

SPECIFICATIONS
FOR
PROJECT MUHJ 02-4074
REPAIR/RELOCATE AFFF EQUIPMENT
FACILITIES 748/751/753/758
LANGLEY AFB, VIRGINIA
IN CONJUNCTION WITH
BCE DRAWING FY09008

Prepared by:
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for
Engineering and Technical Design Section
1st Civil Engineer Contracts Section
Langley AFB, Virginia
Date: 15 SEP 06

SECTION 01110

SPECIAL CONDITIONS
03/06

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 within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

1.2 SUBMITTALS

The following items specified herein shall be submitted in accordance with SUBMITTAL PROCEDURES:

SD-03 Product Data

Material Safety Data Sheet (MSDS) for each item

State and EPA Region 3 Notifications

Recycling Report

Trip Tickets

Affirmative Procurement Report

Exemption Form, Annex B to LAFB Affirmative Procurement Plan 32-7080

All Employee Names and Social Security Numbers

Work Clearance Requests (Air Force Form 103)

Quality Control (QC) Report

SD-11 Closeout Submittals

Survey Report

Metadata

Deliverables and Final As-builts

Two copies of Computer-Aided Drafting and Design (CADD) digital final as-built drawings on CD's

One As-Built (Redline) Drawings

Warranty of Construction

Equipment Warranty Certificate

Equipment Warranty/Guarantee Record

Construction Data Worksheet

Provide text explaining submittal requirements for the item, if necessary. Do not repeat information provided in Section 01330 SUBMITTAL PROCEDURES. Indent first line of the explanatory text two spaces to provide clarity when document is printed without color and with tags off.

1.2.1 SUBMITTAL PROCEDURES

1.2.1.1 Schedule of Material Submittals (Air Force Form 66)

Information, shop drawings, certificates, test data, etc., listed on the attached AF Form 66, Schedule of Material Submittals, shall be submitted for approval by the Contracting Officer, or his/her designated representative in accordance with the General Provisions. Whenever in this contract materials or drawings are required to be submitted by the Contractor to the Contracting Officer for approval and the material or drawings submitted are at variance with the specifications or Government drawings, but are, nevertheless, approved by the Contracting Officer, inadvertently and without consciousness of the variance, and regardless that a closer review could have revealed the variance, then such approval shall not be final unless the Contractor expressly noted on the material submittal or drawing that "this material or drawing varies from specifications in the following aspects -" or uses other words of similar clear meaning. In the event of such an inadvertent, erroneous approval, the Contracting Officer, upon discovering the variance at any stage, have the right to require the Contractor to do such rework and/or material replacement as is necessary to obtain compliance with the specifications, and the expense of such rework and/or material replacement shall be borne solely by the Contractor.

a. Submittals for technical compliance of finishes may be made individually for each material. **SUBMITTALS FOR PATTERN, COLOR, TEXTURE, ETC., SHALL BE MADE SIMULTANEOUSLY FOR EACH ROOM OR AREA.** Finishes shall be scheduled for each room/area to include surface, type material, manufacturer, brand name or product number, and space for the Government selection of pattern/color.

EXAMPLE:

Room 100

Floor:	vinyl	Tarkett	Reliant	(62107 Adobe)
Floor:	carpet	Milliken	Magistrate	(21 Clan Henna)
Wall:	paint	Pittsburgh	Spread-Flow	(white #21)
Wall:	vinyl	Flex-Wall	Pls. In a Roll	(Rajah Blue)
Wainscot:	paneling	Masonic	Fireguard	(walnut)
Ceiling:	acoustic	Gold Bond	Acoustinet	(fissure #21)

Trim: paint Glidden Easy-Enamel (0021 blue)

1.3 SCOPE OF WORK

The work under this project consists of modifying the existing AFFF system to accomplish water/foam distribution aboveground only and replace outdated and irreparable AFFF related equipment.

1.3.1 Work Hours

Normal duty hours for Langley Air Force Base are 0730 through 1630, Monday through Friday. Work on weekends, recognized Federal holidays, or other than normal duty hours must be coordinated with the Contracting Officer (CO) or his/her designated representative.

1.3.2 General Working Conditions

a. Work shall be performed in such a manner as to cause minimum disruption to the users in the area.

b. The Contractor shall notify the Contracting Officer or his/her designated representative when he intends to work so Government inspection can be provided while work is in progress.

1.4 ORDER OF WORK

The Contractor shall coordinate all work with the Contracting Officer, or his/her designated representative, and the Base Civil Engineer. Before starting work at the job site, provide five days notice to the Contracting Officer or his/her designated representative and the Chief of Contract Management at 764-3268.

1.5 APPLICABLE CODES AND REGULATIONS

The latest edition of the following Building Codes shall be used for all construction under this contract:

International Building Code
International Mechanical Code
International Plumbing Code
National Electrical Code (NEC)
ANSI C-2, National Electrical Safety Code (QIESC)
Life Safety Code, NFPA 101
National Fire Protection Association (NFPA)
MIL Handbook 1190
Unified Facilities Criteria (UFC) 3-600-01

NOTE: If there is a conflict between these codes or regulations and these contract specifications, the most stringent requirements shall apply at all times.

1.6 SALVAGE

Title to all materials and equipment to be demolished, shall be vested to the Contractor upon removal from the base except as noted below. The

Government will not be responsible for the condition, loss or damage to such property after notice to proceed. All unsalvageable material will be disposed of legally off-base.

1.7 CONSTRUCTION STANDARDS

1.7.1 General

The Contractor is reminded that the construction site must be operated and maintained according to these specifications and is subject to inspection and enforcement according to all federal, state and local codes/regulations.

1.7.2 Office Trailers and Storage Units

1.7.2.1 Office Trailers

If a trailer is required for work and at the discretion of the Government, an office trailer may be located at the project site. The Contractor shall request Contracting Officer approval for the trailer location. The Contractor shall make the request in writing at least 14 calendar days prior to placement of trailer at site. All office trailers shall be located in areas as directed by the Contracting Officer or his/her designated representative. Any office trailer shall be not more than 10' x 32' in size, provided with a skirt on all sides, in like new condition, and painted either Langley Brown (Federal Standard 595a, 20100), Langley Beige, or white. Office trailers in need of painting and / or repairs or that are in an unsightly condition will not be allowed at the project site. Displayed on the exterior of all trailers shall be a nameplate which has the name of the Contractor's company, name for Contractor's point(s) of contact (POC) and telephone number where he/she can be reached, contract number, project number and title, and date trailer was placed on site where located.

1.7.2.2 Storage Units

The Contractor shall request Contracting Officer approval for the siting, size and color of Storage Units, CONEX boxes, and dumpsters. The Contractor shall not bring any such items to the job site without the Contracting Officer's approval. All storage units shall be painted Langley Brown (Federal Standard 595a, 20100), Langley Beige or white. Displayed on the exterior of all storage units shall be a nameplate which has the name of the Contractor's company, name for Contractor's point(s) of contact (POC) and telephone number where he / she can be reached, contract number, project number and title, and date unit was placed on site where located.

1.7.3 On-Site Storage Units

Availability and size of material lay down area shall be restricted as noted on the contract documents or as discussed during the preconstruction conference. The Contractor shall consolidate all bulk and/or large quantities of materials at the construction site in area(s) approved by the CO. All such items shall be stored neatly grouped together. Bulky or unsightly construction materials, heavy and/or light equipment, or tanks shall not be delivered to or stored on the construction site for any period longer than seven calendar days prior to use, installation in the project, or start of construction. The Contractor shall store all supplies and equipment on project site so as to preclude theft or damage. Protection and security for materials and equipment on site is the sole responsibility of

the Contractor. The Contractor shall not use any area(s) for material or equipment storage that has not been approved by the CO, or his/her designated representative.

1.7.4 Fencing and Screening

Contractor shall enclose the lay down area with a chain link fence that has been erected to a minimum height of 6 feet. Contractor's lay down area shall also be screened from view. Screening shall be fabricated of 100% Polypropylene, woven, 92% blockage fabric that has been mechanically attached to the fence for the full height of the fence. The edges of each section of screening fabric shall be finished with a reinforced hem. Attachment points shall be reinforced fabric built into the hem or metal grommets built into the hem. All fabric used for screening of the construction lay down area shall be **UV rated and dark brown or dark bronze in color. Fence screening fabric shall be inspected weekly to insure all sections remain properly in-stalled and taut at all times.**

1.8 CONTRACTOR OPERATIONS

1.8.1 Grassy Areas

Grass and weed growth in excavated materials that are stockpiled on site shall be controlled and/or cut weekly. Weeds and grass within the construction site shall also be controlled and/or cut weekly and any bushes or shrubs shall be trimmed monthly. Areas disturbed by construction and/or those areas required by the plans to be "re-seeded" shall be re-established by hydroseeding only. Straw shall not be used as a cover for freshly seeded areas.

1.8.2 Privately Owned Vehicles (POVs)

POVs used by Contractor personnel to commute to work are required to park in existing parking lots. Contractor or Contractor's employees, including subcontractors, shall not park any personally owned vehicle (POV) or company and/or delivery vehicle on grassy areas near or in the construction site without prior approval from the Contracting Officer, or his/her designated representative. When allowed, parking on grassy areas will only be for short-term delivery purposes (to include heavy tools, equipment, construction materials, etc.). Use designated hard surfaces or existing parking lots near or within the project site for parking of POVs or company and/or delivery vehicles. Tire and track impressions (ruts) created on wet or soft soil by vehicles and/or equipment used in the Contractor's operations shall not be left for more than one day after removal of such vehicle or equipment that caused the rutting. The Contractor shall restore the affected area(s) of the site to its original condition within that one-day period.

1.8.3 Site Cleanup

During construction, the Contractor shall maintain all areas in a neat and orderly manner. Contractor shall keep the construction site cleaned daily of all construction trash, trash generated by employees, debris, and/or demolished building materials. If the work areas are not kept neat and orderly, the Contractor must return to the area to correct the unacceptable condition. During the laying of asphalt roads, streets and/or parking surfaces, areas soiled by residual asphalt shall be cleaned daily. The

Contractor shall treat with lime entrances and exits to asphalt work site at his/her own expense.

1.8.4 Access Routes

Access routes to this project shall be limited through the Base as shown on the plans. Haul route exiting the base shall be through the West Gate only. The Contractor shall not use the gates at King Street Bridge or West Gate (Sweeney Blvd) for haul route entry.

1.8.5 Road and Street Clean-Up

The Contractor is solely responsible for spillage from his/her vehicles and such spillage shall be cleaned up immediately. For the duration of this contract and on a daily basis, the Contractor shall remove from all base roads and/or streets asphalt, mud, soil, rocks, trash, and debris that result from his/her construction operation on base. All roads and/or streets affected shall be cleaned before close of business on the particular day affected. In the case of asphalt, roads will be cleaned and/or treated with lime immediately upon detection.

1.8.6 Removal of Formwork

The Contractor shall remove all concrete formwork and boards within fourteen calendar days after concrete pour.

1.8.7 Noise Control

The Contractor shall comply with all applicable state, local, and installation laws, ordinances, and regulations relative to noise control, to include applicable quiet hours exclusive to Langley Air Force Base. Work site is in a residential area of Langley Air Force Base. There shall be absolutely no construction activities in or around the construction site prior to or after the hours designated in "Work Hours" paragraph above without a approval from the Contracting Officer, or his/her designated representative. This restriction also applies to holidays also.

1.8.8 Excavations

All trenches/excavations shall be back filled and compacted to 85% of maximum density. Trenches will be top dressed with no less than 3 inches of shifted topsoil and then compacted. The finished area will be free of all debris, rocks and then graded to conform to the surrounding area. The area will be hydro seeded with fescue (cool weather) or Bermuda grass (hot weather). Seed shall contain no less than 99% pure seed, 0% weed seed and spread at a rate of 8 - 10 lbs per 1,000 sq ft.

1.8.9 In-Ground Obstructions

Any type of raised obstructions shall have the surrounding soil backfilled, compacted to 85% of maximum density, and graded. The area will be top dressed as above to within 3 inches of the top of obstruction. Ground level obstructions will have the area dressed to the level of the obstruction. The area will be hydro seeded with fescue (cool weather) or Bermuda grass (hot weather). Seed shall contain no less than 99% pure seed, 0% weed seed and spread at a rate of 8 - 10 lbs per 1,000 sq ft.

1.8.10 Architectural Compatibility

Due to Langley AFB's distinct historic architecture and the high visitor traffic it receives, several special actions are required during construction:

- a. Tracking mud or asphalt on roads will not be tolerated. Roads will be cleaned and/or treated with lime (in case of asphalt) immediately upon detection.
- b. Newly placed concrete curbing and sidewalks shall match existing, adjacent concrete in color and texture.
- c. Unprimed or factory-finished equipment installed on the exterior of facilities shall be painted with two coats of brown paint to match existing equipment.

1.8.11 Patching

All holes in walls or other parts of the structure where material or equipment is removed or replaced shall be sealed, painted, caulked, or plugged neatly with original type of materials to match the existing part of the structure so involved. All above work and materials shall be approved by the Contracting Officer or his/her designated representative.

1.8.12 Repairs

Replace or restore all pavement, curb and gutter, and sidewalk disturbed by operations under this contract to the original condition, except where shown or specified otherwise. Compact backfill in pavement repairs with mechanical tampers to effect a density equal to adjacent subgrade. Replace pavement with equal materials and equal thicknesses to that removed, unless indicated otherwise. Each pavement area shall be replaced immediately after the work operation for that area is completed. At the Contractor's option, a temporary repair with a surface of bituminous concrete may be made immediately and removed and the permanent repair made before completion of the contract.

1.8.13 Marking

Contractor shall not mark any curb or pavement with paint.

1.8.14 Protection Requirements

The Contractor shall at all times protect and preserve the property of the Government which is within the work area and could be affected by the accomplishment of the work specified and indicated, and all parties and individuals within or near the work areas who could be endangered by the installation of the work.

1.8.15 Accidental Spills

In the event of fuel spillage during the performance of this contract, the Contractor shall be responsible for its containment, clean-up, and related disposal costs. The operator shall have sufficient spill supplies readily

available on the pumping vehicle and/or at the site to contain any spillage. In the Event of a Contractor related release, the Contractor shall immediately notify the Environmental Management Office and take appropriate actions to correct its cause and prevent future occurrences. If the federal, state, or local authorities assess any monetary fine, penalty, or assessment related to the release of any substance by the Contractor, his/her employees, or agents during the performance of this contract, the Contractor shall be solely liable for its payment, authorizes the United States Air Force to withhold such form of payment and otherwise indemnify and hold the United States Air Force harmless.

1.9 ENVIRONMENTAL PROTECTION

1.9.1 Environmental Restoration Program (ERP) Requirements

1.9.1.1 Contaminated Soil and Free Products

Any material (soil) that is suspected of containing petroleum products shall be reported to the Contracting Officer or his/her designated representative. If discovered, the Contractor shall mitigate any potential threat to the workers, public and environment. The area that will be disturbed under this contract has the potential to have free product migrate into and under the construction site. Comply with VR-680 and record the quantity of any fuel removed from [the line]. Contaminated soil and/or free product shall not be used for backfill or removed from the base without written approval from the Contracting Officer. Once removal is approved, Contractor shall dispose of material under guidance of the Pollution Prevention Officer (1 CES/CEV). All hazardous waste manifests shall be prepared by the Contractor and shall be coordinated, approved and signed by 1 CES/CEV Hazardous Waste Manager (37 Sweeney Blvd) prior to removal of such waste from the base.

1.9.1.2 Site Safety

Site summaries from our Management Action Plan are furnished with this contract to familiarize personnel with the potential hazards associated with construction and demolition work at these sites. Ensure workers are informed of potential hazardous exposures from working at these sites, and that the appropriate precautions are followed to minimize hazards to human health and the environment. Personnel working at these sites shall have 40-hour HAZWOPER Training. At least one individual on site should have completed the OSHA 8-hour supervisor training course. The plans identify the boundary of these IPR sites. To perform work at these sites, the Contractor must have a Health and Safety Plan and Hazardous Waste Disposal Plan for proper disposal of all regulated materials generated during execution of this project.

1.9.1.3 Monitoring Wells

There are several monitoring wells installed in and around the proposed construction area. Site maps and construction drawings provide the location of these wells. The Contractor shall take all precautions to prevent any damage to wells. If the wells and associated structures are damaged during the project, the Contractor shall repair/replace all damages at no additional expense to the Government. Contractor shall dispose of all regulated materials during repair of the damaged structures and remove any free product as required by VDEQ regulations.

1.9.1.4 Additional Excavation

Prior to any excavation beyond the immediate area or boundary of the construction site, the Contractor shall coordinate with 1 CES/CEV and obtain the Contracting Officer's approval.

1.9.2 HAZARDOUS MATERIALS REPORTING

1.9.2.1 Required Reports

In compliance with AFI 32-7086 and AFI 32-7086 ACC Sup 1, contractors are required to report the usage of all hazardous materials to the government. The contractor shall report the type and estimated usage of all Hazardous Materials and shall submit a copy of the Material Safety Data Sheet (MSDS) for each item to the 1 LRS/HAZMART, 1 CES/CEVQP, and the Contracting Officer (CO) not less than seven calendar days prior to bringing the items on the installation. The Contractor shall submit to the CO the following information along with the Material Safety Data Sheet (MSDS) for each item within 10 days after award of the contract. This information will consist of the title of the project, the project number, project location (i.e. building number, street address, or if new construction, the general area), the contractor company name, point-of-contact and telephone number, the name of the hazardous material, manufacturer of the material, the estimated quantity in gallons or pounds that may be used on the project, and the maximum amounts that will be stored on the job site at any given time.

