVAC Details		01JUL30
	7	M-6	Seismic Details		01JUN25

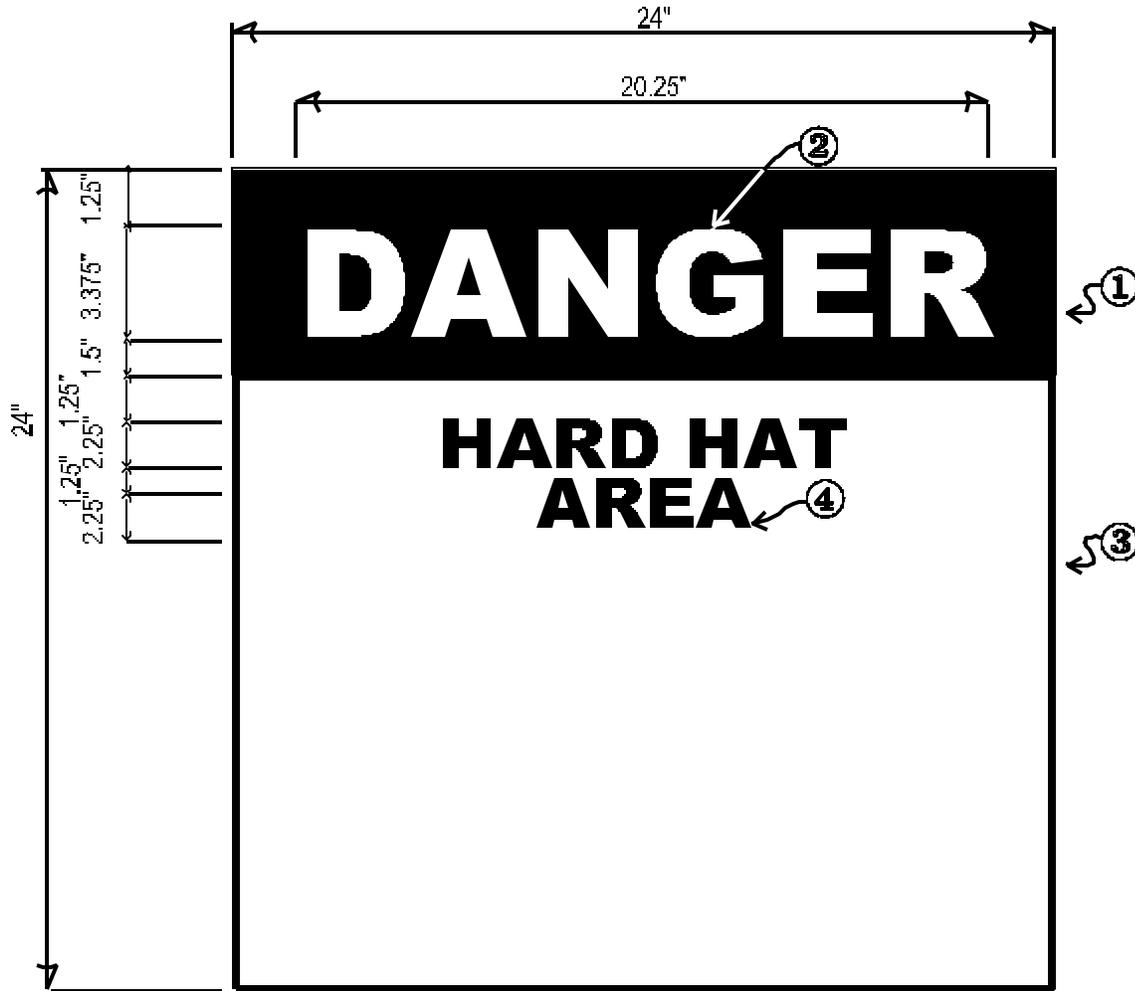
REFERENCE DRAWINGS

Reference drawings provided show conditions at time of construction. These drawings are furnished for information only and the Government does not warrant that conditions will be exactly as shown. Minor deviations can be anticipated and shall not be the basis for a claim for extra compensation.

FILE NUMBER	REF DWG NUMBER	TITLE	REV No.	DATE
Libby Dam Kootenai River, Montana Powerhouse Erection Bay - Arrangement				
E-53-11-189	1	Plans El. 2131.5 and El. 2148	A	72MAR10
Libby Dam Kootenai River, Montana Powerhouse HVAC Renovation				
E-53-11-189	2	Welding Shop Plan El. 2131.5	O	92APR24

STANDARD DETAILS BOUND IN THE SPECIFICATIONS

DRAWING NUMBER	SHEET NUMBER	TITLE	DATE
<u>SECTION 01001 - Supplementary Requirements</u>			
	1	Hard Hat Sign	10SEP90



- SIGN SHALL BE FABRICATED FROM .125 THICK 6061-T6 ALUMINUM PANEL
- COLOR
- 1. SAFETY RED (SR)
- 2. WHITE
- 3. WHITE
- 4. BLACK
- LETTERING SHALL BE HELVETICA BOLD TYPOGRAPHY.
- LETTERS AND BACKGROUND SHALL BE REFLECTIVE SHEETING MATERIAL.
- SIGNS SHALL BE POSTED AT 6'-6" (BOTTOM SIGN TO GRADE) OR AS DIRECTED BY THE CONTRACTING OFFICER.
- LETTERING TO BE CENTERED ON PANEL.

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 CONTROL AND SCHEDULING OF SUBMITTALS

1.1.1 Submittal Coordination Meeting

During the preconstruction coordination meeting with the COR, the Contractor shall provide and develop an approved preliminary submittal register, ENG Form 4288. During the meeting all required items will be identified and grouped into three categories:

- Government Approved (GA)

Government approval is required for extensions of design, critical materials, variations/deviations, an "or equal" decision, equipment whose compatibility with the entire system must be checked, architectural items such as Color Charts/Patterns/Textures, and other items as designated by the COR. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," these submittals will be acted on as "shop drawings."

- For Information Only (FIO)

Submittals not requiring Government approval will be for information only. These are items such as Installation Procedures, Certificates of compliance, Samples, Qualifications, etc. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," these submittals will not be acted on as "shop drawings."

- Those items that can be visually inspected by the Contractor's Quality Control Representative (CQC) on site or are provided to the Government other than with an ENG Form 4025: The items that fall into this category shall remain on the register but shall not be submitted to the COR. For these items, the "Classification" column on the submittal register shall remain blank.

1.1.2 Final Submittal Register

The final submittal register shall be submitted within 15 days of Notice to Proceed.

1.2 SUBMITTAL TYPES

Data

Submittals which provide calculations, descriptions, or documentation regarding the work.

Drawings

Submittals which graphically show relationship of various components of the work, schematic diagrams of systems, details of fabrication, layouts of particular elements, connections, and other relational aspects of the work.

Instructions

Preprinted material describing installation of a product, system or material, including special notices and material safety data sheets, if any, concerning impedances, hazards, and safety precautions.

Schedules

Tabular lists showing location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.

Statements

A document, required of the Contractor, or through the Contractor from a subcontractor, supplier, installer, or manufacturer to confirm the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other quality verifications.

Reports

Reports of inspections or tests, including analyses and interpretation of test results. Each report shall be properly identified. Test methods used shall be identified and test results shall be recorded.

Certificates

Statement signed by an official authorized to certify on behalf of the manufacturer that a product, system or material meets specified requirements. The statement must be dated after the award of this contract and state the Contractor's name and address, project and location, and list specific requirements which are being certified.

Samples

Fabricated and/or unfabricated physical examples of materials, products, and/or units of work as complete units or as portions of units.

Records

Documentation to record compliance with technical or administrative requirements.

Operation and Maintenance Manuals

Data which forms a part of an operation and maintenance manual.

1.3 APPROVED SUBMITTALS

The approval of submittals by the COR shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist. The Contractor, under the CQC requirements of this contract, is responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work. After submittals have been approved by the COR, no resubmittal for the purpose of substituting materials or equipment will be given consideration.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the COR and promptly furnish a corrected submittal in the format and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, written notice, as required under the Contract Clause entitled "Changes," shall be given to the COR.

1.5 PAYMENT

Separate payment will not be made for submittals, and all costs associated therein shall be included in the applicable unit prices or lump sum prices contained in the schedule. Payment will not be made for any material or equipment which does not comply with contract requirements.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

Prior to submittal, all items shall be checked and approved by the Contractor's CQC and each item of the submittal shall be stamped, signed, and dated. Each respective transmittal form (ENG Form 4025) shall be signed and dated by the CQC certifying that the accompanying submittal complies with the contract requirements. This procedure applies to all submittals. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including, but not limited to, catalog cuts, diagrams; operating charts or curves; test reports; test cylinders; samples; certifications; warranties and other such required items. Units of weights and measures used on all submittals shall be the same as the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. GA submittals shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. The Contractor shall maintain a complete and up-to-date file of all submittals/items on for use by both the Contractor and the Government.

3.2 SUBMITTAL REGISTER (ENG Form 4288)

The submittal register - ENG Form 4288 – for Divisions 2 through 16 shall be developed by the Contractor prior to the preconstruction coordination meeting and list each item of equipment and material for which submittals are required in the Technical Specifications (See paragraph SUBMITTALS at the beginning of each specification section. A blank form ENG 4288 is attached at the end of this specification section). The Contractor shall approve all items listed on the submittal register. During the preconstruction coordination meeting, a preliminary submittal register will be created by annotating this Form 4288. When the final submittal register is submitted for approval, the Contractor shall complete the column entitled "Item No." and all data under "Contractor Schedule Dates" and return five completed copies to the COR for approval. The Contractor shall review the list to ensure its completeness and may expand general category listings to show individual entries for each item. The numbers in column "Item No." are to be assigned sequentially starting with "1" for each specification section. DO NOT preassign transmittal numbers when preparing the submittal register. When a conflict exists between the submittal register and a submittal requirement in the technical sections, the approved submittal register shall govern. The preliminary, and then the final approved submittal register, will become the scheduling documents and will be updated monthly and used to control submittals throughout the life of the contract. Names and titles of individuals authorized by the Contractor to approve shop drawings shall be submitted to COR with the final 4288 form. Supplier or subcontractors certifications are not acceptable as meeting this requirement.

3.3 SCHEDULING

Submittals covering component items forming a system, or items that are interrelated, shall be coordinated and submitted concurrently. Certifications shall be submitted together with other pertinent information and/or drawings. Additional processing time beyond 15 days, or number of copies, may be shown by the COR on the submittal register attached in the "Remarks" column, or may be added by the COR during the coordination meeting. No delays damages or time extensions will be allowed for time lost due to the Contractor not properly scheduling and providing submittals.

3.4 TRANSMITTAL FORM (ENG Form 4025)

Transmittal Form 4025 (sample at end of this section) shall be used for submitting both GA and FIO submittals in accordance with the instructions on the reverse side of the form. Transmittal numbers shall be assigned sequentially. Electronic generated 4025 forms shall be printed on carbonless paper and be a reasonable facsimile of the original 4025. If electronic forms are not used, the original 4025 forms shall be used (do not photo copy) and will be furnished by the COR. These forms shall be filled in completely

prior to submittal. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.. Each submittal item shall be listed separately on the form, naming subcontractor, supplier, or manufacturer, applicable specification paragraph number(s), drawing/sheet number, pay item number, and any other information needed to identify the item, define its use, and locate it in the work. One or more 4025 forms may be used per specification section, however, DO NOT include more than one specification section per transmittal.

3.5 CROSS-REFERENCE (ENG FORM 4288/ENG FORM 4025)

To provide a cross-reference between the approved submittal register and transmittal forms, the Contractor shall record the "transmittal numbers" assigned when submitting items in column "Transmittal No." of the ENG FORM 4288. The item numbers in column "Item No." of submittal register shall correspond to the item numbers on ENG Form 4025.

3.6 SUBMITTAL PROCEDURE

3.6.1 General

Shop drawings with 4025 forms shall be submitted in the number of copies specified in subparagraphs "Government Approved Submittals" and "Information Only Submittals," or as indicated on the submittal register in the "Remarks" column. Submit a complete collated "reviewers copy" with one 4025 form and attachments (not originals). The remaining copies (4 for GA, 2 for FIO) of 4025 forms and attachments shall not be collated. This would not apply to a series of drawings.

3.6.2 Approval of Submittals by the Contractor

Before submittal to the COR, the Contractor shall review and correct shop drawings prepared by subcontractors, suppliers, and itself, for completeness and compliance with plans and specifications. The Contractor shall not use red markings for correcting material to be submitted. Red markings are reserved for COR's use. Approval by the Contractor shall be indicated on each shop drawing by an approval stamp containing information as shown in this section. Submittals not conforming to the requirements of this section will be returned to the Contractor for correction and resubmittal.

3.6.3 Variations

For submittals which include proposed variations requested by the Contractor, column "h" of ENG Form 4025 shall be checked and the submittal shall be classified as GA, and submitted accordingly. The Contractor shall set forth in writing the justification for any variations and annotate such variations on the transmittal form in the REMARKS block. Variations are not approved unless there is an advantage to the Government. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted variations.

3.6.4 Drawings

Each drawing shall be not more than 28 inches high by 40 inches wide, with a title block in lower right hand corner and a 3 by 4 inch clear area adjacent. The title block shall contain the subcontractor's or fabricator's name, contract number, description of item(s), bid item number, and a revision block. Provide a blank margin of 3/4 inch at bottom, 2 inches at left, and 1/2 inch at top and right. Where drawings are submitted for assemblies of more than one piece of equipment or systems of components dependent on each other for compatible characteristics, complete information shall be submitted on all such related components at the same time. The Contractor shall ensure that information is complete and that sequence of drawing submittal is such that all information is available for reviewing each drawing. Drawings for all items and equipment, of special manufacture or fabrication, shall consist of complete assembly and detail drawings. All revisions after initial submittal shall be shown by number, date, and subject in revision block.

3.6.4.1 Submittals Containing Drawings Larger than 11 inch by 17 inch

For GA submittals containing drawings larger than A3 size 11 inch by 17 inch, one reproducible and one blue line copy will be required to be submitted with five copies of the ENG Form 4025. The marked-up reproducible (and/or any review comments contained on the page-size comment sheet(s) at the Government's option) will be returned to the Contractor upon review. The Contractor shall provide three copies of blue line drawings (generated from the reviewed reproducible) to the Government within 10 days of Contractor's receipt of the reviewed reproducible. The Contractor shall not incorporate approved work into the project until the Government has received the three blue line copies. The Contractor shall use the marked-up reproducible to make any additional copies as needed. For FIO submittals, one reproducible and two blue line copies shall be submitted with the appropriate number of copies of ENG Form 4025.

3.6.5 Printed Material

All requirements for shop drawings shall apply to catalog cuts, illustrations, printed specifications, or other data submitted, except that the 75 mm by 100 mm (3 inch by 4 inch) clear area adjacent to the title block is not mandatory. Inapplicable portions shall be marked out and applicable items such as model numbers, sizes, and accessories shall be indicated by arrow or highlighted.

3.7 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

3.8 GOVERNMENT APPROVED SUBMITTALS (GA)

The Contractor shall submit 5 copies of GA submittals with 5 corresponding 4025 forms. Upon completion of GA submittal review, copies as specified below will be marked with an action code, dated, and returned to the Contractor. See "Drawings" above for special instructions if drawings larger than size A3 (11 inch by 17 inch) are used.

3.8.1 Processing of GA Submittals

Submittals will be reviewed and processed as follows:

a. Approved as Submitted (Action Code "A"): Shop drawings which can be approved without correction will be stamped "Approved" and two copies will be returned to the Contractor. No resubmittal required.

b. Approved Except as Noted (Action Code "B"): Shop drawings which have only minor discrepancies will be annotated in red to indicate necessary corrections. Marked material will be stamped "Approved Except as Noted" and two copies returned to the Contractor for correction. No resubmittal required.

c. Approved Except as Noted (Action Code "C"): Shop drawings which are incomplete or require more than minor corrections will be annotated in red to indicate necessary corrections. Marked material will be stamped "Approved Except as Noted - Resubmission Required" and two copies returned to the Contractor for correction. Resubmittal of only those items needing correction required.

d. Disapproved (Action Code "E"): Shop drawings which are fundamentally in error, cover wrong equipment or construction, or require extensive corrections, will be returned to the Contractor stamped "Disapproved." An explanation will be furnished on the submitted material or on ENG Form 4025 indicating reason for disapproval. Complete resubmittal required.

e. Resubmittal will not be required for shop drawings stamped "A" or "B" unless subsequent changes are made by Contractor or a contract modification. For shop drawings stamped "C" or "E," Contractor shall make corrections required, note any changes by dating the revisions to correspond with the change request date, and promptly resubmit the corrected material. Resubmittals shall be associated with the "parent" by use of sequential alpha characters (for example, resubmittal of transmittal 8 will be 8A, 8B, etc). Government costs incurred after the first resubmittal may be charged to the Contractor.

3.9 INFORMATION ONLY SUBMITTALS (FIO)

The Contractor shall submit three copies of data and four copies of ENG Form 4025. FIO submittals will not be returned. Government approval is not required on FIO submittals. These submittals will be used for information purposes. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the Contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications and will not prevent the COR from requiring removal and replacement if nonconforming material is incorporated in the work. This does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or check testing by the Government in those instances where the technical specifications so prescribe.

3.9.1 Processing of FIO Submittals

FIO submittals shall be submitted prior to delivery of the material or equipment to the job site. ENG Form 4025 shall be marked with the words "contractor approved - information copy only" in the REMARKS block of the form. Submittals will be monitored and spot checks made. When such checks indicate noncompliance, the Contractor will be notified by the same method used for GA submittals. Resubmittal of nonconforming FIO submittals shall be reclassified GA and shall be in five copies.