1.9.2.2 LAFB Hazardous Materials Management Process (HMMP) Team Review

The LAFB Hazardous Materials Management Process (HMMP) team will review the listing to ensure there are no concerns with the chemicals being used and/or stored on the installation. The report will be sent to the Contracting Officer and to the following addresses:

1 FW/HAZMART	1 CES/CEVQP
Bldg 330	Bldg 328, Rm 253
23 Sweeney Blvd	37 Sweeney Blvd
Langley AFB VA 23665	Langley AFB VA 23665

Should the Contractor need to use additional hazardous materials at any time of the project that were not previously submitted, he shall submit a list of those items to the above offices as soon as he is aware of the need for the materials.

1.9.3 NOTIFICATION OF ABESTOS CONTAINING MATERIALS (ACM)

1.9.3.1 Asbestos Notification

Tests have indicated that Asbestos Containing Materials (ACM) are not present in the areas affected by this work. However, if ACM are exposed that were not previously known to exist, the Contractor shall cease work in the affected area and notify the Contracting Officer. If the Contractor is tasked to remove the discovered the ACM, all asbestos removal work is subject to OSHA, EPA and Commonwealth of Virginia compliance and inspection for asbestos abatement. Contractor must perform asbestos removal work in accordance with these specifications and EPA National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for asbestos and any subsequent updates thereto. This includes State and EPA Region 3 Notifications that

shall be accomplished at least 20 days prior to starting any asbestos abatement or removal. A copy of the notifications shall be submitted to the Contracting Officer. All hazardous waste manifests shall be signed by 1 CES/CEV (37 Sweeney Blvd) prior to removal of such waste from the base. Only CEV is authorized to sign these manifests. The Asbestos Program Manager is Mr. Robert Jones who can be contacted at (757)764-1126. Please contact him if you have any questions.

1.9.4 Fuel Spills

In the event of a fuel spillage during the performance of this contract, the Contractor shall be responsible for its containment, clean up, and related disposal costs. The operator shall have sufficient spill supplies readily available on the pumping vehicle and / or at the site to contain any spillage. In the event of a Contractor-related release, the Contractor shall immediately notify the Environmental management Office and the Contracting Officer and take appropriate actions to correct its cause and prevent future occurrences. If the federal, state, or local authorities assess any monetary fine, penalty, or assessment related to the release of any substance by the Contractor, his/her employees, or agents during the performance of this contract, the Contractor shall be solely liable for its payment, authorizes the United States Air Force to withhold such from payment and otherwise indemnify and hold the United States Air Force harmless.

1.9.5 Waste Disposal

1.9.5.1 Waste Handling, Storage, Transportation, and Disposal

All waste materials generated by any work under this contract performed on a Government installation shall be handled, transported, stored, and disposed of by the Contractor and by his/her subcontractors at any time in accordance with these specifications, all applicable Federal, state, or local laws, ordinances, regulations, court orders, or other types of rules or rulings having the same effect of law. These include but are not limited to Executive Order 12051, 13 October 1978; the Federal Water Pollution Control Act, as amended (33 USC Sec 1251 ET SEQ); The Clean Air Act, as amended (42 USC Sec 1857 ET SEQ); The Endangered Species Act, as amended (16 USC Sec 1531, ET SEQ); The Toxic Substances Control Act, as amended (15 USC Sec 2601, ET SEQ); The Solid Waste Disposal Act, as amended (42 USC 6901 ET SEQ); and the Archaeological and Historic Preservation Act, as amended (16 USC Sec 469, ET SEQ).

1.9.5.2 Construction/Demolition Debris Recycling/Reporting

As good stewards of the environment, the government is committed to recycling to the greatest extent practicable. The Air Force goal is to divert greater than 40% of its waste away from landfills. The government must report quarterly to higher headquarters the amount of construction/demolition debris that is both recycled and disposed of in tons; therefore, the contractor shall recycle all construction/demolition debris to the maximum extent practicable. **The Contractor shall make every effort to recycle materials such as but not limited to concrete, bricks, asphalt, and metals.** The following are some suggested sites for disposal of recyclable materials:

Some Recycling Center Sources

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>Phone</u>	<u>Acceptable Items</u>
Tidewater Fiber	5602 Chesnut Ave	Newport News, VA	247-5766	Glass, tin cans paper, occ., plastics aluminum
Old Dominion Recycling	1618 W. Pembroke Avenue	Hampton, VA	723-2942	Aluminum, copper, steel, iron, metals paper, tires
Butler Paper	324 Newport St	Suffolk, VA	539-2351	Industrial and Commercial Paper Recycling
Dubin Metals	2409 Bowdens Ferry Rd	Norfolk, VA	622-3970	Aluminum, copper, brass, scrap metals batteries, radiators
Gutterman Iron and Metal	1206 East Brambleton Ave	Norfolk, VA	627-1095	Scrap brass, copper, aluminum
Sims Metal	2116 Geroge Wash Mem Hwy	Yorktown, VA	599-4940	Aluminum, copper, steel, brass, stain- les steel, radiators
Waterways Marine	1401 Precon Drive	Chesapeake, VA	333-3427	All C&D materials, (i.e. lumber, asphalt concrete, concrete w/ rebar)
K.F. Wilson	2972 North Armistead Ave	Hampton, VA	865-7182	All C&D materials, (i.e. lumber, asphalt concrete, concrete w/ rebar)

1.9.5.3 Recycling Report

The Contractor shall report the tonnage of the items recycled and the amounts disposed of to the project manager, the Contracting Officer, and 1 CES Environmental Flight by the 5th day of each quarter (Jan, Apr, Jul, Oct) during the period of performance. The report shall list the title of the project, the project number, the Contractor's company name and point-of-contact, phone number, the type items (i.e. concrete, asphalt, scrap metal, etc) and the tonnage of those items recycled and the tonnage of the items disposed of. For the items disposed of, one total figure can be given instead of reporting disposal figures for the various items.

If this information is mailed to the government, please mail it to:

1 CES/CEVQP
Attn: Pollution Prevention Mgr
Bldg 328, Room 253
37 Sweeney Blvd
Langley AFB VA 23665

1.9.5.4 Protection from Loose Debris

Loose debris on trucks leaving the site shall be loaded in a manner that shall prevent dropping of materials on streets and conform to local ordinances/laws. Fasten suitable cover, such as a tarpaulin, over the load before entering surrounding streets.

1.9.5.5 Submitting Trip Tickets

Contractor shall document all debris and material that are delivered and disposed of at local landfills. Contractor shall submit to the Contracting Officer all trip tickets from the landfill facility to show all debris and materials that have been landfilled in accordance with all Federal requirements and in an approved location. At the completion of the project and within 14 calendar days of final acceptance, the Contractor shall also provide to the Contracting Officer a report of tonnage of debris and materials legally disposed of in local landfills.

1.9.6 Use of Recycled-Content Products (Affirmative Procurement)

Whenever the potential for the use of a non-recycled content product exists during the construction stage of the project, the Contractor shall incorporate in this project, as a substitute, recycled-content products that are listed and identified in the Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines (CPG) for recycled-content products. The Contractor shall use recycled-content products as required by EPA and other governmental agencies and Federal Acquisition Regulation (FAR) clauses.

It is mandated by Executive Order 13101 (Greening the Government through Waste Prevention, Recycling, and Federal Acquisition) and Section 6002 of the Resource Conservation and Recovery Act (RCRA) that the Federal Government use recycled-content products in the construction and/or renovation of facilities. It is the intent of the Government to comply with the Environmental Protection Agency (EPA) requirement 100% of the time and use as many of the applicable listed recycled-content products as feasible and economically practical. The Contractor shall consider this a standard requirement for all aspects of the project construction.

The recycled-content products listed in the CPG can be found in the EPA website at www.epa.gov/cpg/products.htm. These products are also listed at Annex C to LAFB Affirmative Procurement Plan 32-7080 (See C-1 through C-3 Attached). This list is subject to change at any time so it is the Contractor's responsibility to be aware of any updates or additions.

Such products shall also comply with the requirements of the EPA Recovered Materials Advisory Notice (RMAN). The RMANs recommend recycled-content ranges for CPG products based on current information on commercially available recycled-content products. The recommended recovered materials content percentage can be obtained by clicking on the product on the website.

1.9.6.1 Affirmative Procurement Report

Before starting the project, the Contractor shall complete Annex C to LAFB Affirmative Procurement Plan 32-7080 (See C-1 through C-3 Attached) indicating the items he plans to use. The Contractor will provide this to

the Contracting Officer and the Project Manager. Then during the accomplishment of the project construction, the Contractor shall complete the form again. At this time, the Contractor shall indicate the use and non-use of products that are contained in the CPG and will list the recycled-content percentage for the applicable item. In each instance where a recycled-content construction product is not used, the Contractor shall provide to the Contracting Officer (or his/her designated representative) and the Project Manager a completed Exemption Form, Annex B to LAFB Affirmative Procurement Plan 32-7080, "Recovered Materials Determination Form" (See B1 and B2 Attached).

The Contractor shall complete this form for all items for which he or she desires an exemption from the Affirmative Procurement Program for Recovered Materials that are being procured. Exemptions can only be taken if (1) the item is not available within a reasonable period of time (2) item fails to meet a performance standard in the specifications and (3) the item was only available at an unreasonable price i.e., the recycled-content product costs more than the non-recycled content product. The fourth reason on the Recovered Materials Determination Form, (4) the item is not available from 2 or more sources, does not apply to construction/renovation contractors as the Government will not specify where you can get your materials from. Specific reasons why an exemption is taken will be specified on the form and documentation supporting this reason will be provided and attached.

The Contractor will sign the form as the "Procurement Originator" and the completed form will also be signed by the 1 CES Engineering Flight Chief or Deputy Flight Chief. These forms will be kept in the project folder indefinitely.

1.9.7 Volatile Organic Compounds

All coatings and solvents used in the performance of this contract shall meet the required performance specifications and shall not exceed the volatile organic compound limits of the Air Pollution Control Districts where they are used.

1.9.8 Above-Ground Storage Tanks

Any above ground storage tanks (ASTs) allowed on site shall have secondary containment, venting and spill/overflow protection. Anti-siphon valves are required. The Contractor shall visually inspect such tanks daily for leaks. All ASTs shall be installed or erected in accordance with VR 680-14-13, NFPA 30, and 40 CFR 112.7.

1.9.9 Erosion and Sediment Control

All construction operations shall comply with the requirements of the Virginia Erosion and Sediment Control Act. Hay bales shall not be used for erosion control and inlet protection from storm water run-off. The Contractor shall submit alternate method of protection to the Contracting Officer at the preconstruction conference for review and approval. The Contracting Officer will notify the Contractor of his/her decision prior to issuance of Notice to Proceed (NTP).

1.9.10 Resolution of Environmental Contractual Conflicts

In case of a conflict or discrepancy between environmental regulations or laws and the contract specifications, the Contractor shall immediately submit the matter in writing to the Contracting Officer for a determination. Without such determination any actions taken shall be at the Contractor's own risk and expense.

1.10 PROTECTION OF GOVERNMENT PROPERTY

1.10.1 General

The Contractor shall at all times protect and preserve the property of the Government which is within the work area and could be affected by the accomplishment of the work specified and indicated, and all parties and individuals within or near the work areas who could be endangered by the installation of the work. Protection requirements include protecting the interior of the facility from inclement weather. Any actions necessary for adequate protection are solely the Contractor's responsibility. Any temporary boarding of windows or doors must be painted Langley Brown or Langley Beige to match the exterior.

1.10.2 Protection of Equipment

Contractor is required to cover equipment that is to remain in place within the area of contract operations and protect it against damage or loss and store equipment that is removed in performance of work where directed or use in work as required by drawings and specifications. Equipment temporarily removed shall be protected and returned equal to its condition prior to starting work at no additional expense to the Government. Security for equipment or material that is to be reused and is removed for temporary storage shall be the sole responsibility of the Contractor.

1.10.3 Protection of Grounds

Contractor shall provide protective barriers for all grass, trees, shrubs, sidewalks, curbs and gutters within the construction boundary. Furthermore, such items, including grass, outside the construction boundary shall also be protected during delivery of materials and/or moving of equipment. Damages caused by the Contractor to existing grounds, plants, pavements, utilities, work by others, fixtures, or furnishings shall be repaired by the Contractor. Such repairs shall be of as good condition as existed before the damaging, unless such existing work is scheduled for removal or replacement by the work requirements of the contract. This requirement also pertains to grading of site to remove all clods and grade irregularities prior to final inspection and acceptance. The Contractor may be required to install temporary fencing to protect the site, at no cost to the Government.

1.11 SAFETY

1.11.1 Safety Barriers and Signs

Contractor shall provide barricades, traffic control signs and construction safety signs that meet industry standards. Actual location, size and final arrangement of these items shall be discussed and approved by the Contracting Officer prior to installation. Such approved items shall be of uniform size, design and color. All cones, barricades, warning lights, temporary signs and protective devices shall conform to the current requirements of the Manual of Uniform Traffic Control Devices for Streets

and Highways (MUTCD) and the US Army Corps of Engineers Safety and Health Requirements Manual EM 385-1-1.

1.11.2 Employee Health and Safety

1.11.2.1 Compliance

In order to provide safety controls for protection to the life and health of employees and other persons; for prevention of damage to property, materials, supplies, and equipment; and for avoidance of work interruptions in the performance of this contract, the Contractor shall comply with all pertinent provisions of the Corps of Engineers Manual, EM 385-1-1 (2003), entitled "Safety and Health Requirements Manual," as amended. The Contractor will also take or cause to be taken such additional measures as the Contracting Officer, or his/her designated representative may determine to be reasonably necessary for the purpose. A copy of the manual is available for review in the Civil Engineering Contract Management Section office (Bldg. 328) or copies can be obtained from the Government Printing Office, Washington DC 20402.

1.11.2.2 Subcontractor's Compliance

Compliance with the provisions of this clause by Subcontractors will be the responsibility of the Contractor.

1.11.2.3 Safety Records

The Contractor will maintain an accurate record of, and will report to the Contracting Officer or his/her designated representative in the manner and on the forms prescribed by the Contracting Officer or his/her designated representative, exposure data and all accidents resulting in death, traumatic injury, occupational disease, and damage to property, materials, supplies and equipment incident to work performed under this contract.

1.11.2.4 Notification of Non-Compliance and Corrective Action

The Contracting Officer or his/her designated representative will notify the Contractor of any noncompliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his/her representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Contracting Officer or his/her designated representative may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

1.11.3 Applicable Publications

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.

a. Code of Federal Regulations (CFR):

(1) OSHA General Industry Safety and Health Standards (29 CFR 1910), Publication V2206, OSHA Construction Industry Standards (29 CFR 1926). One source of these regulations is OSHA Publication 2207, which includes a combination of both Parts 1910 and 1926 as they relate to construction safety and health. They are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

b. National Emission Standards for Hazardous Air Pollutants (40 CFR, Part 61).

c. Federal Standard (Fed. Std.):

(1) 313A Material Safety Data Sheets, Preparation and the Submission to the BioEnvironmental Office on Langley AFB. Safety and Health Requirements Manual, EM 385-1-1

(2) Use of Asbestos Containing Material or any Class 1 ozone depleting chemical compounds is prohibited at Langley AFB, DA Circular 40-83-4

(3) Work covered by this section: This section is applicable to all work covered by this contract.

(4) Definition of Hazardous Materials: Refer to hazardous and toxic materials/substances included in Subparts H and Z of 29 CFR 1910 and to others as additionally defined in Fed. Std. 313. Those most commonly encountered include asbestos, lead paint, polychlorinated biphenyl's (PCB'S), explosives and radioactive material, but may include others. The most likely products to contain asbestos are sprayed-on fireproofing, insulation, boiler lagging, and pipe covering.

1.11.4 Precautions Against Hazards

1.11.4.1 Welding, Cutting and Burning

All welding and cutting operations shall be done in accordance with nationally recognized good practice. The current publications of the American Welding Society, 2501 NW 7th Street, Miami FL 33125, and the National Fire Protection Association, 470 Atlantic Ave., Boston MA 02110, shall be used as a minimum standard of nationally recognized safety procedures in welding and cutting.

The Contractor shall provide the necessary methods of fire extinguishment and fire prevention, and before operations begin, clear all welding and cutting operations with the representative of the Contracting Officer or his/her designated representative. The Contractor shall request and receive an AF Form 592, USAF Welding and Brazing Permit, before preparing for such operations.

The Contractor shall discontinue all burning, welding or cutting operations one hour prior to the end of the normal workday. The Contractor shall provide a workman to remain at the site for thirty minutes after discontinuing the above operations. This workman shall make a thorough inspection of the area for possible sources of latent combustion. Any unsafe conditions shall be reported to the Fire Department for their investigation - EMERGENCY PHONE NO 911.

1.11.4.2 Open Flames

The use of open-flame heating devices will not be allowed except by special permission of the Contracting Officer or his/her designated representative. Such permission will not be granted unless the Contractor has taken all venting precautions. Burning trash, brush or trees on the job site will not be allowed unless specific approval is granted for each incident by the Contracting Officer or his/her designated representative. Approval for the use of open fires and open-flame heating devices will in no way relieve the Contractor from the responsibility of any damage incurred because of fires

1.11.4.3 Flammable Liquid Storage

Flammable liquids shall be stored and handled in accordance with the Flammable Liquids Code (No. 30) of the National Fire Protection Association. Flammable liquids shall not be stored in the Contractors storage trailers.

1.11.4.4 Technical Services

The Langley Fire Department, Technical Services Section, ext. 4275, is available for assistance concerning fire hazard questions.

1.12 SECURITY

1.12.1 General Base Requirements

Access to Langley AFB is restricted to those Contractor and subcontractor employees required for the performance of this contract and only for the performance period of this contract. Contractor passes are issued by the Pass and Registration Section, Bldg 15 (Room 103), after a signed letter from the Contractor listing all employee names and social security numbers has been delivered to and approved by the Contracting Officer or his/her designated representative. Procedures for requesting Base Passes for employees and Contractor vehicles will be further explained during the preconstruction conference.