3.10 CONTRACTOR APPROVAL STAMP

The stamp used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR: _____	
CONTRACT NUMBER _____	

TRANSMITTAL NUMBER _____	
ITEM NUMBER _____	
SPECIFICATION SECTION _____	
PARAGRAPH NUMBER _____	
_____ APPROVED AS SUBMITTED	
_____ APPROVED WITH CORRECTIONS AS	NOTED
SIGNATURE: _____	
TITLE: _____	DATE

CONTRACTORS REVIEW STAMP
MAXIMUM SIZE:
3 INCHES BY 3 INCHES

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.
 2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.
 3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.
 4. Submittals requiring expeditious handling will be submitted on a separate form.
 5. Separate transmittal form will be used for submittals under separate sections of the specifications.
 6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications-also, a written statement to that effect shall be included in the space provided for "Remarks".
 7. Form is self-transmittal, letter of transmittal is not required.
 8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.
 9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.
- | | | | |
|------|--|-------|---|
| A -- | Approved as submitted. | E -- | Disapproved (See attached). |
| B -- | Approved, except as noted on drawings. | F -- | Receipt acknowledged. |
| C -- | Approved, except as noted on drawings.
Refer to attached sheet resubmission required. | FX -- | Receipt acknowledged, does not comply
as noted with contract requirements. |
| D -- | Will be returned by separate correspondence. | G -- | Other (Specify) |
10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

SECTION 05502**METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS****PART 1 GENERAL****1.1. REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36/A 36M	(1996) Carbon Structural Steel
ASTM A 109	(1993) Steel, Strip, Carbon, Cold-Rolled
ASTM A 307	(1994) Carbon Steel Bolts and Studs, 60000 psi Tensile Strength
ASTM F 436	(1993) Hardened Steel Washers

ASME INTERNATIONAL (ASME)

ASME B16.9	(1993) Factory-Made Wrought Steel Buttwelding Fittings
ASME B18.2.1	(1981; Supple 1991; R 1992) Square and Hex Bolts and Screws (Inch Series)
ASME B18.2.2	(1987; R 1993) Square and Hex Nuts (Inch Series)
ASME B18.6.3	(1972; R 1991) Machine Screws and Machine Screw Nuts
ASME B18.21.1	(1994) Lock Washers (Inch Series)
ASME B18.22.1	(1965; R 1990) Plain Washers

ENGINEERING MANUALS (EM)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual
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AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	(1994) Structural Welding Code - Steel
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1.2. SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Shop Fabricated Metal Items ; G.

Detail drawings shall be submitted for approval as specified.

SD-03 Product Data

Miscellaneous Metals and Standard Metal Articles . Shop Fabricated Metal Items ; G.

Lists of materials shall be submitted for approval as specified.

SD-04 Samples

Miscellaneous Metals and Standard Metal Articles; G. Shop Fabricated Metal Items ; G.

Samples shall be submitted for approval as specified. Samples of standard or fabricated items shall be full size and complete as required for installation in the work, and may be installed in the work, provided each sample is clearly identified and its location recorded.

SD-06 Test Reports

Miscellaneous Metals and Standard Metal Articles. Shop Fabricated Metal Items ; G.

Certified test reports for materials tests and analyses shall be submitted for approval as specified.

SD-11 Closeout Submittals

Miscellaneous Metals and Standard Metal Articles. Shop Fabricated Metal Items ; G.

Records which identify the disposition of approved material and fabricated items in the work must be submitted for approval as specified.

1.3. FABRICATION AND WORKMANSHIP REQUIREMENTS

Workmanship for welding shall be in accordance with AWS D1.1, Section 3 and other applicable requirements of these specifications. Workmanship shall be of the highest grade and in accordance with the best modern practices to conform with the specifications for the item of work being furnished.

PART 2 PRODUCTS

2.1. MISCELLANEOUS METALS AND STANDARD METAL ARTICLES

Miscellaneous metal materials and standard metal articles shall conform to the respective specifications and other designated requirements. Sizes shall be as specified or shown. Where material requirements are not specified, materials furnished shall be suitable for the intended use and shall be subject to approval.

2.1.1. Structural Steel

Structural steel shall conform to ASTM A 36/A 36M unless otherwise noted.

2.1.2. Steel Castings

ASTM A 27/A 27M, Grade 60-30, Class 1, or ASTM A 148/A 148M, Grade 80-40.

2.1.3. Steel Strips

ASTM A 109, Temper 1, Edge 4.

2.1.4. Bolts, Nuts, and Washers

Bolts, nuts, and washers shall be of the material, grade, type, class, style and finish indicated or best suited for intended use.

- a. Bolts and Nuts - ASTM A 307, Grade A
- b. Bolts - ASME B18.2.1.
- c. Nuts - ASME B18.2.2.
- d. Washers
 - (1) Plain Washers - ASME B18.22M/ASME B18.22.1, Type B.
 - (2) Lock Washer - ASME B18.21.1.
 - (3) Beveled Washers - ASTM F 436M/ASTM F 436, Beveled.

2.2. SHOP FABRICATED METAL ITEMS

Shop fabricated metal items shall conform to the requirements and details as specified or shown.

PART 3 EXECUTION (Not Applicable)

END OF SECTION

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SECTION 15895
EXHAUST SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AIR MOVEMENT AND CONTROL ASSOCIATION (AMCA)

AMCA 210 (1985) Laboratory Methods of Testing Fans for Rating

AMERICAN BEARING MANUFACTURERS ASSOCIATION (AFBMA)

AFBMA Std 9 (1990) Load Ratings and Fatigue Life for Ball Bearings

AFBMA Std 11 (1990) Load Ratings and Fatigue Life for Roller Bearings

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53/A 53M (1999b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM A 106 (1999e1) Seamless Carbon Steel Pipe for High-Temperature Service

ASTM A 123/A 123M (1997ae1) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 924/A 924M (1999) General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

ASTM D 520 (1984; R 1995e1) Zinc Dust Pigment

ASTM D 1654 (1992) Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments

ASTM D 3359 (1997) Measuring Adhesion by Tape Test

ASTM E 437 (1992; R 1997) Industrial Wire Cloth and Screens (Square Opening Series)

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 70 (1991) Method of Testing for Rating the Performance of Air Outlets and Inlets

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

MSS SP-25 (1998) Standard Marking System for Valves, Fittings, Flanges and Unions

MSS SP-58 (1993) Pipe Hangers and Supports - Materials, Design and Manufacture

MSS SP-69 (1996) Pipe Hangers and Supports - Selection and Application

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG 1 (1998) Motors and Generators

SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA HVAC Duct Const Stds (1995; Addenda Nov 1997) HVAC Duct Construction Standards - Metal and Flexible

SMACNA Leakage Test Mnl (1985) HVAC Air Duct Leakage Test Manual

UNDERWRITERS LABORATORIES (UL)

UL 214 (1997) Tests for Flame-Propagation of Fabrics and Films

UL Bld Mat Dir (1999) Building Materials Directory

1.2 COORDINATION OF TRADES

Ductwork, piping offsets, fittings, and accessories shall be furnished as required to provide a complete installation and to eliminate interference with other construction.

1.3 DELIVERY AND STORAGE

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

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

Shop Drawings

Drawings ; G
Installation; G

Drawings shall consist of equipment layout including assembly and installation details and electrical connection diagrams; ductwork layout showing the location of all supports and hangers, typical hanger details; and the load imposed on each support or anchor, and typical support details. Drawings shall include any information required to demonstrate that the system has been coordinated and will properly function as a unit and shall show equipment relationship to other parts of the work, including clearances required for operation and maintenance.

Product Data

Components and Equipment; G

Manufacturer's catalog data shall be included with the detail drawings for the following items. The data shall be highlighted to show model, size, options, etc., that are intended for consideration. Data shall be adequate to demonstrate compliance with contract requirements for the following:

Air Systems Equipment

Test Procedures

Proposed test procedures for piping hydrostatic test, ductwork leak test, and performance tests of systems, at least 2 weeks prior to the start of related testing.

Similar Services

Statement demonstrating successful completion of similar services on at least 5 projects of similar size and scope, at least 2 weeks prior to submittal of other items required by this section.

Testing, Adjusting and Balancing

Proposed test schedules for hydrostatic test of piping, ductwork leak test, and performance tests, at least 2 weeks prior to the start of related testing.

Test Reports

Performance Tests ; G

Test reports for the piping hydrostatic test, ductwork leak test, and performance tests in booklet form, upon completion of testing. Reports shall document phases of tests performed including initial test summary, repairs/adjustments made, and final test results.

Operation and Maintenance Data

Operating and Maintenance Manual; G

Three manuals listing step-by-step procedures required for system startup, operation, shutdown, and routine maintenance, at least 2 weeks prior to field training. The manuals shall include the manufacturer's name, model number, parts list, list of parts and tools that should be kept in stock by the owner for routine maintenance including the name of a local supplier, simplified wiring and controls diagrams, troubleshooting guide, and recommended service organization (including address and telephone number) for each item of equipment. Each service organization submitted shall be capable of providing 4 hour onsite response to a service call on an emergency basis.

PART 2 PRODUCTS

2.1 STANDARD PRODUCTS

Components and equipment shall be standard products of a manufacturer regularly engaged in the manufacturing of products that are of a similar material, design and workmanship. The standard products shall have been in satisfactory commercial or industrial use for 2 years before bid opening. The 2-year experience shall include applications of components and equipment under similar circumstances and of similar size. The 2 years must be satisfactorily completed by a product which has been sold or is offered for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation, for not less than 6000 hours exclusive of the manufacturer's factory tests, can be shown. The equipment items shall be supported by a service organization.

2.2 ASBESTOS PROHIBITION

Asbestos and asbestos-containing products shall not be used.

2.3 NAMEPLATES

Equipment shall have a nameplate that identifies the manufacturer's name, address, type or style, model or serial number, and catalog number.

2.4 EQUIPMENT GUARDS AND ACCESS

Belts, couplings, projecting setscrews, and other rotating parts exposed to personnel contact shall be fully enclosed. A fan platform shall be provided where shown and shall be constructed according to Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

2.5 PIPING COMPONENTS

2.5.1 Steel Pipe

Steel pipe shall conform to ASTM A 53/A 53M, Schedule 40, Grade A or B, Type E or S.

2.5.2 Joints and Fittings For Steel Pipe

The manufacturer of each fitting shall be permanently identified on the body of the fitting according to MSS SP-25.