1.12.2 Emergency Security Situations

If a security violation is detected from any cause, it may result in the cessation of all work and evacuation of the area by all Contractor personnel to a point to be determined by the Security Police Supervisor at the scene. The control of construction personnel under these conditions is a Security Police Officer and their orders shall be followed in detail. Construction will be permitted to resume as quickly as possible. The individual causing the violation may be apprehended, and if so, will be processed and released to a responsible supervisor; such person might be away from his/her work site as long as 1 to 1½ hours. If a hostile situation is detected as a result of the construction activity, the entire crew may be removed from the area and detained until competent authority approved their release. All

Security Police exercises will be scheduled to not interfere with construction personnel or with their work.

1.12.3 Work In Special Security Areas

1.12.3.1 Escorts

Government shall provide all escorts required for access to security areas while working on construction projects at LAFB.

1.12.3.2 Applicable Security Criteria

AFI 31-101, The Air Force Installation Security Program shall apply to construction projects at Langley AFB.

1.12.4 Restricted Areas

1.12.4.1 General

All work to be performed on this project is within the boundary of a USAF Restricted Area and will be confined to the immediate vicinity of Building 753. Full operational status of the mission and Security Forces will be maintained throughout the contract period. To facilitate contract work while preserving strict security, a Contractor free zone will be established around each work area, and a combination of entry control, internal movement and surveillance techniques will be employed. Security procedures and USAF Security Police actions will take precedence over all concerns at the time of emergencies or mission operations. The use of deadly force is authorized to protect government resources.

1.12.4.2 Entry Control

Entry into the work areas will be through the use of Air Force Form 75, Visitor Pass, and an Entry Authority List provided by the Contractor to the Chief of Security Police. The Base Commander retains the authority to deny entry to any person(s). Security Police and Escort Officials execute this authority for the Base Commander.

1.12.4.3 Identification Permits

The Contractor is responsible for requiring each employee to display an identification permit while within the area. All identification permits shall be immediately delivered to the Contracting Officer, or his/her designated representative, for cancellation upon release of any employee or termination of contract work, whichever is sooner. All Contractor personnel shall stay within the boundaries of the guarded work zone. Subcontractors, material deliverers or other workers must be pre-identified 48 hours in advance of their arrival by an Entry Authority List approved by the Contracting Officer, or his/her designated representative. This list will contain the full name, SSAN and the base pass number (Air Force Form 75). If this notification is not received, some delay may be expected

1.12.4.4 Search Procedures

Search procedures will be in effect at all times. Each time a Contractor personnel enters the secure area the vehicle and cargo, briefcases, toolboxes, etc. may be searched. Individuals are also subject to search by

the use of a metal detector. Primary emphasis will be placed on locating explosive devices, instruments of espionage, unauthorized individuals, and other objects of a suspicious nature. The Contractor shall store tools and cargo that are not required for the job in his/her own facility that will be located in a designated area.

1.12.4.5 Internal Controls

The boundaries of the designated work areas will be under surveillance of armed guards. Contractor personnel must remain within the boundaries of the designated area and shall enter or depart the work areas only through the designated Exit / Entry Point. The Contractor shall insure all persons are aware of the boundaries, and that they are to remain within the work zone.

1.12.4.6 Security Manager

The Contractor shall designate a representative as Security Manager to coordinate security matters. At least 48 hours in advance of a change in work hours, the Security Manager shall notify the Contracting Officer, or his/her designated representative, who will notify the Security Police.

1.12.4.7 Housekeeping

The Contractor shall keep the work area neat and tidy. Clean up shall be accomplished daily, and all piles of materials, equipment and debris that could afford cover or concealment for unauthorized persons shall be removed from the area. Storage areas will be designated and the Contractor shall not store anything within 30 feet of the boundary fence.

1.12.4.8 Power Interruptions

Power interruptions necessary as a part of the construction project shall be coordinated with the Contracting Officer, or his/her designated representative who will, in turn, notify the Base Civil Engineer, Central Security Control, and (the area occupants)(the 48th Munitions Supervisors). The request for interruptions shall include reason, date, time, area affected and duration, and shall be submitted to allow notification at least two days in advance of the interruptions.

1.12.4.9 Repair Responsibilities

Any damages or alteration to any security facility, i.e., fence, lighting, communication cables, will be repaired, replaced, or suitable substitute provided by the Contractor prior to night fall of the day such action occurred or was detected.

1.12.4.10 Overnight Storage of Construction Machinery

All construction machinery that is self-propelled (tractors, back hoes, dozers, trucks, etc.) will not be allowed to remain within the Restricted Area overnight. Such vehicles must be parked in a designated area 30 feet beyond the boundary fence, locked, and keys removed.

1.12.4.11 Mission Operation

(Occupant)(Munitions) and Security Operations will be continuous throughout the contract period and will necessitate nominal constraints on Contractor

operations. Planning between the Contracting Officer, or his/her designated representative, and mission units can eliminate most constraints except those caused by unforeseen events. During any movements of security resources into or from the Restricted Area, construction will be halted prior to the movement and the construction crew will be relocated to an area away from the convoy route and / or destination. Under no circumstance will the reason for this relocation be announced to the Contractor. The (Site Supervisor / Convoy Commander) will be responsible for insuring all Contractor personnel are positioned away from the convoy routes and destination. Contractor personnel shall obey all instructions of Security Police that pertain to their movement and activity. However, Security Police will not interfere or halt any affect on rate of work or quality of work; their interference will pertain only to that necessary to protect security resources, if pre-sent.

1.12.4.12 Delays In Entering And Leaving Work Area

The Contractor may experience delays due to compliance with entrance/exit requirements of restricted/controlled areas. The Contractor shall not be compensated for reasonable delays in accessing the site. Also, due to the nature of restricted areas, the Contractor may be requested to leave the restricted area at any given time. The Contracting Officer may extend the contract performance time when area designations change while the Contractor is working.

1.12.4.13 Safety

Flame and spark producing equipment (i.e., matches, lighters, vehicle cigarette lighters) shall be surrendered at the Entry Control Point prior to entry to the area. Smoking within the area is prohibited except in Contractor provided approved smoking areas. The use of flame and spark producing equipment within the area is discouraged; however, in the event that it is necessary to use electric welders, oxygen-acetylene torches or other spark producing devices, the Contractor shall notify the Contracting Officer or his/her designated representative. Should a hazardous condition arise during the use of such devices, contact the Fire Department (Main Base: 911; Bethel Manor Housing: 865-1042). All Contractor personnel are subject to base safety and traffic regulations, and may be barred from motor vehicle operation for cause.

1.12.5 Airfield Requirements

1.12.5.1 Contact Base Operations

Contractor shall contact LAFB Base Operations (4-4292, 4-2508), for construction restrictions involving the flightline, taxiway and runway areas and shall comply with Air Force Instruction AFI 13-213.

1.12.5.2 Radio Communication with Tower

Two-way radio contact on VHF Radio capable of communication with the Air Traffic Control Tower on the ramp net (163.4625 MHz) is required at all times for all personnel and groups of personnel working on the flightline, taxiways and runways. Contractor shall coordinate radio issuance with the project inspector.

1.13 HISTORIC DISTRICT/ARCHITECTURAL COMPATIBILITY

Due to the distinct historic architecture and the high visitor traffic LAFB receives, several special actions are required during construction and are listed herein.

1.13.1 Newly Placed Concrete

When placing concrete adjacent to existing concrete, all newly placed concrete curbs, gutters, and sidewalks shall match existing adjacent concrete in color and texture. Miami Buff is the predominate color used on LAFB. All concrete that is newly placed by the Contractor shall be Miami Buff in color unless specifically noted otherwise in the contract documents or instructed otherwise by the Contracting Officer or his/her designated representative.

1.13.2 Unprimed or Factory Finished Equipment

Unprimed or factory-finished equipment installed on the exterior of facilities shall be painted with two coats of brown paint to match existing equipment.

1.13.3 Patching

All holes in walls or other parts of the structure where material or equipment is removed or replaced shall be sealed, painted, caulked, or plugged neatly with original type of materials to match the existing part of the structure so involved. The Contracting Officer or his/her designated representative shall approve all above work and materials.

1.13.4 Pavement Repairs

Replace or restore all pavement, curb and gutter, and sidewalk disturbed by operations under this contract to the original condition, including any markings or striping, except where shown or specified otherwise. Compact Backfill in pavement repairs with mechanical tampers to affect a density that is equal to adjacent subgrade. Replace pavement with equal materials and equal thickness to that removed, unless indicated otherwise. Each pavement area shall be replaced immediately after the work operation for that area is completed. At the Contractor's option, a temporary repair with a surface of bituminous concrete may be made immediately and removed and the permanent repair made before completion of the contract.

1.13.5 Marking Restrictions

Contractor shall not mark any curb or pavement with paint unless directed by the Contracting Officer or his/her designated representative.

1.14 RECORDING AND PRESERVING HISTORICAL AND ARCHAEOLOGICAL FINDS

1.14.1 Preservation

All items having any apparent historical or archeological interest, which are discovered in the course of any construction activities shall be carefully preserved. The Contractor shall leave the archeological find undisturbed and shall immediately report the find to the Contracting Officer

or his/her designated representative so that the proper authorities may be notified.

1.14.2 Rehabilitation

All repair, maintenance, and construction must be completed in a manner that is consistent with the Secretary of the Interior's "Standards for Historic Preservation Projects" and the Secretary's "Illustrated Guidelines for Rehabilitating Historic Buildings".

1.15 EXCAVATION REQUIREMENTS

The Government will furnish the Contractor with an approved AF Form 103, BCE Work Clearance Request, indicating any special precautions and/or areas that will be marked (for utilities). The contract drawings, AF Form 103 and marking will indicate all information the Government has knowledge of, but will not indicate all conditions that may occur in the field. The Contractor shall not begin (work) excavation until the Clearance Request is issued. The Contractor shall be responsible for removing all markings made for his benefit as soon as the need for an individual mark is passed. The Government will mark utilities one time only. Maintaining these marks or additional marking is the responsibility of the Contractor.

1.15.1 Acquiring A Work Clearance Requests (Air Force Form 103)

A coordinated and approved Work Clearance Request is required prior to any excavation activities. The Contractor shall submit a request to the Project Inspector 14 days prior to the start of excavation work. All requests must be initiated not later than Thursday of any week to be inserted into the Work Clearance approval process for the following week. The Contractor will be notified to attend a Work Clearance scheduling meeting. At the Work Clearance meeting, the Contractor will receive an AF Form 103, instructions for completing the form, and a date and time for utilities to be marked. **The Contractor shall not commence excavation prior to obtaining an approved AF Form 103.** After all respective utilities have been marked and verified by the Project Inspector, the Contractor shall return the original AF Form 103 to his/her respective Project Inspector for coordination and signature by the Chief of Engineering. No digging or excavation shall begin before the Chief of Engineering signs the AF Form 103. After the Chief of Engineering signs the AF Form 103, the Project Inspector will return it to the Contractor. Then, and only then, shall the Contractor commence excavation. The Contractor shall maintain all utility markings for the duration of the contract. Contractor shall maintain original version of the AF Form 103 for the duration of excavation work at the particular site. Ensure all applicable parties have coordinated on the form prior to excavation. For Miss Utility, use the Ticket Information Exchange (TIE) number or actual technician signature as evidence of coordination. The AF Form 103 clearance shall not be allowed to expire. The Contractor shall revalidate/resubmit the AF Form 103 within 7 days prior to the expiration date if it is anticipated or known that the duration of excavation will exceed the 30-day limitation.

1.15.2 Miss Utility

Contractor shall contact Miss Utility (1-800-552-7001) at least 48 hours prior to excavation to identify non-Air Force-owned underground utilities (cable TV, Bell Atlantic, and Virginia Power, etc.). Notices to Miss

Utility are good for 15 working days; after that period, Contractor shall renew the notice. Indicate renewals on the AF Form 103 as applicable. Miss Utility is open 24 hours, 7 days a week. Calls after 1700, before 0700, on weekends, and on holidays are accepted for emergencies only. Holidays include: New Year's Day; Martin Luther King, Jr. Day; President's Day; Memorial Day; Independence Day; Labor Day; Veteran's Day; Thanksgiving Day; Day after Thanksgiving; and Christmas Day. After 48 hours, Contractor should contact Miss Utility to confirm that clearance/marketing operations have been completed. The Contractor must wait an additional 24 hours if any operators or contract locators have not responded to the Ticket Information Exchange (TIE) system request within the first 48 hours.

1.15.3 Markings

1.15.3.1 General Requirements for Marking Utilities

- a. Prior to commencing any excavation, the Contractor must inspect the site for clear evidence of unmarked facilities. If evidence of such facilities is present, the excavator must notify the notification center and wait an additional 3 hours for the facilities to be marked.
- b. The Contractor may choose to wait 72 hours and begin work after that time if there is no evidence that any underground facilities still remain unmarked. However, it is recommended that Contractors contact the TIE system and confirm the status of underground facilities before they commence work.
- c. After the markings have been made, Contractors are required to maintain a minimum clearance of two feet between a marked, underground utility line and the cutting edge of any power-operated excavating equipment. If excavation is required within two feet of any marking, it shall be performed very carefully with hand tools in accordance with Virginia Code Section 56-265.24.
- d. If, during the course of excavation, a utility line has been exposed, before backfilling, the Contractor must inspect these facilities to ascertain if the facilities have been damaged. If damage of any kind is discovered or suspected, it is the Contractor's responsibility to immediately notify the utility owner directly. The Contractor must NOT attempt to repair damaged facilities.
- e. Maintain any paint marks or stakes indicating underground utilities/lines as required during the duration of work or 30 calendar days from date of approved AF Form 103 (whichever is earlier). Note that Miss Utility clearance expires after fifteen working days.

1.16 OCCUPANCY AND SERVICES TO EXISTING FACILITIES

- a. The Government will occupy all areas of the existing building except the immediate areas being altered by this contract. The Contractor shall not interrupt utilities serving these areas without coordinating with the Contracting Officer or his/her designated representative.

1.17 UTILITIES

All reasonable amounts of water and electricity required for this work will be made available to the Contractor if such utilities exist at the project site. Temporary lines, connections, installation, maintenance and removal shall be the Contractor's responsibility. The Contracting Officer, or the Contracting Officer's designated representative, shall approve any temporary lines and connections. All services are subject to discontinuance without notice to the Contractor in an emergency. Three-phase power may not be available. **The Contractor shall provide his/her own necessary utilities when such utilities are not available at the project site.**

1.18 UTILITY OUTAGES AND TRAFFIC

Contractor shall request utility/power outages and/or changes to normal traffic flow pattern 14 calendar days in advance of disruption or change to either.

1.19 CONVENIENCE FACILITIES

Existing restroom facilities may not be used by construction personnel. The Contractor shall maintain, in a neat and sanitary condition, such accommodations for the use of his employees. Temporary restroom facilities shall be white in color.

1.20 SUPERVISION

1.20.1 Working Supervisor

The Contractor shall designate an employee or employees to oversee work under this contract. This employee will be a working supervisor. While any work is being performed, the designated employee or employees shall remain at the job site, except for such incidental errands as required by his/her duties. The employee or employees are responsible for the proper coordination and timeliness of the work, and the proper workmanship of all trades; therefore, his/her absence from the project site shall be considered as damaging to the Government. The ability of his/her supervision, based on knowledge and experience, is essential to the proper execution of the work, as is the ability to communicate and direct the efforts of those performing the work. The Government reserves the right, in the event that it becomes apparent the employee or employees are not satisfactorily directing the work, to require the Contractor replace the employee or employees.

1.21 RECORD DRAWINGS

1.21.1 Record of Work Progress

During the progress of the work, the Contractor shall keep a careful record at the job site of all changes, corrections, and deviations from the layouts and details shown on the drawings to include all contract modifications. The Contractor shall enter such changes on project drawings promptly, but not later than on a weekly basis. Such revised drawings shall be considered "redline" as-built drawings.

1.21.2 Record of Underground Utilities

Where underground utilities are installed, note the elevation of the utility installed every 30 feet. Where new utilities cross existing utilities, note the elevation of the new and existing utility and the vertical and/or horizontal separation. Where new utilities run parallel to new and existing utilities, note the elevation at which installed and the horizontal and/or vertical separation between utilities.

1.22 DELIVERABLES AND FINAL AS-BUILTS

1.22.1 Geodetic Control Surveys

The Contractor shall provide horizontal and vertical control surveys for the precise location of primary survey points for planning, engineering, construction, real estate projects, GIS applications, or facility management.

1.22.2 Deliverable Requirements

The Contractor shall adhere to the following guidelines when developing data:

- a. The Contractor shall use conventional and other methods, such as a planetable, total station, or Global Positioning Systems (GPS) for field data collection at an accuracy level in accordance with "Geospatial Positioning Accuracy Standards, Part 2: Standards for Geodetic Networks," published by the Federal Geographic Data Committee (FGDC), dated July 1998.
- b. All geodetic data shall be collected using the coordinate and projection system of the installation imagery, NAD 83, Virginia State Plane South (Zone 4502) and NAVD 88, except where modified by the government.
- c. The Contractor shall use survey grade GPS, at an accuracy level of +/- 2cm.
- d. Global Positioning System (GPS) data collection activities will be based on a post-processed environment using an accurately sighted base station. Base station files for post processing acquired locally (off-site CORS Continuous Operating Reference Station) will be verified for accuracy
- e. Any new on-site base station to be initiated for collection activities will be a survey grade base station providing output files compatible with both survey & resource grade rover units (specifically Trimble 5700 and 4700/TRS).
- f. The contractor shall provide a Quality Control (QC) Report that must state whether all in-consistencies in the data generated were corrected, or it must detail the remaining errors by case.
- g. All Survey data collected shall be provided to the Government in a digital format with an attached Survey Report identifying survey method, equipment list, calibration documentation, survey layout, description of control points, control diagrams, and field survey data.

h. A Survey Control Database (consisting of a survey marker database and a survey traverse database) will be produced for all survey control points established under this contract, and delivered in ESRI ArcGIS 8.x geodatabase format.

i. Feature Attributes: The Contractor shall identify the horizontal and vertical order, classification, ID number, elevation, coordinate location and any other necessary attributes (specified by the Government) for all surveyed features.

j. Entity naming conventions, attribute fields, and domain names will be collected in the format defined by the CADD/GIS Technology Center's Spatial Data Standards (SDS) re-lease 2.4 (or the most current version available), except where modified by the government. This standards document can be found at: <http://tsc.wes.army.mil/products/tssds-tsfms/tssds/projects/sds>.

k. Metadata: The Contractor shall complete all metadata elements marked mandatory and mandatory-if-applicable as defined by the FGDC Content Standards for Digital Geospatial Metadata for each feature layer collected. This standards document can be found at <http://www.fgdc.gov/metadata/contstan.html>.

j. Metadata should be submitted in ESRI ArcGIS 8.x format and stored as an XML document with the corresponding feature layer.

1.22.3 Topographic and Infrastructure Surveys

The Contractor shall provide surveys to consist of, but are not limited to, field data acquisition of detailed topographic, planimetric and infrastructure feature data for use in engineering site planning, cost estimating, design, as-builts, and construction layouts.

1.22.3.1 Surveying Methods

The Contractor shall utilize the following surveying method when developing feature data for this project:

a. The Contractor shall use conventional surveying and other methods, such as a total station or Global Positioning Systems (GPS) for field data collection at an accuracy level in accordance with "Geospatial Positioning Accuracy Standards, Part 4: Architecture, Engineering, Construction, and Facilities Management," published by the Federal Geo-graphic Data Committee (FGDC), dated February 2002. This standards document can be found at: http://www.fgdc.gov/standards/status/sub1_5.html.

b. All geospatial data shall overlay on the installation's most current orthorectified imagery provided by the government. The collected data will incorporate the coordinate and projection system of the imagery, NAD 83 Virginia State Plane South (Zone 4502) and NAVD 88, and have an external spatial reference (.prj) file attached that specifies the parameters of the coordinate system.

c. The Contractor shall provide survey grade GPS data at an accuracy level of +/- 2cm. where appropriate (as determined by the

Government), and all other collection at a re-source grade accuracy level of +/- < .5m.

d. The Contractor shall provide a Quality Control (QC) Report that must state whether all inconsistencies in the data generated were corrected, or it must detail the remaining errors by case.

e. Data on the location of utility lines shall be captured at a minimum every 50 feet and each turn or bend in a utility line must also be captured.

f. The Contractor shall prepare and submit a GIS Personal GeoDatabase (format: .mdb) on CD/DVD to the LFW GIO that links the respective spatial and tabular databases through ESRI ArcGIS 8.3. The contractor shall utilize a topology build and clean routine and assure the following:

1. No erroneous overshoots, undershoots, dangles or intersections in the line work.

2. Lines should all be continuous, i.e. do not create dashed lines with many small line segments.

3. Point features should be digitized as points, not graticules, symbols or icons.

4. No sliver polygons.

5. All polygons completely close and have a single unique centroid.

6. Digital representation of the common boundaries for all graphic features must be coincident, regardless of feature layer.

g. Feature Attributes: The Contractor shall identify the classification, type, location, ID number, and any other necessary attributes (specified by the Government) for all surveyed, mapped, designed, or proposed features.

h. Entity naming conventions, attribute fields, and domain names will be collected in the format defined by the CADD/GIS Technology Center's Spatial Data Standards (SDS) re-lease 2.4 (or the most current version available), except where modified by the government. This standards document can be found at:

<http://tsc.wes.army.mil/products/tssds-tsfmts/tssds/projects/sds>

.Metadata: The Contractor shall complete all metadata elements marked mandatory and mandatory-if-applicable as defined by the FGDC Content Standards for Digital Geospatial Metadata for each feature layer collected. This standards document can be found at:
<http://www.fgdc.gov/metadata/contstan.html>.

i. Metadata must include an NSSDA accuracy statement at the 95% confidence interval & corresponding calculation worksheets as outlined in "Geospatial Positioning Accuracy Standards, Part 3: National Standard for Spatial Data Accuracy," published by the

Federal Geographic Data Committee (FGDC), dated July 1998. This standards documentation can be found at:
http://www.fgdc.gov/standards/status/subl_3.html.

j. Metadata should be submitted in ESRI ArcGIS 8.x format and stored as an XML document with the corresponding feature layer.

1. Metadata shall meet GeoBase standards.

k. Before the beginning of the Project, the Contractor will schedule a meeting with the Government Project Manager and the GIO so that all parties can agree with the data deliverables.

1. The Contractor shall provide the Geo Integration Office said deliverable through their respective POC (Military Point of Contact) within 2 weeks of project completion. The following shall apply:

1. Failure of delivery will result in Non-Payment until the deliverable has been approved by the Geo Integration Office.

2. After Delivery, the Geo Integration Office has 2 weeks to complete QC of the data and respond with an approval letter.

3. If the deliverable is not approved by the Geo Integration Office, the Contractor has 10 business or working days to correct the data or penalties will apply for each day thereafter.

1.22.4 Computer-Aided Drafting and Design (CADD) Digital Drawings

These deliverables include (but are not limited to): roof plans, interior designs or layouts, floor plans, blueprints, engineering drawings or details, architectural drawings or details, construction drawings or details, cross-sections, wall sections, stair details, elevations, and other schematics generally used in the design, repair, construction, or maintenance of Government installations.

a. All CADD data deliverables shall be created or designed with the AutoCAD version 2000 or 2002 (or latest version) drawing software. Drawings will be delivered in the AutoCAD ".DWG" file formats.

b. The contractor shall use the A/E/C CADD Standard 2.0 (or latest version) when creating or revising any CADD data deliverables. These standards can be found or reviewed at:
<http://tsc.wes.army.mil/Products/standards/aec/intro.asp>.

c. The Industry Standard model file and sheet naming conventions, consisting of a Discipline/Code Designator, Drawing Type Code, Sheet Type Code/Designator, and Sheet Sequence Identifier shall used for all submissions - diagrams of this naming convention can be found in the A/E/C CADD Standard.

d. All submittals should include any standards sheets (abbreviations, symbols, fonts, etc.) necessary for a complete project, and document any nonstandard fonts, tables, symbols, etc. that are used.

e. All drawing files, unless otherwise specified, will use units of the English System.

f. Acceptable drawing scales depend on the type of drawing and the size of area the drawing encompasses - A detailed description of which drawing scale to select can be found in the A/E/C CADD Standard Release 2.0 (or latest version).

1.22.5 Delivery Format

Note: No deviations from the Government's established standards will be permitted unless prior written approval of such deviation has been issued by the Government. All linkages of non-graphical data with graphic elements, relationships between data objects and attributes, and report formats shall be maintained.

These deliverables include, but are not limited to the following:

- a. Site plans
- b. As-built drawings
- c. Engineering designs, plans or surveys
- d. Topographic surveys or studies
- e. Boundary or Cadastral surveys
- f. Master Plan drawings
- g. Utility (water, sewer, power, storm, etc.) designs, plans, surveys, and studies
- i. Pavement, Grading, or Excavation plans
- j. Soil/Geology studies or surveys
- k. Environmental assessments, surveys, studies, or plans
- l. Historical or Archaeological surveys, studies, or plans

All data deliverables shall be in a digital (electronic information) format and shall be delivered in a format that conforms to the CADD/GIS Technology Center's Spatial Data Standards version 2.4 (or latest version available) and A/E/C CAD Standards version 2.10 (or latest version available) as applicable. These standards documents and programs can be found at <http://tsc.wes.army.mil/products>. ALL digital files shall be delivered in a format that is directly readable and compatible with the installation's software and hardware platforms without conversion.

1.22.6 Setup Procedures for Deliverables

The following procedures must be performed before a file is placed on the delivery media:

- a. Include all files, both graphic and non-graphic, required for the project. Make sure all files are in the same directory, and that references to those files do not include device or directory specifications.
- b. Ensure all reference (external reference) files are attached and without device or directory specifications.

- c. Remove all extraneous graphics/text outside the project border area, and set the active parameters to a standard setting (or the setting contained in the seed or prototype file).
- d. Include any standards sheets (abbreviations, symbols libraries, font libraries, color tables, pen tables, plot configuration files, user command files, etc.) necessary for a complete project.
- e. Compress and/or reduce all files using the appropriate utilities. A digital media copy of the decompression utility should be provided with the delivered data.

1.22.7 Delivery Media

Acceptable Delivery Media

- a. CD-ROM

CD-ROM is the preferred format due to its extended shelf life. Digital media must have an external label listing format and version of the operating system on which the media was created (e.g. Windows 2000), utility (command) used for writing the files to the media, a short description of contents, a sequence number if there are multiple volumes, and the date of CD creation.

A transmittal sheet must accompany the media containing the information included on the external labels, total number of volumes being delivered, and a list of file names and file descriptions on each volume. The transmittal sheet must also include instructions for reading, restoring, or transferring the files from the media, and certification that all delivery media is free of known computer viruses - including the name(s) of the virus scanning software, date the virus scan was performed, virus definition pattern date of service and version.

1.22.8 Government Furnished Materials

The Government will provide the contractor with data and information concerning all necessary and pertinent functions and principal features of the identified project. These items will include:

- a. The installation's latest georeferenced digital planimetric data and/or base map in ESRI Arc/Info 8.x format, or best format available, with associated data files.
- b. The installation's most current orthorectified imagery and its geospatial parameters (coordinate system, datum, projection, distance units).
- c. Any pertinent and necessary prototype or seed files.
- d. Frequency settings for the Real-Time Kinematic (RTK) GPS Base Station and the preferred GPS receiver specifications.

Any other data or schematics deemed necessary for project completion, pending approval from the Government.

1.22.9 Government Review

The Government shall review the submitted data and documentation upon completion of all stated work. Missing or incomplete items will be documented and forwarded to the Contractor for completion. Upon receipt of a complete submittal, the Government will conduct a quality review and notify the contractor within 14 calendar days of acceptance (along with any stipulations this includes) or rejection of the deliverables described herein. Failure to adhere to any of the stated delivery specifications could result in rejection of deliverables and nonpayment. Contractors should, at a minimum, submit data and documentation samples at 25% and 75% project completion to avoid the rejection of final deliverables.

1.22.9.1 Geo Integration Office Point of Contact

Any questions regarding data collection efforts, deliverable formats or deliverable specifications should be addressed to the Geo Integration Office, contact information:

Patricia McSherry
37 Sweeney Blvd Room 224
757-764-1164

1.22.10 As-Built Drawing Submittal

At the time of beneficial occupancy, the Contractor shall submit as-built data to the Contracting Officer, or his/her designated representative, incorporating the aforementioned information into the project drawings. The Contractor shall also ensure that a separate copy of all similar as-built data is provided for delivery to the Base GeoBase Office. The as-built deliverable (plans, shop drawings, surveys, studies, imagery, designs, manuals, spare parts lists, etc.) shall be in a digital (electronic information) format and shall be delivered on standard compact disks (minimum 650 megabytes) in a format that is directly compatible with the CADD/GIS Technology Center's Spatial Data Standards, Version 2.0 (or latest version available). No "redline" or marked-up drawings will be accepted as the final as-built drawings. The data provided shall be compatible with AutoCAD Map and shall be submitted by the Contractor to the Contracting Officer and to the Base GeoBase Office, on two (2) separate compact discs (CD's).

1.23 WARRANTY OF CONSTRUCTION

a. In addition to any other warranties in this contract, the Contractor warrants 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. This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

b. This warranty shall continue for a period of one (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 one year from the date the Government takes possession. In the event the Contractor's

warranty of this clause has expired, the Government may bring suit, at its expense, to enforce a subcontractor's, manufacturer's, or supplier's warranty.

c. 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:

1. The Contractor's failure to conform to contract requirements, or

2. Any defect of equipment, material, workmanship, or design furnished.

d. 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 one year from the date of repair or replacement.

e. The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

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

g. 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:

1. Obtain all warranties that would be given in normal commercial practice, and

2. Require all warranties to be executed, in writing, for the benefit of the Government if directed by the Contracting Officer, and

3. Enforce all warranties for the benefit of the Government if directed by the Contracting Officer.

h. Unless a defect is caused by the negligence of the Contractor, subcontractor or suppliers 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.

i. Defects in design or manufacture of equipment specified by the Government on a "brand name and model" basis shall not be included in this warranty. In this event, the Contractor shall require any subcontractors, manufacturers or suppliers thereof to execute their warranties, in writing, directly to the Government.

j. The warranty enumerated herein does not preclude any manufacturer warranties in excess of one year as noted in the individual specifications sections. The Contractor should read each section carefully to ensure that he/she is aware of all warranties called for in this project.

1.24 WARRANTY/GUARANTEE RECORDS

1.24.1 Certification of Equipment

The Contractor shall prepare Optional Form(s) (OF) 274, Equipment Warranty Certificate, and affix the certificate(s) to all warranted components of the equipment installed during the project. When a complete mechanical system has been installed, affix the OF(s) 274 to the Mechanical Room door also. If the warranted items are in a new facility, Optional Form(s) 274 shall be placed as mentioned above. The Construction Inspector will distribute the OF 274 to the Contractor during the Pre-Construction Conference. The Contractor shall place all OF(s) 274 on the appropriate equipment prior to final acceptance of the project by the Government.

1.24.2 Listing of Equipment

The Contractor is required, prior to the final inspection to provide a listing of all equipment or material carrying a manufacturer's warranty or as indicated in the specifications. Use the following Equipment Warranty/Guarantee Record for each item and attach manufacturer's certificate as appropriate.

Equipment

Warranty / Guarantee Record

Facility No: _____ Project No: MUHJ _____

Project Title: _____ Work Order: _____ Shop Code: _____

Item: _____ Location: _____ Contractor: _____

Prefix: _____ Suffix: _____ Serial No: _____ Model No: _____

Style: _____ HZ: _____ Volts: _____ HP: _____ Size: _____ Frame: _____

Purchase Cost: _____ Replacement Cost: _____ Manufacturer: _____

Date Purchased: _____ Date Installed: _____

Effective Date: _____ Expiration Date: _____

Replacement, New or Other: _____ Purchase Number: _____

GSA Contract Number: _____

Contract Inspector: _____ Phone: _____

Remarks: _____

Evaluator: _____ Grade: _____ Title: _____ Orgn: _____

1.25 SEASONAL HVAC REQUIREMENTS

Air conditioning systems are required to be operational from 15 May through 15 September and the heating systems are required to be operational from 15 October through 1 May. Provide temporary heating or cooling during these periods if the air conditioning system or heating system is shut down to perform any work. Submit shop drawings for approval of proposed method for providing temporary heating or cooling.

1.26 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

This provision specifies the procedure for the determination of time extensions for unusually severe weather. The listing below defines the adverse weather days that are anticipated monthly. The listing is based upon data from the National Oceanographic & Atmospheric Administration (NOAA) or similar data.

MONTHLY ANTICIPATED ADVERSE WEATHER CALENDAR DAYS

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
13	12	12	9	10	9	10	10	7	8	10	12

1.26.1 Base Line

The above schedule of anticipated adverse weather will constitute the base line for monthly (or portion thereof) weather time evaluations. Upon acknowledgment of the Notice To Proceed and continuing throughout the contract on a monthly basis, actual adverse weather days will be recorded on a calendar day basis (include weekends and holidays) and compared to the monthly anticipated adverse weather in the schedule above. The term "actual adverse weather days" shall include days impacted by actual adverse weather days.

1.26.2 Calculation of Adverse Days

The number of actual adverse weather days shall be calculated chronologically from the first to the last day in each month. Once the number of actual adverse weather days anticipated in the schedule above have occurred, the Contracting Officer, or his/her designated representative, upon the Contractor's written request, will examine any subsequently occurring adverse weather days to determine whether the Contractor is entitled to a time extension. Before adverse weather entitlement is granted, the Contractor must demonstrate that fifty percent or more of his/her workdays were affected by the subsequent adverse weather. The adverse weather must also delay work critical to the timely completion of the project. The Contracting Officer, or his/her designated representative, will convert any delays meeting the above requirements to calendar days and issue a modification.

Note: For all weather dependent activities, the Contractor's schedule must reflect the anticipated adverse weather delays that are noted above.

1.26.3 Examples of Adverse Weather

The following is considered as adverse weather: Weather of a nature that workers cannot perform work as scheduled or get to work site (i.e.

hurricane, tornado, high winds, floods, extremely cold weather, ice storm, sleet, heavy snow storm, et cetera).

1.27 FINAL INSPECTION AND ACCEPTANCE STANDARDS

1.27.1 Seeding

Within seven workdays of actual completion of work at contract site, the Contractor shall grade, rake, and seed (or sod), or prepare for seeding (or sodding). **New turf and turf restoration shall be established or accomplished by hydroseeding or sodding in accordance with Section 02921 TURF.** When areas of the site are raked prior to seeding (or sodding) or for leveling of topsoil to rid the site of mounds, clods and / or ruts, the Contractor shall ensure that no clods larger than 1" are left on the site. Contractor shall restore the site to a condition and appearance similar or equal to existing before the damages occurred. Such restoration work will not be considered complete until approved by the CO or his/her designated representative. The Government will not accept sites that have not been raked and restored to this standard. **Straw shall not be used as a cover for newly sown seeds or freshly seeded areas.**

1.27.2 Removal of Signs and Barriers

All Contractors' stakes, traffic/safety cones and barriers, warning tape, erosion control fences, et cetera, that are erected during construction, shall be removed entirely prior to Government final acceptance of project.

1.27.3 Removal of Trailers and Storage Units

All trailers, equipment/storage units, residual construction materials shall be removed from construction site within five workdays after completion of work at that job site.

1.28 CONSTRUCTION DATA WORKSHEET

The Contractor is required, prior to the final inspection, to submit a completed copy of the following Construction Data Worksheet. This worksheet is used by the Air Force to inventory and capitalize new work. The Contractor shall complete only those areas of the form that are applicable to the work included in this project.