2.5.3 Escutcheons

Escutcheons shall be chromium-plated iron or chromium-plated brass, either one piece or split pattern, held in place by internal spring tension or setscrews.

2.5.4 Hangers, Inserts, and Supports

Hangers shall conform to MSS SP-58 and MSS SP-69.

2.6 ELECTRICAL WORK

Electrical motor-driven equipment specified shall be provided complete with motor, motor starter, and controls. Unless otherwise indicated, motors of 745 W (1 hp) and above shall be high efficiency type. Motor starters shall be provided complete with thermal overload protection and other appurtenances necessary. Each motor shall conform to NEMA MG 1 and shall be of sufficient size to drive the equipment at the specified capacity without exceeding the nameplate rating of the motor. Manual control and protective devices, and any control wiring required, but not shown, shall be provided. Where two-speed motors are indicated, solid-state variable-speed controller may be provided to accomplish the same function. Solid-state variable-speed controllers shall be utilized for motors rated 7.45 kW (10 hp) or less.

2.7 CONTROLS

Controls shall be provided as specified in Section 15950 HEATING, VENTILATING AND AIR CONDITIONING (HVAC) CONTROL SYSTEM.

2.8 DUCTWORK COMPONENTS

2.8.1 Metal Ductwork

All aspects of metal ductwork construction, including all fittings and components, shall comply with **SMACNA HVAC Duct Const Standards** unless otherwise specified. Elbows shall be radius type with a centerline radius of 1-1/2 times the width or diameter of the duct where space permits. Static pressure Class 125, 250, and 500 Pa (1/2, 1, and 2 inch w.g.) ductwork shall meet the requirements of Seal Class C. Class 750 through 2500 Pa (3 through 10 inch) 3 through 10 inch shall meet the requirements of Seal Class A.

2.8.2 Transitions

Transitions for converging air flow shall be made with each side pitched in a maximum of 30 degrees, for an included angle of 60 degrees, or shall be as indicated. Factory-fabricated reducing fittings for systems using round duct sections when formed to the shape of the ASME short flow nozzle, need not comply.

2.8.3 Insulated Nonmetallic Flexible Duct

Flexible duct shall be used where indicated. Length shall be as shown on the drawings, but shall in no case exceed 4 m (13 feet). Flex duct shall be factory fabricated for the intended application.

2.8.4 General Service Duct Connectors

A flexible duct connector approximately 150 mm (6 inches) in width shall be provided where sheet metal connections are made to fans or where ducts of dissimilar metals are connected. For round/oval ducts, the flexible material shall be secured by stainless steel or zinc-coated, iron clinch-type draw bands. For rectangular ducts, the flexible material locked to metal collars shall be installed using normal duct construction methods. The composite connector system shall comply with **UL 214** and be classified as "flame-retarded fabrics" in **UL Bld Mat Dir**.

2.8.5 Ductwork Accessories

2.8.5.1 Duct Access Doors

Access doors shall be provided in ductwork and plenums where indicated and at all dampers, thermostats, and other apparatus requiring service and inspection in the duct system, and unless otherwise shown, shall conform to **SMACNA HVAC Duct Const Sids**. Doors shall be minimum 375 x 450 mm (15 x 18 inches), unless otherwise shown. Where duct size will not accommodate this size door, the doors shall be made as large as practicable.

2.8.5.2 Manual Balancing Dampers

Manual balancing dampers shall be furnished with accessible operating mechanisms. Manual volume control dampers shall be operated by locking-type quadrant operators. Dampers shall be 2 gauges heavier than the duct in which installed. Unless otherwise indicated, multileaf dampers shall be opposed blade type with maximum blade width of 300 mm (12 inches). Access doors or panels shall be provided for all concealed damper operators and locking setscrews. Volume dampers shall be provided where indicated.

2.8.5.3 Air Deflectors and Branch Connections

Air deflectors shall be provided at duct branch takeoff connections, and at 90 degree elbows, as well as at locations as indicated on the drawings or otherwise specified. Conical branch connections or 45 degree entry connections may be used in lieu of deflectors or extractors for branch connections. Air deflectors shall be factory-fabricated units consisting of curved turning vanes or louver blades designed to provide uniform air distribution and change of direction with minimum turbulence or pressure loss. Air deflectors shall be factory or field assembled. Blade air deflectors, also called blade air extractors, shall be approved factory fabricated units consisting of equalizing grid and adjustable blade and lock. Adjustment shall be easily made from the face of the diffuser or by position adjustment and lock external to the duct. Stand-off brackets shall be provided on insulated ducts and are described herein. Fixed air deflectors, also called turning vanes, shall be provided in 90 degree elbows with a turning radii less than the R/D that is indicated.

2.8.6 Duct Sleeves, Framed Prepared Openings, Closure Collars

Duct sleeves shall be provided for round ducts 375 mm 15 inches in diameter or less passing through floors, walls, ceilings, or roof, and installed during construction of the floor, wall, ceiling, or roof. Round ducts larger than 375 mm (15 inches) in diameter and square, rectangular, and oval ducts passing through floors, walls, ceilings, or roof shall be installed through framed prepared openings. The Contractor shall be responsible for the proper size and location of sleeves and prepared openings. Sleeves and

framed openings are also required where grilles, registers, and diffusers are installed at the openings. Framed prepared openings shall be fabricated from 1.0 mm (20 gauge) galvanized steel, unless otherwise indicated. Where sleeves are installed in bearing walls or partitions, black steel pipe, ASTM A 53/A 53M, Schedule 20 shall be used. Sleeve shall provide 25 mm (1 inch) clearance between the duct and the sleeve or 25 mm (1 inch) clearance between the insulation and the sleeve for insulated ducts.

2.8.7 Registers and Grilles

Units shall be factory-fabricated of steel, corrosion-resistant steel, or aluminum. Inlets and outlets shall be sound rated and certified according to ASHRAE 70. Registers shall be provided with volume damper with accessible operator, unless otherwise indicated; or if standard with the manufacturer, an automatically controlled device will be acceptable. Volume dampers shall be opposed blade type for all registers.

2.8.8 Gooseneck

Gooseneck shall be fabricated from galvanized steel or aluminum sheets with galvanized or aluminum structural shapes. Sheet metal thickness, reinforcement, and fabrication shall conform to SMACNA HVAC Duct Const Standards. Gooseneck shall be provided with bird screen. Gooseneck shall be provided as indicated.

2.8.9 Bird Screens and Frames

Bird screens shall conform to ASTM E 437, No. 2 mesh, aluminum or stainless steel. Aluminum screens shall be rated "medium-light". Stainless steel screens shall be rated "light". Frames shall be removable type, stainless steel or extruded aluminum.

2.9 AIR SYSTEMS EQUIPMENT

2.9.1 Fans

Fans shall be tested and rated according to AMCA 210. Fans may be connected to the motors either directly or indirectly with V-belt drive. V-belt drives shall be designed for not less than 150 percent of the connected driving capacity. Motor sheaves shall be variable pitch for 11 kW (15 hp) and below. Variable pitch sheaves shall be selected to drive the fan at a speed which will produce the specified capacity when set at the approximate midpoint of the sheave adjustment. Removable metal guards shall be provided for all exposed V-belt drives, and speed-test openings shall be provided at the center of all rotating shafts. Fans shall be provided with personnel screens or guards on both suction and supply ends, except that the screens need not be provided, unless otherwise indicated, where ducts are connected to the fan. Fan and motor assemblies shall be provided with vibration-isolation supports or mountings as indicated. Vibration-isolation units shall be standard products with published loading ratings. Standard AMCA arrangement, rotation, and discharge shall be as indicated.

2.9.1.1 Centrifugal Fans

Centrifugal fans shall be fully enclosed, single-width single-inlet, AMCA Pressure Class I, II, or III as required or indicated for the design system pressure. Impeller wheels shall be rigidly constructed, accurately balanced both statically and dynamically. Fan wheels 900 mm (36 inches) or less in diameter may have one or more extra long bearings between the fan wheel and the drive. Bearings shall be sleeve type, self-aligning and self-oiling with oil reservoirs, or precision self-aligning roller or ball-type with accessible grease fittings or permanently lubricated type. Grease fittings shall be connected to tubing and serviceable from a single accessible point. Bearing life shall be L50 rated at not less than 200,000 hours as defined by AFBMA Std 9 and AFBMA Std 11. Fan shafts shall be steel, accurately finished, and shall be provided with key seats and keys for impeller hubs and fan pulleys. Each fan outlet shall be of ample proportions and shall be designed for the attachment of angles and bolts for attaching flexible connections. Motors, unless otherwise indicated, shall not exceed 1800 rpm and shall have drip proof enclosures.

2.9.1.2 Welding Exhaust Fan

Exhaust fans shall be centrifugal type, single inlet, direct or belt driven, orientation as indicated. Fan shall have acoustically insulated housing. Provide chatter-proof integral back draft damper. Fan motor shall be mounted on vibration isolators. Unit shall be provided with mounting platform as indicated. Fan shall be U.L. listed.

2.10 FACTORY PAINTING

Units which are not of galvanized construction according to ASTM A 123/A 123M or ASTM A 924/A 924M shall be factory painted with a corrosion resisting paint finish. Internal and external ferrous metal surfaces shall be cleaned, phosphatized and coated with a paint finish which has been tested according to ASTM B 117, ASTM D 1654, and ASTM D 3359. Evidence of satisfactory paint performance for a minimum of 125 hours for units to be installed indoors and 500 hours for units to be installed outdoors shall be submitted. Rating of failure at the scribe mark shall be not less than 6, average creepage not greater than 3 mm, 1/8 inch. Rating of the inscribed area shall not be less than 10, no failure. On units constructed of galvanized steel which have been welded, exterior surfaces of welds or welds that have burned through from the interior shall receive a final shop docket of zinc-rich protective paint according to ASTM D 520 Type I.

PART 3 EXECUTION

3.1 INSTALLATION

Work shall be installed as shown and according to the manufacturer's diagrams and recommendations.

3.1.1 Equipment and Installation

Frames and supports shall be provided for fans, dampers, and other similar items requiring supports.

3.1.2 Access Panels

Access panels shall be provided for concealed dampers and items requiring inspection or maintenance. Access panels shall be of sufficient size and located so that the concealed items may be serviced and maintained or completely removed and replaced. Access panels shall be as specified in SMACNA.

3.1.3 Flexible Connectors

Flexible connectors and duct shall be attached to other components in accordance with the latest printed instructions of the manufacturer to ensure a vapor tight joint. Hangers, when required to suspend the connectors, shall be of the type recommended by the connector or duct manufacturer and shall be provided at the intervals recommended.

3.1.4 Sleeved and Framed Openings

Space between the sleeved or framed opening and the duct or the duct insulation shall be packed in accordance with manufacturer's recommendations. Sealant shall be a waterproof silicon based product warranted for the type of use indicated for at least 5 years.

3.1.5 Metal Ductwork

Installation shall be according to **SMACNA HVAC Duct Const Standards** unless otherwise indicated. Duct supports for sheet metal ductwork shall be according to **SMACNA HVAC Duct Const Standards**, unless otherwise specified. Friction beam clamps indicated in **SMACNA HVAC Duct Const Standards** shall not be used. Supports shall be attached only to structural framing members and concrete slabs. Where C-clamps are used, retainer clips shall be provided.

3.1.5.1 Underground Ductwork

Underground ductwork shall be PVC plastisol coated galvanized steel with coating on interior and exterior surfaces and watertight joints. Ductwork shall be installed as indicated, according to the Air Conditioning Contractors of America (**ACCA Manual 4**) and manufacturer's instructions. Maximum burial depth shall be **as indicated**.

3.1.6 Exhaust Ductwork

3.1.6.1 Ducts Conveying Smoke Vapors

Duct material shall be minimum **1.3 mm (18 gauge)**, Type 304L or 316L, stainless steel.

3.1.6.2 Exposed Ductwork

Exposed ductwork shall be fabricated from minimum **1.3 mm (18 gauge)**, Type 304L or 316L, stainless steel with continuously welded joints and seams.

3.1.7 Duct Test Holes

Holes with closures or threaded holes with plugs shall be provided in ducts and plenums as indicated or where necessary for the use of pitot tube in balancing the air system. Extensions, complete with cap or plug, shall be provided where the ducts are insulated.

3.1.8 Power Transmission Components Adjustment

V-belts and sheaves shall be tested for proper alignment and tension prior to operation and after 72 hours of operation at final speed. Belts on drive side shall be uniformly loaded, not bouncing. Direct driven couplings shall be installed with a misalignment no higher than 50 percent of the manufacturer's maximum allowable misalignment value.

3.2 DUCTWORK LEAK TEST

Ductwork leak test shall be performed for the entire exhaust system. designated as static pressure Class **750 Pa (3 inch water gauge)** through Class **2500 Pa (10 inch water gauge)**. Test procedure, apparatus, and report shall conform to **SMACNA Leakage Test Manual**. The maximum allowable leakage rate is **5% of the total design air flow**.

3.3 CLEANING AND ADJUSTING

Inside of ducts, plenums, and casing shall be thoroughly cleaned of debris and blown free of small particles of rubbish and dust and then shall be vacuum cleaned. Equipment shall be wiped clean, with traces of oil, dust, dirt, or paint spots removed. Temporary filters shall be provided prior to startup of all fans that are operated during construction, and new filters shall be installed after all construction dirt has been removed from the building, and the ducts, plenums, casings, and other items specified have been vacuum cleaned. System shall be maintained in this clean condition until final acceptance. Bearings shall be properly lubricated with oil or grease as recommended by the manufacturer. Belts shall be tightened to proper tension. Other miscellaneous equipment requiring adjustment shall be adjusted to setting indicated or directed. Fans shall be adjusted to the speed indicated by the manufacturer to meet specified conditions.

3.4 TESTING, ADJUSTING, AND BALANCING

Testing, adjusting, and balancing shall be as specified in Section 15990 TESTING, ADJUSTING AND BALANCING OF HVAC SYSTEMS. Testing, adjusting, and balancing shall begin only when the air supply and distribution, including controls, has been completed, with the exception of performance tests.

3.5 PERFORMANCE TESTS

After testing, adjusting, and balancing has been completed as specified, each system shall be tested as a whole to see that all items perform as integral parts of the system and temperatures and conditions are evenly controlled throughout the building. Corrections and adjustments shall be made as necessary to produce the conditions indicated or specified. Capacity tests and general operating tests shall be conducted by an experienced engineer. Tests shall cover a period of not less than 1 day and shall demonstrate that the entire system is functioning according to the specifications.

END OF SECTION

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SECTION 15950**HEATING, VENTILATING AND AIR CONDITIONING (HVAC) CONTROL SYSTEM****PART 1 GENERAL****1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AIR MOVEMENT AND CONTROL ASSOCIATION (AMCA)

AMCA 500-D (1997) Laboratory Methods of Testing Dampers for Rating

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 269 (1996) Seamless and Welded Austenitic Stainless Steel Tubing for General Service

ASTM B 88 (1996) Seamless Copper Water Tube

ASTM D 635 (1997) Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position

ASTM D 1693 (1997a) Environmental Stress-Cracking of Ethylene Plastics

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B16.34 (1997) Valves - Flanged, Threaded, and Welding End

ASME B40.1 (1991) Gauges - Pressure Indicating Dial Type - Elastic Element

ASME BPV VIII Div 1 (1998) Boiler and Pressure Vessel Code; Section VIII, Pressure Vessels Division 1 - Basic Coverage

CODE OF FEDERAL REGULATIONS (CFR)

47 CFR 15 Radio Frequency Devices

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C62.41 (1991; R 1995) Surge Voltages in Low-Voltage AC Power Circuits

Instrument Society of America (ISA)

ISA S7.0.01 (1996) Quality Standard for Instrument Air

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

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

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1999) National Electrical Code

NFPA 90A (1996) Installation of Air Conditioning and Ventilating Systems

UNDERWRITERS LABORATORIES (UL)

UL 94 (1996; Rev thru Jul 1998) Tests for Flammability of Plastic Materials for Parts in Devices and Appliances

UL 268A (1998) Smoke Detectors for Duct Application

UL 508 (1993; Rev thru Oct 1997) Industrial Control Equipment

UL 555S	(1999) Safety for Smoke Dampers
UL 916	(1998) Energy Management Equipment

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

Shop Drawings

Drawings ; G

Drawings on A1 841 by 594 mm 34 by 22 inch sheets in the form and arrangement shown. The drawings shall use the same abbreviations, symbols, nomenclature and device identifiers shown. Each control-system element on a drawing shall have a unique identifier as shown. All HVAC control system drawings shall be delivered together as a complete submittal. Drawings shall be submitted for each HVAC system.

- a. HVAC control system drawings shall include the following:

Drawing index, HVAC control system legend, damper schedule, HVAC control system schematic and equipment schedule, HVAC control system sequence of operation and ladder diagram, Control loop wiring diagrams; Motor starter and relay wiring diagram.

Product Data

HVAC Control System; G Service Organizations ; G

Four copies of a list of service organizations qualified to service the HVAC control system. The list shall include the service organization name, address, technical point of contact and telephone number, and contractual point of contact and telephone number.

Equipment Compliance Booklet; G

An HVAC control system equipment compliance booklet (ECB) in indexed booklet form with numbered tabs separating the information on each device. It shall consist of, but not be limited to, data sheets and catalog cuts which document compliance of all devices and components with the specifications.

Performance Verification Test Procedures ; G

Two copies of the HVAC control system performance verification test procedures, in indexed booklet form, 60 days before the Contractor's scheduled test dates. The performance verification test procedures shall refer to the devices by their unique identifiers as shown, shall explain, step-by-step, the actions and expected results that will demonstrate that the HVAC control system performs in accordance with the sequences of operation.

Operation and Maintenance Data

Operation, Maintenance and Repair Manual; G

Three copies of the operation, maintenance and repair manual.

1.3 GENERAL REQUIREMENTS

1.4 DELIVERY AND STORAGE

Products shall be stored with protection from the weather, humidity and temperature variations, dirt and dust, and other contaminants, within the storage-condition limits published by the equipment manufacturer.

1.5 OPERATION MANUAL

A control system operation manual for each control system shall be provided. The operation manual shall include the system sequence, and procedures for start-up, operation and shut-down. A control system maintenance and repair manual shall be provided. The maintenance and repair manual shall include the routine maintenance checklist, and the qualified service organization list. The manual may be combined with the O&M manual specified in Section 15895 EXHAUST SYSTEM.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

Material and equipment shall be standard products of a manufacturer regularly engaged in the manufacturing of such products which are of a similar material, design and workmanship. The standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The equipment items shall be supported by a service organization. The Contractor shall submit a certified list of qualified permanent service organizations and qualifications. These service organizations shall be reasonably convenient to the equipment on a regular and emergency basis during the warranty period.