CONSTRUCTION DATA WORKSHEET

I. DESCRIPTION OF PROJECT: _____

PROJECT NO. _____ WORK ORDER NO. _____
 DRAWING NO. _____ CONTRACT NO. _____
 FACILITY NO. _____ COMPLETION DATE _____

II. GENERAL DATA (for construction to existing facilities, only provide data for the new addition):

A. Outside Dimensions:

Main Building _____ Wings _____
 Offsets _____ Total SF _____

B. Number of Floors: _____

C. Construction Materials:

Foundation _____ Floors _____
 Walls _____ Roof _____

III. Utilities/Related Facilities - Addition/(Deletion):

<u>Cat Code</u>	<u>Nomenclature</u>	<u>UM</u>	<u>Amount</u>	<u>Cost</u>
812-223	Prim Distr Lne OH	LF	_____	\$ _____
812-224	Sec/Distr Lne OH	LF	_____	\$ _____
812-225	Prim Distr Lne UG	LF	_____	\$ _____
812-226	Sec Distr Lne UG	LF	_____	\$ _____
812-926	Ext. Area Lighting	EA	_____	\$ _____
(Street/Parking lights - No. of Poles)				
824-464	Gas Mains	LF	_____	\$ _____
831-169	Sewage Septic Tank	KG	_____	\$ _____
832-266	Sanitary Sewer Main	LF	_____	\$ _____
842-245	Water Distr Mains	LF	_____	\$ _____
843-315	Fire Hydrants	EA	_____	\$ _____
851-143	Curbs & Gutters	LF	_____	\$ _____
851-145	Driveway	SY	_____	\$ _____
851-147	Road	SY	_____	\$ _____
852-261	Veh Parking (Ops)	SY	_____	\$ _____
852-262	Veh Parking (Non Org)	SY	_____	\$ _____
871-183	Storm Drain	LF	_____	\$ _____
872-247	Security Fence	LF	_____	\$ _____

IV. Systems Addition/(Deletion):

A. FIRE PROTECTION

<u>Cat Code</u>	<u>Nomenclature</u>	<u>UM</u>	<u>Amount</u>	<u>Cost</u>
872-248	Interior Fence	LF	_____	\$ _____
852-289	Sidewalk	SY	_____	\$ _____
890-187	Utility Vault (4 or more transformers)	SF	_____	\$ _____
135-583	Telephone Duct Fac	LF	_____	\$ _____
135-586	Telephone Pole Fac	EA	_____	\$ _____
880-211	Closed Head Auto Sprinklers	SF HD	_____ _____	\$ _____ \$ _____
880-212	Open Head Deluge System	SF HD	_____ _____	\$ _____ \$ _____
880-221	Auto Fire Detection System	SF EA	_____ _____	\$ _____ \$ _____
880-223	Ext Manual FR Alarm	BX	_____	\$ _____
880-222	Int Manual FR Alarm	EA	_____	\$ _____
880-231	CO2 Fire System	EA	_____	\$ _____
880-232	Foam Fire System	EA	_____	\$ _____
880-233	Other Fire System	EA	_____	\$ _____
880-234	Halon 1301 Fire Sys	EA	_____	\$ _____

B. SECURITY SYSTEMS:

872-841	Security Alarm Sys	EA	_____	\$ _____
	Other Security Sys	—	_____	\$ _____
		—	_____	\$ _____

V. PLANTS:

<u>Cat Code</u>	<u>Nomenclature</u>	<u>UM</u>	<u>Amount</u>	<u>Cost</u>
890-126	A/C Window Units	TN SF	_____ _____	\$ _____ \$ _____
890-125	A/C Plt Less Than 5 TN	TN SF	_____ _____	\$ _____ \$ _____
890-121	A/C Plt 5 to 25 TN	TN	_____	\$ _____
826-122	A/C Plt 25 to 100 TN	TN	_____	\$ _____
826-123	A/C Plt Over 100 TN	TN	_____	\$ _____
821-115	Htg Plt 750/3500 MB	MB	_____	\$ _____
821-116	Htg Plt over 3500 MB	MB	_____	\$ _____
811-147	Electric Emergency Power Generator Plt Other Plants	KW _____ _____	_____ _____ _____	\$ _____ \$ _____ \$ _____
	Fuel Storage Tanks	Type GA	_____ _____	\$ _____ \$ _____

VI. Demolition Costs:

\$ _____

VII. ANY ADDITIONAL COMMENTS OR REMARKS:

TOTAL COST OF PROJECT

\$ _____

I certify that the information provided is complete and accurate to the best of my knowledge.

CONTRACTOR

CONTRACTING REPRESENTATIVE

DATE

DATE

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section -

SECTION 01 45 04.00 10

CONTRACTOR QUALITY CONTROL
04/06

PART 1 GENERAL

1.1 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction/design and construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 10 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Construction/Design and construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including

work by subContractors, fabricators, suppliers, and purchasing agents
subContractors, designers of record, consultants, architect/engineers (AE),
fabricators, suppliers, and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.
- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subContractors, offsite fabricators, suppliers, and purchasing agentssubContractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
- e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used.)
- f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- g. Procedures for tracking constructiondesign and construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.
- h. Reporting procedures, including proposed reporting formats.
- i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction design and construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction/design and construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, Postaward Conference, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 30 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a construction person with a minimum of 10 years in related work. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as project superintendent in addition to quality control. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following areas: fire protection. These individuals shall be directly employed by the prime Contractor and may not be employed by a supplier or sub-Contractor on this project; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility; have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan.

Experience Matrix

	Area	Qualifications
a.	Civil	Graduate Civil Engineer with 2 years experience in the type of work being performed on this project or technician with 5 yrs related experience
b.	Mechanical	Graduate Mechanical Engineer with 2 yrs experience or person with 5 yrs related experience
c.	Electrical	Graduate Electrical Engineer with 2 yrs related experience or person with 5 yrs related experience
d.	Structural	Graduate Structural Engineer with 2 yrs experience or person with 5 yrs related experience
e.	Architectural	Graduate Architect with 2 yrs experience or person with 5 yrs related experience

Experience Matrix

	Area	Qualifications
f.	Environmental	Graduate Environmental Engineer with 3 yrs experience
g.	Submittals	Submittal Clerk with 1 yr experience
h.	Occupied family housing	Person, customer relations type, coordinator experience
i.	Concrete, Pavements and Soils	Materials Technician with 2 yrs experience for the appropriate area
j.	Testing, Adjusting and Balancing (TAB) Personnel	Specialist must be a member of AABC or an experienced technician of the firm certified by the NEBB.
k.	Design Quality Control Manager	Registered Architect or Professional Engineer

3.4.4 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01 33 00 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subContractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be

accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. Review of provisions that have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
- j. Discussion of the initial control phase.
- k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have

been prepared.

- e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date

scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subContractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

- a. Contractor/subContractor and their area of responsibility.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.
- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- g. Offsite surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 48 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of

test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

SECTION 01 50 02.00 10

TEMPORARY CONSTRUCTION FACILITIES
04/06

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

1.1.1 Site Plan

The Contractor shall prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate if the use of a supplemental or other staging area is desired.

1.1.2 Identification of Employees

The Contractor shall be responsible for furnishing to each employee, and for requiring each employee engaged on the work to display, identification as approved and directed by the Contracting Officer. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subContractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

1.1.3 Employee Parking

Contractor employees shall park privately owned vehicles in an area designated by the Contracting Officer. This area will be within reasonable walking distance of the construction site. Contractor employee parking shall not interfere with existing and established parking requirements of the military installation.

1.2 AVAILABILITY AND USE OF UTILITY SERVICES

1.2.1 Payment for Utility Services

The Government will make all reasonably required utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the Government or, where the utility is produced by the Government, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.

1.2.2 Meters and Temporary Connections

The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall provide and maintain necessary temporary connections, distribution lines, and meter bases (Government will provide

meters) required to measure the amount of each utility used for the purpose of determining charges. The Contractor shall notify the Contracting Officer, in writing, 5 working days before final electrical connection is desired so that a utilities contract can be established. The Government will provide a meter and make the final hot connection after inspection and approval of the Contractor's temporary wiring installation. The Contractor shall not make the final electrical connection.

1.2.3 Advance Deposit

An advance deposit for utilities consisting of an estimated month's usage or a minimum of \$50.00 will be required. The last monthly bills for the fiscal year will normally be offset by the deposit and adjustments will be billed or returned as appropriate. Services to be rendered for the next fiscal year, beginning 1 October, will require a new deposit. Notification of the due date for this deposit will be mailed to the Contractor prior to the end of the current fiscal year.

1.2.4 Final Meter Reading

Before completion of the work and final acceptance of the work by the Government, the Contractor shall notify the Contracting Officer, in writing, 5 working days before termination is desired. The Government will take a final meter reading, disconnect service, and remove the meters. The Contractor shall then remove all the temporary distribution lines, meter bases, and associated paraphernalia. The Contractor shall pay all outstanding utility bills before final acceptance of the work by the Government.

1.2.5 Sanitation

The Contractor shall provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.2.6 Telephone

The Contractor shall make arrangements and pay all costs for telephone facilities desired.

1.3 BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1 Bulletin Board

Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. The bulletin board shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Legible copies of the aforementioned data shall be displayed until work is completed. Upon completion of work the bulletin board shall be removed by and remain the property of the Contractor.

1.3.2 Project and Safety Signs

The requirements for the signs, their content, and location shall be as

shown on the drawings. The signs shall be erected within 15 days after receipt of the notice to proceed. The data required by the safety sign shall be corrected daily, with light colored metallic or non-metallic numerals. Upon completion of the project, the signs shall be removed from the site.

1.4 PROTECTION AND MAINTENANCE OF TRAFFIC

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.4.1 Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, haul roads designated by the Contracting Officer shall be removed.

1.4.2 Barricades

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.5 CONTRACTOR'S TEMPORARY FACILITIES

1.5.1 Administrative Field Offices

The Contractor shall provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

1.5.2 Storage Area

The Contractor shall construct a temporary 6 foot high chain link fence around trailers and materials. The fence shall include plastic strip inserts, colored brown, so that visibility through the fence is obstructed.

Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the military boundaries. Trailers, equipment, or materials shall not be open to public view with the exception of those items which are in support of ongoing work on any given day. Materials shall not be stockpiled outside the fence in preparation for the next day's work. Mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment, shall be parked within the fenced area at the end of each work day.

1.5.3 Supplemental Storage Area

Upon Contractor's request, the Contracting Officer will designate another or supplemental area for the Contractor's use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but shall be within the military boundaries. Fencing of materials or equipment will not be required at this site; however, the Contractor shall be responsible for cleanliness and orderliness of the area used and for the security of any material or equipment stored in this area. Utilities will not be provided to this area by the Government.

1.5.4 Appearance of Trailers

Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the military property.

1.5.5 Maintenance of Storage Area

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse, with construction equipment or other vehicles, grassed or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion. Grass located within the boundaries of the construction site shall be mowed for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers shall be edged or trimmed neatly.

1.5.6 New Building

In the event a new building is constructed for the temporary project field office, it shall be a minimum 12 feet in width, 16 feet in length and have a minimum of 7 feet headroom. It shall be equipped with approved electrical wiring, at least one double convenience outlet and the required switches and fuses to provide 110-120 volt power. It shall be provided with a work table with stool, desk with chair, two additional chairs, and one legal size file cabinet that can be locked. The building shall be

waterproof, shall be supplied with heater, shall have a minimum of two doors, electric lights, a telephone, a battery operated smoke detector alarm, a sufficient number of adjustable windows for adequate light and ventilation, and a supply of approved drinking water. Approved sanitary facilities shall be furnished. The windows and doors shall be screened and the doors provided with dead bolt type locking devices or a padlock and heavy duty hasp bolted to the door. Door hinge pins shall be non-removable. The windows shall be arranged to open and to be securely fastened from the inside. Glass panels in windows shall be protected by bars or heavy mesh screens to prevent easy access to the building through these panels. In warm weather, air conditioning capable of maintaining the office at 50 percent relative humidity and a room temperature 20 degrees F below the outside temperature when the outside temperature is 95 degrees F, shall be furnished. Any new building erected for a temporary field office shall be maintained by the Contractor during the life of the contract and upon completion and acceptance of the work shall become the property of the Contractor and shall be removed from the site. All charges for telephone service for the temporary field office shall be borne by the Contractor, including long distance charges up to a maximum of \$75.00 per month.

1.5.7 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment; in addition, the Contractor shall notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.

1.6 GOVERNMENT FIELD OFFICE

1.6.1 Resident Engineer's Office

The Contractor shall provide the Government Resident Engineer with an office, approximately 200 square feet in floor area, located where directed and providing space heat, electric light and power, and toilet facilities consisting of one lavatory and one water closet complete with connections to water and sewer mains. A mail slot in the door or a lockable mail box mounted on the surface of the door shall be provided. At completion of the project, the office shall remain the property of the Contractor and shall be removed from the site. Utilities shall be connected and disconnected in accordance with local codes and to the satisfaction of the Contracting Officer.

1.6.2 Trailer-Type Mobile Office

The Contractor may, at its option, furnish and maintain a trailer-type mobile office acceptable to the Contracting Officer and providing as a minimum the facilities specified above. The trailer shall be securely anchored to the ground at all four corners to guard against movement during high winds.

1.7 PLANT COMMUNICATION

Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. The devices shall be made available for use by Government personnel.

1.8 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, the Contractor shall furnish and erect temporary project safety fencing at the work site. The safety fencing shall be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 42 inches high, supported and tightly secured to steel posts located on maximum 10 foot centers, constructed at the approved location. The safety fencing shall be maintained by the Contractor during the life of the contract and, upon completion and acceptance of the work, shall become the property of the Contractor and shall be removed from the work site.

1.9 CLEANUP

Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away. Materials resulting from demolition activities which are salvageable shall be stored within the fenced area described above or at the supplemental storage area. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.

1.10 RESTORATION OF STORAGE AREA

Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including top soil and seeding as necessary.

-- End of Section --

SECTION 01 57 20.00 10

ENVIRONMENTAL PROTECTION
04/06

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 within the text by the basic designation only.

U.S. AIR FORCE (USAF)

AFI 32-1053 (1999) Pest Management Program

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

WETLAND MANUAL Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328 Definitions of Waters of the United States

40 CFR 261 Identification and Listing of Hazardous Waste

40 CFR 262 Standards Applicable to Generators of Hazardous Waste

40 CFR 279 Standards for the Management of Used Oil

40 CFR 302 Designation, Reportable Quantities, and Notification

40 CFR 355 Emergency Planning and Notification

40 CFR 68 Chemical Accident Prevention Provisions

49 CFR 171 - 178 Hazardous Materials Regulations

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.4 Installation Pest Management Coordinator

Installation Pest Management Coordinator (IPMC) is the individual officially designated by the Installation Commander to oversee the Installation Pest Management Program and the Installation Pest Management Plan.

1.2.5 Project Pesticide Coordinator

The Project Pesticide Coordinator (PPC) is an individual that resides at a Civil Works Project office and that is responsible for oversight of pesticide application on Project grounds.

1.2.6 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.7 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.8 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.9 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.10 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.11 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subContractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan

The environmental protection plan.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

- a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.
- b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.
- c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
- d. Description of the Contractor's environmental protection personnel training program.
- e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.
- f. Drawings showing locations of proposed temporary excavations or

embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

i. Drawing showing the location of borrow areas.

j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subContractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence

of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

p. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

q. A pesticide treatment plan shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation Project Office specific requirements. The Contractor shall follow AFI 32-1053 Sections 3.4.13 and 3.4.14 for data required to be reported to the Installation.

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until

satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a

minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs) as indicated on the drawings. BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Any temporary measures shall be removed after the area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

3.3.1 Dewatering Operations

Construction operations for dewatering shall be controlled at all times to maintain compliance with existing State water quality standards and designated uses of the surface water body. The Contractor shall comply with the State of Virginia water quality standards and anti-degradation provisions.

3.3.2 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded

or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of Virginia rules.

3.4.4 Burning

Burning shall be prohibited on the Government premises.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by

applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 and shall manage and store hazardous waste in accordance with the Installation hazardous waste management plan. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer, the Facility Environmental Office and local fire department. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. There shall be no storage of fuel on the project site. Fuel must be brought to the project site each day that work is performed.

3.5.5 Waste Water

Disposal of waste water shall be as specified below.

- a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water off-Government property in accordance with all Federal, State, Regional and Local laws and regulations.
- b. For discharge of ground water, the Contractor shall surface discharge in accordance with the requirements of the NPDES or State STORM WATER DISCHARGES FROM CONSTRUCTION SITES permit.
- c. Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing shall be discharged into the sanitary sewer with prior approval and/or notification to the Waste Water Treatment Plant's Operator.

3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project.

3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. The following shall be included in the report:

- a. Construction and Demolition (C&D) Debris Disposed = in cubic yards or tons, as appropriate.
- b. Construction and Demolition (C&D) Debris Recycled = in cubic yards or tons, as appropriate.
- c. Total C&D Debris Generated = in cubic yards or tons, as appropriate.
- d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = in cubic yards or tons, as appropriate.

3.8 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.9 INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the Installation Pest Management Coordinator (IPMC) Project Pesticide Coordinator (PPC) at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. Installation Project Office Pest Management personnel shall be given the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide.

3.9.1 Pesticide Delivery and Storage

Pesticides shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended.

3.9.2 Qualifications

For the application of pesticides, the Contractor shall use the services of a subContractor whose principal business is pest control. The subContractor shall be licensed and certified in the state where the work is to be performed.

3.9.3 Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment specified on the labeling for use during all phases of the application. Material Safety Data Sheets (MSDS) shall be available for all pesticide products.

3.9.4 Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and personal protective equipment as specified on the pesticide label. Water used for formulating shall only come from locations designated by the Contracting Officer. The Contractor shall not allow the equipment to overflow. Prior to application of pesticide, all equipment shall be inspected for leaks, clogging, wear, or damage and shall be repaired prior to being used.