2.2 GENERAL EQUIPMENT REQUIREMENTS

2.2.1 Electrical and Electronic Devices

All electrical, and electronic devices not located within an HVAC control panel shall have a NEMA Type 1 enclosure unless otherwise shown.

2.2.2 Standard Signals

The output of all analog transmitters shall be 4-to-20 mA_{dc} signals. The signal shall originate from current-sourcing devices and shall be received by current-sinking devices.

2.2.3 Ambient Temperature Limits

Ambient Temperature Actuators and positive positioners and transmitters shall operate within temperature limit ratings of 5 to 60 degrees C (40 to 140 degrees F). All panel-mounted instruments shall operate within limit ratings of 2 to 50 degrees C (35 to 120 degrees F) and 10 percent to 95 percent relative humidity, noncondensing. All devices installed outdoors shall operate within limit ratings of minus 40 to plus 65 degrees C (minus 40 to plus 150 degrees F).

2.2.4 Nameplates, Lens Caps, and Tag Nameplates

A plastic or metal tag shall be mechanically attached directly to each device or attached by a metal chain or wire.

2.3 MATERIALS

2.3.2 Wiring

2.3.2.1 Terminal Blocks

Terminal blocks shall be insulated, modular, feed-through, clamp style with recessed captive screw-type clamping mechanism, shall be suitable for rail mounting, and shall have end plates and partition plates for separation or shall have enclosed sides.

2.3.2.2 Control Wiring for 24-Volt Circuits

Control wiring for 24-volt circuits shall be 18 AWG minimum, stranded copper and shall be rated for 300-volt service.

2.3.2.3 Wiring for 120-Volt Circuits

Wiring for 120-volt circuits shall be 18 AWG minimum, stranded copper and shall be rated for 600-volt service.

2.3.2.4 Analog Signal Wiring Circuits

Analog signal wiring circuits within control panels shall not be less than 20 AWG and shall be rated for 300-volt service.

2.3.2.5 Instrumentation Cable

Instrumentation cable shall be 18 AWG, stranded copper, single or multiple-twisted, minimum 51 mm (2 inch) lay of twist, 100 percent shielded pairs, and shall have a 300-volt insulation. Each pair shall have a 20 AWG tinned-copper drain wire and individual overall pair insulation. Cables shall have an overall aluminum-polyester or tinned-copper cable-shield tape, overall 20 AWG tinned-copper cable drain wire, and overall cable insulation.

2.3.2.6 Nonconducting Wiring Duct

Nonconducting wiring duct in control panels shall have wiring duct in control panels shall have slotted sides, snap-on duct covers, have slotted sides, snap-on duct covers, fittings for connecting ducts, mounting clips for securing ducts, and wire-retaining clips.

2.3.2.7 Transformers

Step-down transformers shall be utilized where control equipment operates at lower than line circuit voltage. Transformers, other than transformers in bridge circuits, shall have primaries wound for the voltage available and secondaries wound for the correct control circuit voltage. Transformers shall be sized so that the connected load is 80 percent of the rated capacity or less. Transformers shall conform to UL 508.

2.4 ACTUATORS

Actuators shall be electric or electronic and shall be provided with mounting and connecting hardware. Actuators shall fail to their spring-return positions on signal or power failure.

2.14 PILOT LIGHTS AND MANUAL SWITCHES

Pilot lights and switches shall be rectangular devices arranged in a horizontal matrix as shown. Momentary switches shall be non-illuminated. Interlocking switches shall have separately illuminated sections. Split legend lights shall have separately illuminated sections. Device illumination shall be by light-emitting diode or neon lamp.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION CRITERIA

The HVAC control system shall be installed and ready for operation, as specified and shown. Penetrations through and mounting holes in the building exterior shall be made watertight. The control system installation shall not interfere with the clearance requirements for mechanical and electrical system maintenance.

3.1.1 Device Mounting Criteria

Devices mounted in or on piping or ductwork, on building surfaces, in mechanical/electrical spaces, or in occupied space ceilings shall be installed in accordance with manufacturer's recommendations and as shown. Control devices to be installed in piping and ductwork shall be provided with all required gaskets, flanges, thermal compounds, insulation, piping, fittings, and manual valves for shutoff, equalization, purging, and calibration.

3.1.2 Wiring Criteria

Wiring external to control panels, including low-voltage wiring, shall be installed in metallic raceways. Cables and conductors shall be tagged at both ends, with the identifier shown on the shop drawings. Other electrical work shall be as shown.

3.2 CONTROL SYSTEM INSTALLATION (NOT USED)

3.3 CONTROL SEQUENCES OF OPERATION

3.3.1 System Requirements

3.3.1.1 HVAC System Exhaust Fan

Exhaust fan shall operate under the selection of a High-Low-Off switch.

3.2 BALANCING, COMMISSIONING, AND TESTING

3.2.1 Coordination with HVAC System Balancing

Commissioning of the control system shall be performed after HVAC system balancing. The Contractor shall tune the HVAC control system after all air-system balancing has been completed, minimum damper positions set and a report has been issued.

3.2.2 Control System Calibration, Adjustments, and Commissioning

Control system commissioning shall be performed for the system, using test plans and procedures approved by the Government. The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform commissioning and testing of the control system. Wiring shall be tested for continuity and for ground, open, and short circuits. Mechanical control devices shall be adjusted to operate as specified. Written notification of any planned commissioning or testing of the Control system shall be given to the Government at least 14 calendar days in advance.

3.5.3 Performance Verification Test

The Contractor shall demonstrate compliance of the HVAC control system with the contract documents. Using test plans and procedures previously approved by the Government, the Contractor shall demonstrate all physical and functional requirements of the project. The performance verification test shall show, step-by-step, the actions and results demonstrating that the control systems perform in accordance with the sequences of operation. The performance verification test shall not be started until after

receipt by the Contractor of written permission by the Government, based on Government approval of the commissioning report and completion of balancing.

END OF SECTION

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SECTION 15990

TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASSOCIATED AIR BALANCE COUNCIL (AABC)

AABC MN-1 (1989) National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems

NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB)

NEBB Procedural Stds (1991) Procedural Standards for Testing Adjusting Balancing of Environmental Systems

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

Design Review Report; G

A copy of the Design Review Report, no later than 14 days after approval of the TAB Firm and the TAB Specialist.

TAB Report; G

Three copies of the completed TAB Reports, no later than 7 days after the execution of TAB. All items in the TAB Report shall be signed by the TAB Specialist and shall bear the seal of the Professional Society or National Association used as the TAB Standard.

TAB Verification Report; G

Three copies of the completed TAB Verification Report, no later than 7 days after the execution of TAB Verification. All items in the TAB Verification Report shall be signed by the TAB Specialist and shall bear the seal of the Professional Society or National Association used as the TAB Standard.

Certificates**Ductwork Leak Testing, G**

A written statement signed by the TAB Specialist certifying that the TAB Specialist witnessed the Ductwork Leak Testing, it was successfully completed, and that there are no known deficiencies related to the ductwork installation that will prevent TAB from producing satisfactory results.

TAB Firm; G

Certification of the proposed TAB Firm's qualifications by either AABC or NEBB to perform the duties specified herein and in other related Sections, no later than 21 days after the Notice to Proceed. The documentation shall include the date that the Certification was initially granted and the date that the current Certification expires. Any lapses in Certification of the proposed TAB Firm or disciplinary action taken by AABC or NEBB against the proposed TAB Firm shall be described in detail.

TAB Specialist; G

Certification of the proposed TAB Specialist's qualifications by either AABC or NEBB to perform the duties specified herein and in other related Sections, no later than 21 days after the Notice to Proceed. The documentation shall include the date that the Certification was initially granted and the date that the current Certification expires. Any lapses in Certification of the proposed TAB Specialist or disciplinary action taken by AABC or NEBB against the proposed TAB Specialist shall be described in detail.

1.3 SIMILAR TERMS

In some instances, terminology differs between the Contract and the TAB Standard primarily because the intent of this Section is to use the industry standards specified, along with additional requirements listed herein to produce optimal results. The following table of similar terms is provided for clarification only. Contract requirements take precedent over the corresponding AABC or NEBB requirements where differences exist.

SIMILAR TERMS

<u>Contract Term</u>	<u>AABC Term</u>	<u>NEBB Term</u>
TAB Standard	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems	Procedural Standards for Testing Adjusting Balancing of Environmental Systems.
TAB Specialist	TAB Engineer	TAB Supervisor
Systems Readiness Check	Construction Phase Inspection Check & Preliminary Field Procedures.	Field Readiness

1.4 TAB STANDARD

TAB shall be performed in accordance with the requirements of the standard under which the TAB Firm's qualifications are approved, i.e., **AABC MN-1** or **NEBB Procedural Stds**, unless otherwise specified herein. All recommendations and suggested practices contained in the TAB Standard shall be considered mandatory. The provisions of the TAB Standard, including checklists, report forms, etc., shall, as nearly as practical, be used to satisfy the Contract requirements. The TAB Standard shall be used for all aspects of TAB, including qualifications for the TAB Firm and Specialist and **calibration** of TAB instruments. Where the instrument manufacturer calibration recommendations are more stringent than those listed in the TAB Standard, the manufacturer's recommendations shall be adhered to. All quality assurance provisions of the TAB Standard such as performance guarantees shall be part of this contract. For systems or system components not covered in the TAB Standard, TAB procedures shall be developed by the TAB Specialist. Where new procedures, requirements, etc., applicable to the Contract requirements have been published or adopted by the body responsible for the TAB Standard used (AABC or NEBB), the requirements and recommendations contained in these procedures and requirements shall be considered mandatory.

1.5 QUALIFICATIONS

1.5.1 TAB Firm

The TAB Firm shall be either a member of AABC or certified by the NEBB and certified in all categories and functions where measurements or performance are specified on the plans and specifications, including building systems commissioning. These TAB services are to assist the prime Contractor in performing the quality oversight for which it is responsible. The TAB Firm shall be a subcontractor of the prime Contractor, and shall report to and be paid by the prime Contractor.

1.5.2 TAB Specialist

The TAB Specialist shall be either a member of AABC or an experienced technician of the Firm certified by the NEBB. The certification shall be maintained for the entire duration of duties specified herein.

1.6 TAB SPECIALIST RESPONSIBILITIES

All TAB work specified herein and in related sections shall be performed under the direct guidance of the TAB Specialist.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 DESIGN REVIEW

The TAB Specialist shall review the Contract Plans and Specifications and advise the Contracting Officer of any deficiencies that would prevent the HVAC systems from effectively operating in accordance with the sequence of operation specified or prevent the effective and accurate TAB of the system. The TAB Specialist shall provide a **Design Review Report** individually listing each deficiency and the corresponding proposed corrective action necessary for proper system operation.

3.2 TAB RELATED HVAC SUBMITTALS

The TAB Specialist shall prepare a list of the submittals from the Contract Submittal Register that relate to the successful accomplishment of all HVAC TAB. The submittals identified on this list shall be accompanied by a letter of approval signed and

dated by the TAB Specialist when submitted to the Government. The TAB Specialist shall also ensure that the location and details of ports, terminals, connections, etc., necessary to perform TAB are identified on the submittals.

3.3 TAB SCHEMATIC DRAWINGS AND REPORT FORMS

A schematic drawing showing each system component, including balancing devices, shall be provided for each system. Each drawing shall be accompanied by a copy of all report forms required by the TAB Standard used for that system. Where applicable, the acceptable range of operation or appropriate setting for each component shall be included on the forms or as an attachment to the forms. The schematic drawings shall identify all testing points and cross reference these points to the report forms and procedures.

3.4 DUCTWORK LEAK TESTING

The TAB Specialist shall witness the Ductwork Leak Testing specified in Section 15895 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM and approve the results as specified in Paragraph TAB RELATED HVAC SUBMITTALS.

3.5 TESTING, ADJUSTING, AND BALANCING

3.5.1 TAB Procedures

Step by step procedures for each measurement required during TAB Execution shall be provided. The procedures shall be oriented such that there is a separate section for each system. The procedures shall include measures to ensure that each system performs as specified in all operating modes, interactions with other components (such as exhaust fans, kitchen hoods, fume hoods, relief vents, etc.) and systems, and with all seasonal operating differences, diversity, simulated loads, and pressure relationships required.

3.5.2 Systems Readiness Check

The TAB Specialist shall inspect each system to ensure that it is complete, including installation and operation of controls, and that all aspects of the facility that have any bearing on the HVAC systems, including installation of ceilings, walls, windows, doors, and partitions, are complete to the extent that TAB results will not be affected by any detail or touch-up work remaining. The TAB Specialist shall also verify that all items such as ductwork and piping ports, terminals, connections, etc., necessary to perform TAB shall be complete during the Systems Readiness Check.

3.5.3 Preparation of TAB Report

Preparation of the TAB Report shall begin only when the Systems Readiness Report has been approved. The Report shall be oriented so that there is a separate section for each system. The Report shall include a copy of the appropriate approved Schematic Drawings and TAB Related Submittals, such as pump curves, fan curves, etc., along with the completed report forms for each system. The operating points measured during successful TAB Execution and the theoretical operating points listed in the approved submittals shall be marked on the performance curves and tables. Where possible, adjustments shall be made using an "industry standard" technique which would result in the greatest energy savings, such as adjusting the speed of a fan instead of throttling the flow. Any deficiencies outside of the realm of normal adjustments and balancing during TAB Execution shall be noted along with a description of corrective action performed to bring the measurement into the specified range. If, for any reason, the TAB Specialist determines during TAB Execution that any Contract requirement cannot be met, the TAB Specialist shall immediately provide a written description of the deficiency and the corresponding proposed corrective action necessary for proper system operation to the Contracting Officer.

3.5.4 TAB Verification

The TAB Specialist shall recheck ten percent of the measurements listed in the Tab Report and prepare a TAB Verification Report. The measurements selected for verification and the individuals that witness the verification will be selected by the Contracting Officer's Representative (COR). The measurements will be recorded in the same manner as required for the TAB Report. All measurements that fall outside the acceptable operating range specified shall be accompanied by an explanation as to why the measurement does not correlate with that listed in the TAB Report and a description of corrective action performed to bring the measurement into the specified range. The TAB Specialist shall update the original TAB report to reflect any changes or differences noted in the TAB verification report and submit the updated TAB report. If over 20 percent of the measurements selected by the COR for verification fall outside of the acceptable operating range specified, the COR will select an additional ten percent for verification. If over 20 percent of the total tested (including both test groups) fall outside of the acceptable range, the TAB Report shall be considered invalid and all contract TAB work shall be repeated beginning with the Systems Readiness Check.

3.5.5 Marking of Setting

Following approval of TAB Verification Report, the setting of all HVAC adjustment devices including valves, splitters, and dampers shall be permanently marked by the TAB Specialist so that adjustment can be restored if disturbed at any time.

3.5.6 Identification of Test Ports

The TAB Specialist shall permanently and legibly identify the location points of duct test ports. If the ductwork has exterior insulation, the identification shall be made on the exterior side of the insulation. All penetrations through ductwork and ductwork insulation shall be sealed to prevent air leakage or to maintain integrity of vapor barrier.

END OF SECTION

SECTION I Contract Clauses

CLAUSES INCORPORATED BY REFERENCE:

52.222-3	Convict Labor	AUG 1996
52.222-6	Davis Bacon Act	FEB 1995
52.222-7	Withholding of Funds	FEB 1988
52.222-8	Payrolls and Basic Records	FEB 1988
52.222-9	Apprentices and Trainees	FEB 1988
52.222-10	Compliance with Copeland Act Requirements	FEB 1988
52.222-11	Subcontracts (Labor Standards)	FEB 1988
52.222-12	Contract Termination-Debarment	FEB 1988
52.222-13	Compliance with Davis-Bacon and Related Act Regulations.	FEB 1988
52.222-14	Disputes Concerning Labor Standards	FEB 1988
52.222-15	Certification of Eligibility	FEB 1988
52.222-16	Approval of Wage Rates	FEB 1988
52.222-17	Labor Standards for Construction Work--Facilities Contracts	FEB 1988
52.222-19	Child Labor--Cooperation with Authorities and Remedies	DEC 2001
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	FEB 1999
52.222-27	Affirmative Action Compliance Requirements for Construction	FEB 1999
52.222-35	Equal Opportunity For 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
52.223-5	Pollution Prevention and Right-to-Know Information	APR 1998
52.223-6	Drug Free Workplace	MAY 2001
52.225-10	Notice of Buy American Act/Balance of Payments Program Requirement--Construction Materials	FEB 2000
52.225-13	Restrictions on Certain Foreign Purchases	JUL 2000
52.227-1	Authorization and Consent	JUL 1995
52.227-4	Patent Indemnity-Construction Contracts	APR 1984
52.232-5	Payments under Fixed-Price Construction Contracts	MAY 1997
52.232-23 Alt I	Assignment of Claims (Jan 1986) - Alternate I	APR 1984
52.232-27	Prompt Payment for Construction Contracts	MAY 2001
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	MAY 1999
52.233-1	Disputes	DEC 1998
52.233-3	Protest After Award	AUG 1996
52.236-2	Differing Site Conditions	APR 1984
52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13	Accident Prevention	NOV 1991
52.236-14	Availability and Use of Utility Services	APR 1984
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-21	Specifications and Drawings for Construction	FEB 1997
52.242-14	Suspension of Work	APR 1984
52.242-17	Government Delay Of Work	APR 1984
52.243-5	Changes and Changed Conditions	APR 1984
52.246-21	Warranty of Construction	MAR 1994
52.249-1	Termination For Convenience Of The Government (Fixed Price) (Short Form)	APR 1984
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.249-13	Failure To Perform	APR 1984
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.223-7006	Prohibition On Storage And Disposal Of Toxic And Hazardous Materials	APR 1993
252.225-7031	Secondary Arab Boycott Of Israel	JUN 1992
252.227-7033	Rights in Shop Drawings	APR 1966
252.236-7000	Modification Proposals-Price Breakdown	DEC 1991
252.236-7008	Contract Prices-Bidding Schedules	DEC 1991
252.243-7001	Pricing Of Contract Modifications	DEC 1991

CLAUSES INCORPORATED BY FULL TEXT

52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) Definitions.

"Common parent," as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

"Taxpayer Identification Number (TIN)," as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

___ TIN: _____

___ TIN has been applied for.

___ TIN is not required because:

___ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

___ Offeror is an agency or instrumentality of a foreign government;

___ Offeror is an agency or instrumentality of the Federal Government.

(e) Type of organization.