3.10 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.11 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.12 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and

continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.13 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --

SECTION 01 62 35

RECYCLED / RECOVERED MATERIALS

07/06

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 within the text by the basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 247

Comprehensive Procurement Guideline for
Products Containing Recovered Materials

1.2 OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. EPA designated products specified in this contract comply with the stated policy and with the EPA guidelines. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

EPA maintains a Database of Manufacturers and Suppliers for each designated item at <http://www.epa.gov/cpg/database.htm>. Use of sources from this database is not required. It is intended as a tool to assist purchasers in locating products with recycled content.

1.3 EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Various sections of the specifications contain requirements for materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials. These items, when incorporated into the work under this contract, shall contain at least the specified percentage of recycled or recovered materials unless adequate justification for non-use is provided. The following are considered adequate justifications for non-use:

- a. The product does not meet appropriate performance standards.
- b. The product is not available within a reasonable time frame.
- c. The product is not available competitively (from two or more sources).
- d. The product is only available at an unreasonable price (compared

with a comparable non-recycled content product).

When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.4 EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

1.5 EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be used by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

-- End of Section --

SECTION 01 74 19

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

07/06

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 within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM E 1609 (1994; R 2001) Development and Implementation of a Pollution Prevention Program

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED (2002; R 2005) Leadership in Energy and Environmental Design(tm) Green Building Rating System for New Construction (LEED-NC)

1.2 GOVERNMENT POLICY

Government policy is to apply sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy the Contractor shall: (1) practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction and demolition waste from landfills and incinerators and to facilitate their recycling or reuse. A minimum of 75 percent by weight of total project solid waste shall be diverted from the landfill.

1.3 MANAGEMENT

Develop and implement a waste management program in accordance with ASTM E 1609 and as specified. The Contractor shall take a pro-active, responsible role in the management of construction and demolition waste and require all subcontractors, vendors, and suppliers to participate in the effort. Construction and demolition waste includes products of demolition or removal, excess or unusable construction materials, packaging materials for construction products, and other materials generated during the construction process but not incorporated into the work. In the management of waste consideration shall be given to the availability of viable markets, the condition of the material, the ability to provide the material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates. The Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling of waste. Revenues or other savings obtained for salvage, or recycling shall accrue to the Contractor. Firms and facilities used for recycling, reuse, and disposal shall be appropriately permitted for the intended use to the extent required by federal, state, and local regulations. The Contractor

shall provide on-site instruction of appropriate separation, handling, recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Waste Management Plan; G; (LEED)

SD-11 Closeout Submittals

Records; (LEED)

1.5 MEETINGS

The Contractor shall conduct Construction Waste Management meetings. After award of the Contract and prior to commencement of work, the Contractor shall schedule and conduct a meeting with the Contracting Officer to discuss the proposed Waste Management Plan and to develop a mutual understanding relative to the details of waste management. The requirements for this meeting may be fulfilled during the coordination and mutual understanding meeting outlined in Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL. At a minimum, environmental and waste management goals and issues shall be discussed at the following additional meetings:

- a. Pre-bid meeting.
- b. Preconstruction meeting.

1.6 WASTE MANAGEMENT PLAN

A waste management plan shall be submitted within 15 days after contract award and not less than 10 days before the preconstruction meeting. The plan shall demonstrate how the project waste diversion goal shall be met and shall include the following:

- a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- b. Actions that will be taken to reduce solid waste generation, including coordination with subcontractors to ensure awareness and participation.
- c. Description of the regular meetings to be held to address waste management.
- d. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas on site and equipment to be used for processing, sorting, and temporary storage of wastes.
- e. Characterization, including estimated types and quantities, of the waste to be generated.

- f. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.
- g. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity. Include the name, location, and phone number for each reuse facility to be used, and provide a copy of the permit or license for each facility.
- h. List of specific waste materials that will be salvaged for resale, salvaged and reused on the current project, salvaged and stored for reuse on a future project, or recycled. Estimated percentage of waste diverted by this Plan. Recycling facilities that will be used shall be identified by name, location, and phone number, including a copy of the permit or license for each facility.
- i. Identification of materials that cannot be recycled/reused with an explanation or justification, to be approved by the Contracting Officer.
- j. Description of the means by which any waste materials identified in item (h) above will be protected from contamination.
- k. Description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site).
- l. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

Revise and resubmit Plan as required by the Contracting Officer. Approval of Contractor's Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations or meeting project cumulative waste diversion requirement. The Contractor shall distribute copies of the Waste Management Plan to each subcontractor, the Quality Control Manager, and the Contracting Officer.

1.7 RECORDS

Records shall be maintained to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Quantities may be measured by weight or by volume, but must be consistent throughout. List each type of waste separately noting the disposal or diversion date. Identify the landfill, recycling center, waste processor, or other organization used to process or receive the solid waste. Provide explanations for any waste not recycled or reused. With each application for payment, submit updated documentation for solid waste disposal and diversion, and submit manifests, weight tickets, receipts, and invoices specifically identifying the project and waste material. The records shall be made available to the Contracting Officer during construction, and a copy of the records shall be delivered to the Contracting Officer upon completion of the construction.

1.8 COLLECTION

Separate, store, protect, and handle at the site identified recyclable and salvageable waste products in a manner that maximizes recyclability and salvagability of identified materials. Provide the necessary containers, bins and storage areas to facilitate effective waste management and clearly and appropriately identify them. Provide materials for barriers and enclosures around recyclable material storage areas which are nonhazardous and recyclable or reusable. Locate out of the way of construction traffic.

Provide adequate space for pick-up and delivery and convenience to subcontractors. Recycling and waste bin areas are to be kept neat and clean, and recyclable materials shall be handled to prevent contamination of materials from incompatible products and materials. Clean contaminated materials prior to placing in collection containers. Use cleaning materials that are nonhazardous and biodegradable. Handle hazardous waste and hazardous materials in accordance with applicable regulations. Separate materials by one of the following methods:

1.8.1 Source Separated Method.

Waste products and materials that are recyclable shall be separated from trash and sorted as described below into appropriately marked separate containers and then transported to the respective recycling facility for further processing. Deliver materials in accordance with recycling or reuse facility requirements (e.g., free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process). Separate materials into the following category types as appropriate to the project waste and to the available recycling and reuse programs in the project area:

- a. Land clearing debris.
- b. Asphalt.
- c. Concrete and masonry.
- d. Metal (e.g. banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, lead, lead brass, bronze).
 - (1) Ferrous.
 - (2) Non-ferrous.
- e. Wood (nails and staples allowed).
- f. Debris.
- g. Glass (colored glass allowed).
- h. Paper.
 - (1) Bond.
 - (2) Newsprint.
 - (3) Cardboard and paper packaging materials.
- i. Plastic.

- (1) Type 1: Polyethylene Terephthalate (PET, PETE).
- (2) Type 2: High Density Polyethylene (HDPE).
- (3) Type 3: Vinyl (Polyvinyl Chloride or PVC).
- (4) Type 4: Low Density Polyethylene (LDPE).
- (5) Type 5: Polypropylene (PP).
- (6) Type 6: Polystyrene (PS).
- (7) Type 7: Other. Use of this code indicates that the package in question is made with a resin other than the six listed above, or is made of more than one resin listed above, and used in a multi-layer combination.

- j. Gypsum.
- k. Non-hazardous paint and paint cans.
- l. Carpet.
- m. Ceiling tiles.
- n. Insulation.
- o. Lighting (e.g., fluorescent, HID, incandescent).
- p. Beverage containers.

1.8.2 Co-Mingled Method.

Waste products and recyclable materials shall be placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed.

1.8.3 Other Methods.

Other methods proposed by the Contractor may be used when approved by the Contracting Officer.

1.9 DISPOSAL

Control accumulation of waste materials and trash. Recycle or dispose of collected materials off-site at intervals approved by the Contracting Officer and in compliance with waste management procedures. Except as otherwise specified in other sections of the specifications, disposal shall be in accordance with the following:

1.9.1 Reuse.

First consideration shall be given to salvage for reuse since little or no re-processing is necessary for this method, and less pollution is created when items are reused in their original form. Coordinate reuse with Contracting Officer. Sale or donation of waste suitable for reuse shall be considered.

1.9.2 Recycle.

Waste materials not suitable for reuse, but having value as being recyclable, shall be made available for recycling. All fluorescent lamps, HID lamps, and mercury-containing thermostats removed from the site shall be recycled. Arrange for timely pickups from the site or deliveries to recycling facilities in order to prevent contamination of recyclable materials.

1.9.3 Waste.

Materials with no practical use or economic benefit shall be disposed at a landfill or incinerator.

1.9.4 Return

Set aside and protect misdelivered and substandard products and materials and return to supplier for credit.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

04/06

PART 1 GENERAL

1.1 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 01 33 00 SUBMITTAL PROCEDURES.

1.1.1 Package Quality

Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

1.1.2 Package Content

Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission.

1.1.3 Changes to Submittals

Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

1.2 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

1.2.1 Operating Instructions

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

1.2.1.1 Safety Precautions

List personnel hazards and equipment or product safety precautions for all operating conditions.

1.2.1.2 Operator Prestart

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

1.2.1.3 Startup, Shutdown, and Post-Shutdown Procedures

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

1.2.1.4 Normal Operations

Provide narrative description of Normal Operating Procedures. Include Control Diagrams with data to explain operation and control of systems and specific equipment.

1.2.1.5 Emergency Operations

Include Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of all utility systems including required valve positions, valve locations and zones or portions of systems controlled.

1.2.1.6 Operator Service Requirements

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

1.2.1.7 Environmental Conditions

Include a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

1.2.2 Preventive Maintenance

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

1.2.2.1 Lubrication Data

Include preventative maintenance lubrication data, in addition to instructions for lubrication provided under paragraph titled "Operator Service Requirements":

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

1.2.2.2 Preventive Maintenance Plan and Schedule

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

1.2.3 Corrective Maintenance (Repair)

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

1.2.3.1 Troubleshooting Guides and Diagnostic Techniques

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

1.2.3.2 Wiring Diagrams and Control Diagrams

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

1.2.3.3 Maintenance and Repair Procedures

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

1.2.3.4 Removal and Replacement Instructions

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

1.2.3.5 Spare Parts and Supply Lists

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

1.2.4 Corrective Maintenance Work-Hours

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

1.2.5 Appendices

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

1.2.6 Parts Identification

Provide identification and coverage for all parts of each component,

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

1.2.6.1 Warranty Information

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

1.2.6.2 Personnel Training Requirements

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

1.2.6.3 Testing Equipment and Special Tool Information

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

1.2.6.4 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name address and telephone number of the manufacturer's representative and service organization most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

1.3 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Furnish the O&M data packages specified in individual technical sections. The required information for each O&M data package is as follows:

1.3.1 Data Package 1

- a. Safety precautions
- b. Maintenance and repair procedures
- c. Warranty information
- d. Contractor information

- e. Spare parts and supply list

1.3.2 Data Package 2

- a. Safety precautions
- b. Normal operations
- c. Environmental conditions
- d. Lubrication data
- e. Preventive maintenance plan and schedule
- f. Maintenance and repair procedures
- g. Removal and replacement instructions
- h. Spare parts and supply list
- i. Parts identification
- j. Warranty information
- k. Contractor information

1.3.3 Data Package 3

- a. Safety precautions
- b. Normal operations
- c. Emergency operations
- d. Environmental conditions
- e. Lubrication data
- f. Preventive maintenance plan and schedule
- g. Troubleshooting guides and diagnostic techniques
- h. Wiring diagrams and control diagrams
- i. Maintenance and repair procedures
- j. Removal and replacement instructions
- k. Spare parts and supply list
- l. Parts identification
- m. Warranty information
- n. Testing equipment and special tool information
- o. Contractor information

1.3.4 Data Package 4

- a. Safety precautions
- b. Operator prestart
- c. Startup, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Emergency operations
- f. Operator service requirements
- g. Environmental conditions
- h. Lubrication data
- i. Preventive maintenance plan and schedule
- j. Troubleshooting guides and diagnostic techniques
- k. Wiring diagrams and control diagrams
- l. Maintenance and repair procedures
- m. Removal and replacement instructions
- n. Spare parts and supply list
- o. Corrective maintenance man-hours
- p. Parts identification
- q. Warranty information
- r. Personnel training requirements
- s. Testing equipment and special tool information
- t. Contractor information

1.3.5 Data Package 5

- a. Safety precautions
- b. Operator prestart
- c. Start-up, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Environmental conditions
- f. Preventive maintenance plan and schedule
- g. Troubleshooting guides and diagnostic techniques
- h. Wiring and control diagrams

- i. Maintenance and repair procedures
- j. Spare parts and supply list
- k. Testing equipments and special tools
- l. Warranty information
- m. Contractor information

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 21 13 24.00 10

AQUEOUS FILM-FORMING FOAM (AFFF) FIRE PROTECTION SYSTEM
04/06

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 within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A13.1 (1996; R 2002) Scheme for Identification of Piping Systems

ASME INTERNATIONAL (ASME)

ASME B16.1 (1998) Cast Iron Pipe Flanges and Flanged Fittings

ASME B16.3 (1998) Malleable Iron Threaded Fittings

ASME B16.4 (1998) Gray Iron Threaded Fittings

ASME BPVC SEC VIII D1 (2001) Boiler and Pressure Vessel Code; Section VIII, Pressure Vessels Division 1 - Basic Coverage

ASTM INTERNATIONAL (ASTM)

ASTM A 183 (2003) Carbon Steel Track Bolts and Nuts

ASTM A 193/A 193M (2004c) Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service

ASTM A 312/A 312M (2004b) Seamless and Welded Austenitic Stainless Steel Pipes

ASTM A 351/A 351M (2003) Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts

ASTM A 403/A 403M (2004) Wrought Austenitic Stainless Steel Piping Fittings

ASTM A 449 (2004a) Quenched and Tempered Steel Bolts and Studs

ASTM A 47/A 47M (1999) Ferritic Malleable Iron Castings

ASTM A 53/A 53M (2004a) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM A 536	(1984; R 2004) Ductile Iron Castings
ASTM A 795/A 795M	(2004) Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use
ASTM F 436	(2004) Hardened Steel Washers
FM GLOBAL (FM)	
FM P7825a	(2003) Approval Guide Fire Protection
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)	
NFPA 11	(2002) Low-, Medium- and High- Expansion Foam Systems
NFPA 13	(2002) Installation of Sprinkler Systems
NFPA 16	(2003) Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
NFPA 24	(2002) Installation of Private Fire Service Mains and Their Appurtenances
NFPA 72	(2002) National Fire Alarm Code
NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET)	
NICET 1014-7	(2003) Program Detail Manual for Certification in the Field of Fire Protection Engineering Technology (Field Code 003) Subfield of Automatic Sprinkler System Layout
U.S. DEPARTMENT OF DEFENSE (DOD)	
MIL-F-24385	(Rev F; Am 1) Fire Extinguishing Agent, Aqueous Film Forming Foam (AFFF) Liquid Concentrate, for Fresh and Seawater
UNDERWRITERS LABORATORIES (UL)	
UL Fire Prot Dir	(2004) Fire Protection Equipment Directory

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 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

AFFF System; G

Detail drawings conforming to the requirements prescribed in NFPA 13; drawings shall be 30 x 42 inches. Drawings shall include plan and elevation views which establish that the equipment will fit the allotted spaces with clearance for installation and maintenance. Each set of drawings shall include the following:

- a. A descriptive index with drawings listed in sequence by number. A legend sheet identifying device symbols, nomenclature, and conventions used in the package.
- b. Floor plans drawn to a scale not less than 1/8 inch equals 1 foot clearly showing locations of devices, equipment, risers, electrical power connections, and other details required to clearly describe the proposed arrangement.
- c. Piping plan and isometric drawing of the AFFF concentrate system and details of all associated valves, fittings, and other components.
- d. Location of control panels, manual stations, supervisory switches, solenoids, and other electrical devices.
- e. Connection drawings and control diagrams indicating overall electrical and mechanical operation of the AFFF system. This shall include identification and operation of each major component of the system. Diagrams shall be supplemented with a narrative description of the system. Point-to-point wiring diagrams shall indicate foam system control panel wiring and make and model of devices and equipment connected thereto.

As-built Drawings

One set of reproducible and six copies, within 14 calendar days after successful completion of required testing. A separate set of approved submittal drawings of the overall system, marked up to indicate as-built conditions, shall be maintained on site. These drawings shall be maintained in a current condition at all times and shall be made available for review immediately upon request during normal working hours. Variations from the approved drawings, for whatever reason, including those occasioned by modifications, change orders, optional materials, and/or required for coordination between trades shall be indicated in sufficient detail to accurately reflect the as-built conditions.

SD-03 Product Data

Materials and Equipment; G

Manufacturer's catalog data for each separate piece of equipment proposed for use in the system. Data shall indicate the name of the manufacturer of each item of equipment, with data highlighted to indicate model, size, options, etc. proposed for installation. In addition, a complete equipment list with equipment description, model number, and quantity shall be provided.

Spare Parts

Spare parts data as specified.

AFFF System; G

A copy of the proposed diagrams and instructions for the overall AFFF system, prior to posting.

Installer's Qualifications; G

Data approved, prior to submittal of any other data or drawings, to substantiate that the proposed installer is regularly engaged in the installation of the type and complexity of fire protection system included in this project. Data shall identify the location of three systems recently installed by the proposed installer which are comparable to the system specified. Contractor shall certify that each system has performed satisfactorily, in the manner intended, for a period of not less than 6 months.

Post-discharge Test Requirements; G

Details of method proposed for required tests at Final Acceptance, including step-by-step test procedures; list of equipment to be used; names, titles, and affiliations and qualifications of personnel who will participate in the tests; methods for protecting the facility and equipment during testing; means for containing the AFFF solution during discharge tests; and proposed means for disposal. Test plan shall include a drawing showing proposed number and arrangement of fire hoses and nozzles proposed for use in testing foam proportioners. Blank forms the Contractor plans to use to record test results shall be included.

SD-06 Test Reports

Tests; G

Reports for tests, as follows:

- a. Reports as outlined in NFPA 13 documenting results of flushing and hydrostatic tests.
- b. Trip tests of preaction water control valves.
- c. Test report of AFFF concentrate proportioning system. Report shall include all pressure readings and settings of pumps, pressure sustaining valves, relief valves and similar system components. Report shall include conductivity readings for foam samples taken from each AFFF proportioner. Report shall be signed by the factory-trained technical representative employed by the AFFF concentrate manufacturer.

SD-07 Certificates

Materials and Equipment; G

Certificates from manufacturers to substantiate that components, equipment and material proposed for installation and use meet requirements as specified, concurrent with submittal of manufacturer's catalog data of equipment proposed for installation. Certificates shall be on a form for this purpose or on official letterhead of the manufacturer with specified information stated as required. Certificate shall be signed by an

officer of the corporation. Certificates shall be provided for the following:

- a. AFFF concentrate. Certification that all AFFF concentrate proposed for use has been tested and is in compliance with MIL-F-24385. Existing AFFF may be reused however samples shall be tested.
- b. AFFF concentrate control valve. Certification that the valve is designed and, constructed as specified and will function as intended.
- c. AFFF proportioning system. Certification that the foam proportioning system complies with contract specifications and manufacturer's recommendations.

SD-10 Operation and Maintenance Data

AFFF System; G

Six manuals in loose-leaf binder format and grouped by technical sections consisting of manufacturer's brochures, schematics, printed instructions, general operating procedures, and safety precautions. Manuals shall include a narrative description of the sequence or sequences of operation of the overall fire protection system and a separate description for each major subsystem. Information to be provided shall include specific start/stop settings for pumps, open/close settings for all adjustable valves (including pressure sustaining and relief valves) shall be included. The manuals shall list routine maintenance procedures, possible breakdowns, and repairs, and troubleshooting guide. The manuals shall include conduit layout, equipment layout, and simplified wiring and control diagrams for the system as installed. The manuals shall include procedures and instructions pertaining to frequency of preventive maintenance, inspection, adjustment, lubrication and cleaning necessary to minimize corrective maintenance and repair.

1.3 AFFF SYSTEM

When complete the system shall consist of an automatic preaction foam-water fire protection system. The scope of this project involves the replacement and relocation of the AFFF bladder tank, proportioning system, and providing new preaction valves for the hangar areas indicated on the drawings. Except as modified herein, the system shall meet the requirements of NFPA 11, NFPA 13, NFPA 16, NFPA 24 and NFPA 72.

1.4 SYSTEM OPERATIONAL FEATURES

The single-interlocked preaction sprinkler system (without supervisory air) shall operate so that actuation of a single heat detector or manual release will cause the automatic water control (deluge) valve to open, foam concentrate to enter the affected proportioners, and foam-water solution to be discharged from actuated sprinklers .

1.5 SUBMITTAL PREPARER'S QUALIFICATIONS

The fire protection system submittals, including as-built drawings, shall be prepared by an individual who is either a registered professional

engineer with ten years experience designing AFFF systems or who is certified as a Level IV Technician by National Institute for Certification in Engineering Technologies (NICET) in the Automatic Sprinkler System Layout subfield of Fire Protection Engineering Technology in accordance with NICET 1014-7.

1.6 INSTALLER'S QUALIFICATIONS

The installer shall be experienced and regularly engaged in the installation of the type and complexity of fire protection system included in this project. A statement prior to submittal of any other data or drawings, that the proposed installer is regularly engaged in the installation of the type and complexity of system included in this project shall be provided. In addition, data identifying the locations of at least three systems recently installed by the proposed installer which are comparable to the system specified shall be submitted. Contractor shall certify that each system has performed satisfactorily, in the manner intended, for a period of not less than 6 months.

1.7 REGULATORY REQUIREMENTS

The advisory provisions of NFPA standards and recommended practices specified shall be considered mandatory, as though the word "shall" had been substituted for "should" wherever it appears. In the event of a conflict between referenced NFPA standards and this specification, this specification shall govern. Reference to "authority having jurisdiction" shall be interpreted to mean the Contracting Officer.

1.8 SPARE PARTS

The Contractor shall submit spare parts data for each different item of material and equipment specified. The data shall include a complete list of parts and supplies, with current unit prices and source of supply, and a list of parts recommended by the manufacturer to be replaced after 1 year and 3 years of service. A list of special tools and test equipment required for maintenance and testing of the products supplied by the Contractor shall be included.

PART 2 PRODUCTS

2.1 STANDARD PRODUCTS

Materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacture of such products and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening.

2.2 REQUIREMENTS FOR FIRE PROTECTION SERVICE

All equipment and material shall have been tested by Underwriters Laboratories, and listed in UL Fire Prot Dir or approved by Factory Mutual and listed in FM P7825a. Where the terms "listed" or "approved" appear in this specification, such shall mean listed in UL Fire Prot Dir or FM P7825a. The omission of these terms under the description of any item of equipment described shall not be construed as waiving this requirement.

2.3 PRESSURE RATINGS

Valves, fittings, couplings, proportioners, alarm switches, strainers, and

similar devices shall be rated for the maximum working pressures that can be experienced in the system, but in no case less than 175 psi.

2.4 NAMEPLATES

Major components of equipment shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a plate permanently affixed to the item of equipment.

2.5 ABOVEGROUND PIPING SYSTEMS FOR WATER OR AFFF SOLUTION

2.5.1 Pipe

Pipe shall be standard weight conforming to ASTM A 795/A 795M or ASTM A 53/A 53M. Pipe 6 inch diameter and smaller shall be Schedule 40. Pipe shall be marked as to the brand or name of the manufacturer, kind of pipe and the ASTM designation in accordance with the "Product Marking" provisions of the ASTM standard.

2.5.2 Grooved Fittings and Couplings

Grooved fittings, couplings and bolts shall be provided by the same manufacturer. Fittings and couplings shall be malleable iron complying with ASTM A 47/A 47M or ductile iron complying with ASTM A 536. Couplings shall be of the rigid type except that flexible type will be provided where flexible joints are specifically required by NFPA 13. Coupling gaskets shall be Grade E (EPDM) approved for dry pipe fire protection service. Gasket shall be the flush type that fills the entire cavity between the coupling and the pipe. Nuts and bolts shall be heat-treated steel conforming to ASTM A 183 and shall be cadmium plated or zinc electroplated.

2.5.3 Non-Grooved Fittings

Non-grooved fittings shall be threaded or flanged. Threaded fittings shall be cast iron conforming to ASME B16.4 or malleable iron conforming to ASME B16.3. Flanged fittings shall be cast iron conforming to ASME B16.1. Fittings into which sprinklers, drop nipples or riser nipples (sprigs) are screwed shall be threaded type. Plain-end fittings with mechanical couplings, fittings which require drilling a hole in the pipe, and fittings which use steel gripping devices to bite into the pipe, shall not be used.

2.5.4 Flanges and Gaskets

Flanges shall conform to NFPA 13 and ASME B16.1. Flanges shall be the type that are welded or threaded to the pipe. Flanges which are bolted to grooved pipe will not be permitted. Gaskets shall be full face type EPDM or other approved material.

2.5.4.1 Bolts

Bolts shall be ASTM A 449, Type 1. Bolts shall extend no less than three full threads beyond the nut with bolts tightened to the required torque.

2.5.4.2 Nuts

Nuts shall be ASTM A 193/A 193M, Grade 5.

2.5.4.3 Washers

Washers shall meet the requirements of ASTM F 436. Flat circular washers shall be provided under all bolt heads and nuts.

2.5.5 Pipe Hangers

Hangers shall be listed in UL Fire Prot Dir or FM P7825a and be of the type suitable for the application, construction and size pipe involved.

2.5.6 Control Valve

Unless otherwise indicated, valves shall be indicating type in accordance with NFPA 13. Valves 2-1/2 inch and larger shall be flanged outside screw and yoke (OS&Y) type.

2.5.7 Check Valve

Check valves 4 inches and larger shall be flanged, swing type, cast or ductile iron body and cover, cast or ductile iron clapper with replaceable EPDM rubber facing. Valves shall be suitable for either vertical or horizontal mounting and equipped with a removable handhole cover. The direction of flow shall be indicated by an arrow cast in the valve body. The valve body shall include plugged pipe thread connections for a 2 inch drain.

2.6 ABOVEGROUND PIPING SYSTEMS FOR AFFF CONCENTRATE

2.6.1 Pipe

Pipe shall be standard weight stainless steel conforming to ASTM A 312/A 312M, Grade TP 304L.

2.6.2 Fittings

Seamless socket weld type or flanged type fittings shall conform to ASTM A 403/A 403M, Grade WP 304L, and shall be compatible with the pipe. Grooved type fittings and couplings shall be of Type 316 Stainless Steel conforming to ASTM A 351/A 351M.

2.6.3 Pipe Hangers

Hangers shall be listed in UL Fire Prot Dir or FM P7825a and be of the type suitable for the application, construction and size pipe involved.

2.6.4 Control Valves

Valve shall be indicating type with full port ball and operating handle that indicates the on/off position of the valve. Unit shall be socket weld or flanged type. Valve body and ball shall be of 316 stainless steel complying with ASTM A 351/A 351M. The valve handle shall be provided with a suitable and substantial means for securing the valve open with a key-operated locking device.

2.7 AUTOMATIC WATER CONTROL VALVE ASSEMBLY (DELUGE VALVE)

Water control valve shall be an electrically-actuated type rated for a maximum working pressure of 175 psi. The control valve shall be resettable without opening the valve and without the use of special tools. Electrical

solenoid valve used to actuate the water control valve shall be an integral component of the valve or shall be approved for use by the water control valve manufacturer and the control panel manufacturer. Solenoid valve shall be of the normally closed, de-energized type which opens when energized upon receipt of an electrical signal from the control panel to which it is connected. Solenoid valves used with diaphragm-type valves shall be rated for a maximum pressure equal to that of the associated valve. Water control valve shall be equipped with a means to prevent the valve from returning to the closed position until being manually reset. Assembly shall be complete with the valve manufacturer's standard trim piping, drain and test valves, pressure gauges, and other required appurtenances. Each assembly shall include an emergency release device for manually tripping the water control valve in the event of a power or other system failure. Device shall be a standard accessory component of the valve manufacturer and shall be labeled as to its function and method of operation. Valves located in hazardous locations shall be approved for the hazard classification of the area where located.

2.8 AFFF LIQUID CONCENTRATE

AFFF concentrate shall be 3 percent conforming to MIL-F-24385. Concentrate shall be the product of one manufacturer. Mixing of non-identical brands of concentrate will not be permitted.

2.9 DIAPHRAGM TANK BALANCED PRESSURE PROPORTIONING SYSTEM

Tank shall be a steel pressure vessel constructed in accordance with ASME BPVC SEC VIII D1. ASME label shall be permanently affixed to the tank. Tank shall be horizontally mounted on steel saddles and shall contain a full internal diaphragm (bladder) having a minimum capacity of 600 gallons. Diaphragm shall be nylon-reinforced Buna-N rubber or other approved material conforming to the inside shape of the tank. AFFF concentrate shall be stored inside the diaphragm and the concentrate shall not be in contact with the steel tank. The tank shall have perforated PVC tubes installed inside the diaphragm to assure full displacement of the stored concentrate. Tank shall be equipped with the manufacturer's standard fittings and trim, including AFFF fill and drain connections, water fill and drain connections, and concentrate sight gauge.

2.10 BALANCED PRESSURE PROPORTIONER (RATIO CONTROLLER)

The proportioner shall be an in-line balanced pressure type unit capable of proportioning AFFF liquid at 3 percent, (3 parts concentrate to 97 parts water by volume solution) at flow rates within the flow range of the proportioner. Major components of the proportioner, including the body, inlet nozzle and metering orifice shall be of brass, bronze or stainless steel. The body shall be clearly marked with a flow-direction arrow, and the type and percent of AFFF concentrate that it was designed to proportion. The proportioner size shall be 4 inch 4. The in-line balanced pressure proportioner shall be an assembly that includes a proportioner as described, integral pressure balancing valve with duplex pressure gauge, inlet pressure gauge and manual ball valve. The proportioner assembly shall be factory assembled and tested as an assembly by one manufacturer. Field disassembly or assembly of any component part will not be accepted. Components shall be of the make/model required by the specific UL listing or FM approval.

2.11 AFFF CONCENTRATE CONTROL VALVE ASSEMBLY

Assembly shall be specifically designed and constructed to control AFFF concentrate to proportioners and shall be arranged to open upon application of water or AFFF solution pressure from the alarm check or automatic water control valve to which it is connected. Valve shall be a listed or approved automatic control valve specifically intended for this application or a full port ball valve. All components shall be constructed of brass, bronze or stainless steel, except that the internal portions of listed or approved fire protection valves subjected to AFFF concentrate may be provided with a coating warranted by the manufacturer to protect the valve from the deleterious effects of the concentrate. All components shall be rated for working pressure of 175 psi or maximum working pressure to which they could be subjected, whichever is greater. Valve shall be certified by the manufacturer to be operable with water inlet pressure as low as 30 psi. Valve components shall be brass, bronze or stainless steel.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Aboveground Piping

Piping shall be installed straight and bear evenly on hangers and supports. Preaction sprinkler system piping shall be pitched as if it were being installed in areas subject to freezing. Piping shall be concealed in areas with suspended ceiling and shall be inspected, tested and approved before being concealed.

3.1.1.1 Joints

Pipe joints shall conform to NFPA 13. Not more than four threads shall show after joint is made up. Joint compound shall be applied to male threads only. Joints shall be faced true, provided with gaskets and made square and tight. Flanged joints or mechanical groove couplings shall be provided where indicated or required by NFPA 13. Grooved pipe and fittings shall be prepared in accordance with the manufacturer's latest published installation instructions. All grooved couplings and fittings shall be from the same manufacturer. Grooved joints shall not be used in concealed locations, such as behind solid walls or ceilings, unless an access panel is shown on the drawings for servicing or adjusting the joint.

3.1.1.2 Reducers

Reductions in pipe sizes shall be made with one-piece tapered reducing fittings. The use of grooved-end or rubber-gasketed reducing couplings will not be permitted. When standard fittings of the required size are not manufactured, single bushings of the face type will be permitted. Where used, face bushings shall be installed with the outer face flush with the face of the fitting opening being reduced. Bushings shall not be used in elbow fittings, in more than one outlet of a tee, in more than two outlets of a cross, or where the reduction in size is less than 1/2 inch.

3.1.1.3 Pipe Supports and Hangers

Installation methods outlined in NFPA 13 are mandatory. Protection of piping against damage from earthquakes shall be provided. Longitudinal and lateral sway bracing shall be provided for piping 2-1/2 inch diameter and larger.

3.1.1.4 Drains

Main drain piping shall be provided to discharge within the hangar bay. Drains shall be of adequate size to readily receive the full flow from each drain under maximum pressure. Auxiliary drains shall be provided as required by NFPA 13 except that drain valves shall be used where drain plugs are otherwise permitted. Where branch lines terminate at low points and form trapped sections, such branch lines shall be manifolded to a common drain line. Each drain valve shall be provided with a metal sign identifying the type of drain connection or function of the valve.

3.1.1.5 Identification Signs

Signs shall be in accordance with NFPA 13. Properly lettered and approved metal signs shall be suitably affixed to each control valve, inspector test valve, main drain, auxiliary drain, test valve, and similar valves as appropriate.

3.2 PIPE PAINTING AND LABELING

3.2.1 Painting

Black steel pipe shall be painted. Pipe in equipment rooms shall be painted red. Pipe in other areas shall be painted to match finishes in those areas. Stainless steel pipe shall not be painted.

3.2.2 Pipe Identification

Aboveground pipe 2 inch diameter and larger shall be identified with legends. Legends shall include FOAM CONCENTRATE, FOAM-WATER SPRINKLER, FOAM-WATER NOZZLE, and FIRE PROTECTION WATER. Legends shall utilize WHITE letters on a RED color field and shall include arrows to indicate the direction of flow. Length of color field, letter size and locations on piping shall be as recommended in ANSI A13.1.

3.3 PRELIMINARY TESTS

Tests shall be performed to make adjustments in the fire protection system operation and to verify that the system will function as intended and that it is ready for service. Such tests shall include all components and subsystems. Test results shall be clearly documented and included with the written request for Final Test.

3.3.1 Flushing

Underground water mains shall be flushed in accordance with NFPA 13 and NFPA 24. This includes the requirement to flush the lead-in connection to the fire protection system at a flow rate not less than the maximum water demand rate of the system.

3.3.2 Hydrostatic Tests

The underground and aboveground piping systems, including AFFF concentrate, shall be hydrostatically tested in accordance with NFPA 13 at not less than 200 psi, or 50 psi in excess of maximum system operating pressure, for 2 hours. There shall be no visible leakage from the piping when the system is subjected to the hydrostatic test.

3.3.3 Alarm Check and Automatic Water Control Valves

Each valve shall be tested to verify operation in accordance with manufacturer's published operating instructions. This shall include tests of valves and switches connected thereto.

3.3.4 AFFF Concentrate System

Tests shall be conducted under the supervision of a technical representative employed by the AFFF concentrate manufacturer. The complete AFFF concentrate system shall be adjusted and tested to assure proper operation. Test results, including all pressure settings and readings, shall be recorded on an appropriate test form signed and dated by manufacturer's representative certifying that the system is in compliance with contract requirements and the manufacturer's recommended practices. Testing shall include, but not be limited to, the following:

- a. Filling the AFFF concentrate tank.
- b. Adjustment of pressure sustaining valves, pump relief valves, and proportioners.
- c. Collection of AFFF samples and testing with a conductivity meter to verify proportioning accuracy.
- d. Testing AFFF concentrate pumps for proper automatic operation. This shall include start and stop settings, automatic shutoff, and relief valve operation.
- e. Testing low liquid level alarms and pump shutoff.
- f. Other operational checks recommended by the AFFF proportioner manufacturer.