___ Sole proprietorship;

___ Partnership;

___ Corporate entity (not tax-exempt);

___ Corporate entity (tax-exempt);

___ Government entity (Federal, State, or local);

___ Foreign government;

___ International organization per 26 CFR 1.6049-4;

___ Other _____

(f) Common parent.

___ Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this provision.

___ Name and TIN of common parent:

Name _____

TIN _____

(End of provision)

52.219-1 SMALL BUSINESS PROGRAM REPRESENTATIONS (MAY 2001)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is 233320.

(2) The small business size standard is \$27.5 Million.

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) Representations. (1) The offeror represents as part of its offer that it () is, () is not a small business concern.

(2) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, for general statistical purposes, that it () is, () is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it () is, () is not a women-owned small business concern.

(4) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it () is, () is not a veteran-owned small business concern.

(5) (Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (b)(4) of this provision.) The offeror represents as part of its offer that it () is, () is not a service-disabled veteran-owned small business concern.

(c) Definitions. As used in this provision--

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

"Small business concern," means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern," means a small business concern --

(1) That is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice.

(1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small, HUBZone small, small disadvantaged, or women-owned small business concern in order to obtain a contract to be awarded under the preference programs established pursuant to section 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall--

(i) Be punished by imposition of fine, imprisonment, or both;

- (ii) Be subject to administrative remedies, including suspension and debarment; and
- (iii) Be ineligible for participation in programs conducted under the authority of the Act.

(End of provision)

52.219-19 SMALL BUSINESS CONCERN REPRESENTATION FOR THE SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRAM (OCT 2000)

(a) Definition.

"Emerging small business" as used in this solicitation, means a small business concern whose size is no greater than 50 percent of the numerical size standard applicable to the North American Industry Classification System (NAICS) code assigned to a contracting opportunity.

(b) [Complete only if the Offeror has represented itself under the provision at 52.219-1 as a small business concern under the size standards of this solicitation.] The Offeror [] is, [] is not an emerging small business.

(c) (Complete only if the Offeror is a small business or an emerging small business, indicating its size range.)

Offeror's number of employees for the past 12 months (check this column if size standard stated in solicitation is expressed in terms of number of employees) or Offeror's average annual gross revenue for the last 3 fiscal years (check this column if size standard stated in solicitation is expressed in terms of annual receipts). (Check one of the following.)

No. of Employees	Avg. Annual Gross Revenues
<input type="checkbox"/> 50 or fewer	<input type="checkbox"/> \$1 million or less
<input type="checkbox"/> 51 - 100	<input type="checkbox"/> \$1,000,001 - \$2 million
<input type="checkbox"/> 101 - 250	<input type="checkbox"/> \$2,000,001 - \$3.5 million
<input type="checkbox"/> 251 - 500	<input type="checkbox"/> \$3,500,001 - \$5 million
<input type="checkbox"/> 501 - 750	<input type="checkbox"/> \$5,000,001 - \$10 million
<input type="checkbox"/> 751 - 1,000	<input type="checkbox"/> \$10,000,001 - \$17 million
<input type="checkbox"/> Over 1,000	<input type="checkbox"/> Over \$17 million

(End of provision)

52.219-20 NOTICE OF EMERGING SMALL BUSINESS SET-ASIDE (JAN 1991)

Offers or quotations under this acquisition are solicited from emerging small business concerns only. Offers that are not from an emerging small business shall not be considered and shall be rejected.

52.219-21 SMALL BUSINESS SIZE REPRESENTATION FOR TARGETED INDUSTRY CATEGORIES UNDER THE SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRAM (MAY 1999)

(Complete only if the Offeror has represented itself under the provision at 52.219-1 as a small business concern under the size standards of this solicitation.)

Offeror's number of employees for the past 12 months (check this column if size standard stated in solicitation is expressed in terms of number of employees) or Offeror's average annual gross revenue for the last 3 fiscal years (check this column if size standard stated in solicitation is expressed in terms of annual receipts). (Check one of the following.)

No. of Employees	Avg. Annual Gross Revenues
<input type="checkbox"/> 50 or fewer	<input type="checkbox"/> \$1 million or less
<input type="checkbox"/> 51 - 100	<input type="checkbox"/> \$1,000,001 - \$2 million
<input type="checkbox"/> 101 - 250	<input type="checkbox"/> \$2,000,001 - \$3.5 million
<input type="checkbox"/> 251 - 500	<input type="checkbox"/> \$3,500,001 - \$5 million
<input type="checkbox"/> 501 - 750	<input type="checkbox"/> \$5,000,001 - \$10 million

___ 751 - 1,000 ___ \$10,000,001 - \$17 million

___ 17 million

(End of provision)

52.228-13 ALTERNATIVE PAYMENT PROTECTIONS (JULY 2000)

(a) The Contractor shall submit one of the following payment protections:

PAYMENT BOND or IRREVOCABLE LETTER OF CREDIT

(b) The amount of the payment protection shall be 100 percent of the contract price.

(c) The submission of the payment protection is required within five (5) days of contract award.

(d) The payment protection shall provide protection for the full contract performance period plus a one-year period.

(e) Except for escrow agreements and payment bonds, which provide their own protection procedures, the Contracting Officer is authorized to access funds under the payment protection when it has been alleged in writing by a supplier of labor or material that a nonpayment has occurred, and to withhold such funds pending resolution by administrative or judicial proceedings or mutual agreement of the parties.

(f) When a tripartite escrow agreement is used, the Contractor shall utilize only suppliers of labor and material that signed the escrow agreement.

52.236-26 PRECONSTRUCTION CONFERENCE (FEB 1995)

If the Contracting Officer decides to conduct a preconstruction conference, the successful offeror will be notified and will be required to attend. The Contracting Officer's notification will include specific details regarding the date, time, and location of the conference, any need for attendance by subcontractors, and information regarding the items to be discussed.

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://farsite.hill.af.mil>

<http://www.dtic.mil/dfars>

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://farsite.hill.af.mil>

<http://www.dtic.mil/dfars>

252.201-7000 CONTRACTING OFFICER'S REPRESENTATIVE (DEC 1991)

(a) "Definition. Contracting officer's representative" means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

(End of clause)

252.204-7004 REQUIRED CENTRAL CONTRACTOR REGISTRATION.(NOV 2001)

(a) Definitions.

As used in this clause--

(1) Central Contractor Registration (CCR) database means the primary DoD repository for contractor information required for the conduct of business with DoD.

(2) Data Universal Numbering System (DUNS) number means the 9-digit number assigned by Dun and Bradstreet Information Services to identify unique business entities.

(3) Data Universal Numbering System +4 (DUNS+4) number means the DUNS number assigned by Dun and Bradstreet plus a 4-digit suffix that may be assigned by a parent (controlling) business concern. This 4-digit suffix may be assigned at the discretion of the parent business concern for such purposes as identifying subunits or affiliates of the parent business concern.

(4) Registered in the CCR database means that all mandatory information, including the DUNS number or the DUNS+4 number, if applicable, and the corresponding Commercial and Government Entity (CAGE) code, is in the CCR database; the DUNS number and the CAGE code have been validated; and all edits have been successfully completed.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee must be registered in the CCR database prior to award, during performance, and through final payment of any contract resulting from this solicitation, except for awards to foreign vendors for work to be performed outside the United States.

(2) The offeror shall provide its DUNS or, if applicable, its DUNS+4 number with its offer, which will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(3) Lack of registration in the CCR database will make an offeror ineligible for award.

(4) DoD has established a goal of registering an applicant in the CCR database within 48 hours after receipt of a complete and accurate application via the Internet. However, registration of an applicant submitting an application through a method other than the Internet may take up to 30 days. Therefore, offerors that are not registered should consider applying for registration immediately upon receipt of this solicitation.

(c) The Contractor is responsible for the accuracy and completeness of the data within the CCR, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to confirm on an annual basis that its information in the CCR database is accurate and complete.

(d) Offerors and contractors may obtain information on registration and annual confirmation requirements by calling 1-888-227-2423, or via the Internet at <http://www.ccr.gov>.

(End of clause)

252.247-7023 TRANSPORTATION OF SUPPLIES BY SEA (MAR 2000)

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

(1) "Components" means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) "Department of Defense" (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) "Foreign flag vessel" means any vessel that is not a U.S.-flag vessel.

(4) "Ocean transportation" means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) "Subcontractor" means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract.

(6) "Supplies" means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) "Supplies" includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.

(7) "U.S.-flag vessel" means a vessel of the United States or belonging to the United States, including any vessel registered or

having national status under the laws of the United States.

(b)(1) The Contractor shall use U.S.-flag vessels when transporting any supplies by sea under this contract.

(2) A subcontractor transporting supplies by sea under this contract shall use U.S.-flag vessels if--

(i) This contract is a construction contract; or

(ii) The supplies being transported are--

(A) Noncommercial items; or

(B) Commercial items that--

(1) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it contracts for f.o.b. destination shipment);

(2) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(3) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(c) The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that --

(1) U.S.-flag vessels are not available for timely shipment;

(2) The freight charges are inordinately excessive or unreasonable; or

(3) Freight charges are higher than charges to private persons for transportation of like goods.

(d) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum --

(1) Type, weight, and cube of cargo;

(2) Required shipping date;

(3) Special handling and discharge requirements;

(4) Loading and discharge points;

(5) Name of shipper and consignee;

(6) Prime contract number; and

(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(e) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information --

(1) Prime contract number;

(2) Name of vessel;

(3) Vessel flag of registry;

(4) Date of loading;

(5) Port of loading;

(6) Port of final discharge;

(C) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(End of clause)