3.3.5 Control System Tests

Tests shall be conducted under the supervision of a factory-trained representative of the control panel manufacturer. The electrical control system shall be tested to verify that the control panel and all wiring have been installed correctly and that all components function as intended. Tests shall be conducted using normal operating and battery power. Testing shall include, but not be limited to, each of the following:

- a. Alarm initiating circuit and device. This shall include heat detectors, manual actuation stations, waterflow and pressure switches, and similar devices connected to the control panel.
- b. Supervisory circuit and device. This shall include valve supervisory (tamper) switches, pump power circuits, pump running, low liquid level in foam concentrate tank, and similar circuits and devices.
- c. Actuation circuit and device. This shall include circuits to automatic water control valves, foam concentrate pumps, fire pumps, and similar circuits related to system activation.
- d. Annunciator lamp and notification appliance. This shall include bells, horns, electronic signaling, and similar devices.

3.4 FINAL TEST

3.4.1 Requirements

The Final Test shall be a repeat of Preliminary Tests, except that flushing and hydrostatic tests shall not be repeated. In addition, the system shall be automatically actuated and allowed to discharge for a period of at least one minute prior to shutting the system off. The Contractor shall correct system failures and other deficiencies identified during testing and shall retest portions of the system affected by the required corrections.

3.4.1.1 Pretest Requirements

The system will be considered ready for final testing only after the following have been accomplished.

- a. The required test plan has been submitted and approved.
- b. Preliminary tests have been made and deficiencies determined to have been corrected to the satisfaction of the equipment manufacturer's technical representatives and the Contracting Officer.
- c. Test reports, including the required videotape of the preliminary tests, have been submitted and approved.
- d. The control panels and detection systems shall have been in service for a break-in period of at least 14 consecutive days prior to the final test.
- e. The Contractor has provided written notification to the Contracting Officer, at least 21 days prior to date of Final Test, that preliminary tests have been successfully completed.

3.4.1.2 Videotaping

Contractor shall videotape the tests in VHS format and shall record the date and time-lapse, in seconds, from start to finish of each portion of the test as directed by the Contracting Officer. Four copies of the tape shall be submitted before the system will be considered accepted.

3.4.1.3 Manufacturer's Services

Experienced technicians regularly employed by the Contractor in the installation of the system and manufacturer's representative referred to elsewhere in this specification shall conduct the testing.

3.4.1.4 Materials and Equipment

Contractor shall provide AFFF concentrate, gauges, AFFF sample collection apparatus, instruments, hose, personnel, elevating platforms, scaffolding, ladders, appliances and any other equipment necessary to fulfill testing requirements specified.

3.4.1.5 Facility and Environmental Protection

Contractor shall provide protection for the facility, including electrical and mechanical equipment exposed to possible damage during discharge tests. This shall include provision of sandbags or similar means for preventing

migration of foam solution into adjacent areas. Temporary measures shall be provided to prevent AFFF solution from entering storm drains, sanitary sewers, drainage ditches, streams and other water sources. Discharged AFFF shall be contained on paved surfaces and shall not be allowed to come in contact with the earth.

3.4.2 Control System Tests

Operational features of the control system shall be tested and demonstrated. This shall include testing of control panels and each input and output circuit. Tests of circuits shall include actuation and simulated circuit fault at each initiating, notification, supervisory and actuation device or appliance. As a practical matter, these tests shall be a repeat of preliminary tests required under paragraph PRELIMINARY TESTS.

3.4.3 AFFF Proportioning System Tests

Each AFFF proportioner (ratio controller) shall be flow tested to determine that proportioning accuracy is within specified limits. Each proportioner supplying sprinkler systems with closed heads shall be tested at two flow rates; the minimum flow rate specified in the manufacturer's published data and a flow rate at least four times the minimum. Collecting AFFF samples from each proportioner shall be accomplished in accordance with NFPA 16, and the approved test plan. Foam solution concentrations shall be determined using the methods outlined in NFPA 16. Proportioning for nominal 3 percent concentrate shall be between 3 percent and 4 percent. If test results indicate proportioning below or above this range, the Contractor shall make necessary adjustments and retest as directed by the Contracting Officer.

3.4.4 Post-discharge Test Requirements

Following the successful completion of the tests, the Contractor shall remove the foam solution from the site as indicated on the approved AFFF waste containment and disposal plan. Contractor shall replenish AFFF concentrate consumed during the tests. The entire fire protection system shall be returned to automatic operation and the facility restored to operational capability. Discharged solution shall be contained and disposed of in a manner acceptable to local authorities and as identified on the approved test plan. Once tests are completed, systems shall be returned to fully operational status, including filling of AFFF concentrate tanks with concentrate and filling of solution piping with premix as required.

3.5 POSTED INSTRUCTIONS

Framed description of system operation, instructions and schematic diagrams of the overall AFFF system and each subsystem, shall be posted where directed. Condensed operating instructions explaining the system for normal operation, refilling the AFFF storage tank, and routine testing shall be included.

3.6 TRAINING

Contractor shall provide at least two training sessions of at least 6 hours each to explain system's operation and maintenance. Training sessions shall be conducted on alternate days to afford flexibility by shift personnel and other attendees. Training sessions shall include classroom instruction and explanation of approved Operation and Maintenance Manuals.

Training aids shall be provided as necessary to clearly describe the systems. In addition to classroom instruction, systems shall be operated to provide hands-on demonstrations. Contractor shall include a system actuation using water only, to demonstrate system operation and procedures for resetting the system. Training areas will be provided by the Government in the building where the systems are installed. Dates and times of the training sessions shall be coordinated with the Contracting Officer not less than 15 calendar days prior to the first session.

-- End of Section --

SECTION 28 31 00.00 10

FIRE DETECTION AND ALARM SYSTEM, DIRECT CURRENT LOOP
04/06

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 within the text by the basic designation only.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2005) National Electrical Code

NFPA 72 (2002) National Fire Alarm Code

UNDERWRITERS LABORATORIES (UL)

UL 1242 (2000; Rev thru May 2003) Electrical Intermediate Metal Conduit -- Steel

UL 6 (2000; Rev thru May 2003) Rigid Metal Conduit

UL 797 (2000; Rev thru May 2003) Electrical Metallic Tubing -- Steel

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 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Detail Drawings

Detail drawings, prepared and signed by a Registered Professional Engineer or a NICET Level 3 Fire Alarm Technician, as specified.

SD-03 Product Data

Testing

Detailed test procedures, prepared and signed by a Registered Professional Engineer or a NICET Level 3 Fire Alarm Technician, for the fire detection and alarm system 60 days prior to performing system tests.

Storage Batteries

Special Tools and Spare Parts

SD-06 Test Reports

Testing

Test reports, in booklet form, showing field tests performed to prove compliance with the specified performance criteria, upon completion and testing of the installed system. Each test report shall document readings, test results and indicate the final position of controls. The Contractor shall include the NFPA 72 Certificate of Completion and NFPA 72 Inspection and Testing Form, with the appropriate test reports.

SD-07 Certificates

Qualifications

Proof of qualifications for required personnel. The installer shall submit proof of experience for the Professional Engineer, fire alarm technician, and the installing company.

1.3 GENERAL REQUIREMENTS

1.3.1 Standard Products

Material and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products for at least 2 years prior to bid opening. Equipment shall be supported by a service organization that can provide service within 24 hours of notification.

1.3.2 Nameplates

Major components of equipment shall have the manufacturer's name, address, type or style, voltage and current rating, and catalog number on a noncorrosive and nonheat-sensitive plate which is securely attached to the equipment.

1.3.3 Keys and Locks

Locks shall be keyed alike. Four keys for the system shall be provided.

1.3.4 Tags

Tags with stamped identification number shall be furnished for keys and locks.

1.3.5 Verification of Dimensions

After becoming familiar with details of the work, the Contractor shall verify dimensions in the field and shall advise the Contracting Officer of any discrepancy before performing the work.

1.3.6 Compliance

The fire detection and alarm system and the central reporting system shall be configured in accordance with NFPA 72; exceptions are acceptable as directed by the Contracting Officer. The equipment furnished shall be

compatible and be UL listed, FM approved, or approved or listed by a nationally recognized testing laboratory in accordance with the applicable NFPA standards.

1.3.7 Qualifications

1.3.7.1 Engineer and Technician

a. Registered Professional Engineer with verification of experience and at least 4 years of current experience in the design of the fire protection and detection systems.

b. National Institute for Certification in Engineering Technologies (NICET) qualifications as an engineering technician in fire alarm systems program with verification of experience and current NICET certificate.

c. The Registered Professional Engineer may perform all required items under this specification. The NICET Fire Alarm Technician shall perform only the items allowed by the specific category of certification held.

1.3.7.2 Installer

The installing Contractor shall provide the following: NICET Fire Alarm Technicians to perform the installation of the system. A NICET Level 3 Fire Alarm Technician shall supervise the installation of the fire alarm system. NICET Level 2 or higher Fire Alarm Technician shall install and terminate fire alarm devices, cabinets and panels. An electrician or NICET Level 1 Fire Alarm Technician shall install conduit for the fire alarm system. The Fire Alarm technicians installing the equipment shall be factory trained in the installation, adjustment, testing, and operation of the equipment specified herein and on the drawings.

1.3.8 Detail Drawings

The Contractor shall submit detail drawings consisting of a complete list of equipment and material, including manufacturer's descriptive and technical literature, catalog cuts, and installation instructions. Note that the contract drawings show layouts based on typical detectors. The Contractor shall check the layout based on the actual detectors to be installed and make any necessary revisions in the detail drawings. The detail drawings shall also contain complete wiring and schematic diagrams for the equipment furnished, equipment layout, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Detailed point-to-point wiring diagram shall be prepared and signed by a Registered Professional Engineer or a NICET Level 3 Fire Alarm Technician showing points of connection. Diagram shall include connections between system devices, appliances, control panels, supervised devices, and equipment that is activated or controlled by the panel.

1.4 SYSTEM OPERATION

1.4.1 Operation

The existing Notifier AFP-300 fire alarm control panel shall remain. The scope of the fire alarm work is to demolish the existing solenoid operated concentrate control and preaction valves and to provide new solenoids to

activate the replaced pre-action valves.

1.5 DELIVERY AND STORAGE

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

PART 2 PRODUCTS

2.1 CONTROL PANEL

2.1.1 Circuit Connections

Circuit conductors entering or leaving the panel shall be connected to screw-type terminals with each conductor and terminal marked for identification.

2.1.2 System Expansion and Modification Capabilities

Any equipment and software needed by qualified technicians to implement future changes to the fire alarm system shall be provided as part of this contract.

2.1.3 Addressable Initiating Device Circuits Module

The initiating device being monitored shall be configured as a Style D or Style B to match existing initiating device circuits. The system shall be capable of defining any module as an alarm module and report alarm trouble, loss of polling, or as a supervisory module, and reporting supervisory short, supervisory open or loss of polling. The module shall be UL listed as compatible with the control panel. The monitor module shall provide address setting means compatible with the control panel's SLC supervision and store an internal identifying code. Monitor module shall contain an integral LED that flashes each time the monitor module is polled. Pull stations with a monitor module in a common backbox are not required to have an LED.

2.2 STORAGE BATTERIES

Storage batteries shall be provided and shall be 24 Vdc sealed, lead-calcium type requiring no additional water. The batteries shall have ample capacity, with primary power disconnected, to operate the fire alarm system for a period of 72 hours. Following this period of battery operation, the batteries shall have ample capacity to operate all components of the system, including all alarm signaling devices in the total alarm mode for a minimum period of 15 minutes. Batteries shall be located in a separate battery cabinet. Batteries shall be provided with overcurrent protection in accordance with NFPA 72. Separate battery cabinets shall have a lockable, hinged cover similar to the fire alarm panel. The lock shall be keyed the same as the fire alarm control panel. Cabinets shall be painted to match the fire alarm control panel.

2.3 BATTERY CHARGER

Battery charger shall be completely automatic, 24 Vdc with high/low charging rate, capable of restoring the batteries from full discharge (18 Volts dc) to full charge within 48 hours. A pilot light indicating when batteries are manually placed on a high rate of charge shall be provided as

part of the unit assembly, if a high rate switch is provided. Charger shall be located in control panel cabinet or in a separate battery cabinet.

2.4 FIRE DETECTION AND ALARM SYSTEM PERIPHERAL EQUIPMENT

2.4.1 Conduit

Conduit and fittings shall comply with NFPA 70, UL 6, UL 1242, and UL 797.

2.4.2 Wiring

Wiring shall conform to NFPA 70. Wiring for 120 Vac power shall be No. 12 AWG minimum. The SLC wiring shall be copper cable in accordance with the manufacturers requirements. Wiring for fire alarm dc circuits shall be No. 14 AWG minimum. Voltages shall not be mixed in any junction box, housing, or device, except those containing power supplies and control relays. Wiring shall conform to NFPA 70. System field wiring shall be solid copper and installed in metallic conduit or electrical metallic tubing, except that rigid plastic conduit may be used under slab-on-grade. Conductors shall be color coded. Conductors used for the same functions shall be similarly color coded. Wiring code color shall remain uniform throughout the circuit. Pigtail or T-tap connections to initiating device circuits, supervisory alarm circuits, and notification appliance circuits are prohibited. T-tapping using screw terminal blocks is allowed for style 5 addressable systems.

2.4.3 Special Tools and Spare Parts

Software, connecting cables and proprietary equipment, necessary for the maintenance, testing, and reprogramming of the equipment shall be furnished to the Contracting Officer. Two spare fuses of each type and size required shall be furnished. Two percent of the total number of each different type of detector, but no less than two each, shall be furnished. Spare fuses shall be mounted in the fire alarm panel.

PART 3 EXECUTION

3.1 INSTALLATION

All work shall be installed as shown, and in accordance with NFPA 70 and NFPA 72, and in accordance with the manufacturer's diagrams and recommendations, unless otherwise specified. Smoke detectors shall not be installed until construction is essentially complete and the building has been thoroughly cleaned.

3.1.1 Wiring

Conduit size for wiring shall be in accordance with NFPA 70. Wiring for the fire alarm system shall not be installed in conduits, junction boxes, or outlet boxes with conductors of lighting and power systems. Not more than two conductors shall be installed under any device screw terminal. The wires under the screw terminal shall be straight when placed under the terminal then clamped in place under the screw terminal. The wires shall be broken and not twisted around the terminal. Circuit conductors entering or leaving any mounting box, outlet box enclosure, or cabinet shall be connected to screw terminals with each terminal and conductor marked in accordance with the wiring diagram. Connections and splices shall be made using screw terminal blocks. The use of wire nut type connectors in the system is prohibited. Wiring within any control equipment shall be readily

accessible without removing any component parts. The fire alarm equipment manufacturer's representative shall be present for the connection of wiring to the control panel.

3.1.2 Addressable Control Module

Addressable and control modules shall be installed in the outlet box or adjacent to the device they are controlling. If a supplementary suppression releasing panel is provided, then the monitor modules shall be mounted in a common enclosure adjacent to the suppression releasing panel and both this enclosure and the suppression releasing panel shall be in the same room as the releasing devices. All interconnecting wires shall be supervised unless an open circuit or short circuit abnormal condition does not affect the required operation of the fire alarm system. If control modules are used as interfaces to other systems, such as HVAC or elevator control, they shall be within the control panel or immediately adjacent to it. Control modules that control a group of notification appliances shall be adjacent to the first notification appliance in the notification appliance circuits. Control modules that connect to devices shall supervise the notification appliance circuits. Control modules that connect to auxiliary systems or interface with other systems (non-life safety systems) and where not required by NFPA 72, shall not require the secondary circuits to be supervised. Contacts in suppression systems and other fire protection subsystems shall be connected to the fire alarm system to perform required alarm functions as specified in 21 13 24.00 10 AQUEOUS FILM FORMING FOAM FIRE PROTECTION SYSTEM and NFPA 72, as indicated on the drawings and as specified herein.

3.2 SUPERVISING STATION PROVISIONS

3.2.1 Revisions to Existing Facilities

Existing supervising components shall be modified as indicated on the drawings and programming shall be updated if required to accommodate the revised configuration. Acceptance testing shall include procedures that would demonstrate that operation of existing equipment has not been degraded and that the revised configuration plus interfacing components operates compatibly with the new fire alarm system at the protected premises. Work on existing equipment shall be performed in accordance with the manufacturer's instructions or under supervision of the manufacturer's representative.

3.3 TESTING

The Contractor shall notify the Contracting Officer at least 10 days before the preliminary and acceptance tests are to be conducted. The tests shall be performed in accordance with the approved test procedures in the presence of the Contracting Officer. The control panel manufacturer's representative shall be present to supervise tests. The Contractor shall furnish instruments and personnel required for the tests.

3.3.1 Preliminary Tests

Upon completion of the installation, the system shall be subjected to functional and operational performance tests including tests of each installed initiating and notification appliance, when required. Tests shall include the meggering of system conductors to determine that the system is free from grounded, shorted, or open circuits. The megger test shall be conducted prior to the installation of fire alarm equipment. If

deficiencies are found, corrections shall be made and the system shall be retested to assure that it is functional. After completing the preliminary testing the Contractor shall complete and submit the NFPA 72, Certificate of Completion.

3.3.2 Acceptance Test

Acceptance testing shall not be performed until the Contractor has completed and submitted the Certificate of Completion. Testing shall be in accordance with NFPA 72. The recommended tests in NFPA 72 shall be considered mandatory and shall verify that previous deficiencies have been corrected. The Contractor shall complete and submit the NFPA 72, Inspection and Testing Form. The test shall include all requirements of NFPA 72 and the following:

- a. Test of each function of the control panel.
- b. Test of each circuit in both trouble and normal modes.
- c. Tests of each alarm initiating devices in both normal and trouble conditions.
- d. Tests of each control circuit and device.
- e. Tests of each alarm notification appliance.
- f. Tests of the battery charger and batteries.
- g. Complete operational tests under emergency power supply.
- h. Visual inspection of wiring connections.
- i. Opening the circuit at each alarm initiating device and notification appliance to test the wiring supervisory feature.
- j. Ground fault.
- k. Short circuit faults.
- l. Stray voltage.
- m. Loop resistance.

-- End of Section --