

US Army Corps
of Engineers
Baltimore District

CONSTRUCTION SPECIFICATIONS

McMILLIAN ROOF REPLACEMENT

WASHINGTON AQUEDUCT DIVISION
WASHINGTON, DC

INVITATION NO. **DACW31-03-B-0006**

CONTRACT NO.

DATE **DEC. 26, 2002**

PROJECT TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

01000 ADMINISTRATIVE REQUIREMENTS
01050 JOB CONDITIONS
01060 SAFETY
01200 WARRANTY REQUIREMENT
01330 SUBMITTAL PROCEDURES
01420 SOURCES FOR REFERENCE PUBLICATIONS
01451 CONTRACTOR QUALITY CONTROL
01510 TEMPORARY CONSTRUCTION ITEMS
01562 ENVIRONMENTAL PROTECTION
01720 AS-BUILT DRAWINGS - CADD

DIVISION 02 - SITE WORK

02220 DEMOLITION

DIVISION 07 - THERMAL & MOISTURE PROTECTION

07220 ROOF INSULATION
07510 BUILT-UP ROOFING
07600 SHEET METALWORK, GENERAL

DIVISION 09 - FINISHES

09200 LATHING AND PLASTERING

-- End of Project Table of Contents --

SECTION 01000

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SUBMITTALS

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

SD-01 Preconstruction Submittals

Title Evidence

Proof of purchase for equipment and/or materials.

Invoice Copies

Proof of rental equipment costs.

Payment Evidence

Proof of full payment.

Photographs

SD-03 Product Data

Cost or Pricing Data

Proof of actual equipment costs.

SD-05 Design Data

Progress Schedule; G WA.

A schedule that shows the manner in which the Contractor intends to prosecute the work.

1.2 PROGRESS SCHEDULING AND REPORTING (AUG. 1999)

The Contractor, shall within five days or as otherwise determined by the Contracting Officer, after date of commencement of work, submit for approval a practicable progress schedule showing the manner in which he intends to prosecute the work. Contractor prepared form shall contain the same information as shown on the attached NADB Form 1153 ("Physical Construction Progress Chart" (CENAB-CO-E)

1.4 PAYMENTS TO CONTRACTORS: (NOV 1976)

For payment purposes only, an allowance will be made by the Contracting Officer of 100 percent of the invoiced cost of materials or equipment delivered to the site but not incorporated into the construction, pursuant to the Contract Clause entitled "PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS". The Contracting Officer may also, at his discretion, take into consideration the cost of materials or equipment stored at locations other than the jobsite, when making progress payments under the contract. In order to be eligible for payment, the Contractor must provide satisfactory evidence that he has acquired title to such material or equipment, and that it will be utilized on the work covered by this contract. Further, all items must be properly stored and protected. Earnings will be computed using 100% of invoiced value. (CENAB-CO-E)

1.5 IDENTIFICATION OF EMPLOYEES: (OCT 1983)

Each employee assigned to this project by the Contractor and subcontractors shall be required to display at all times, while on the project site, an approved form of identification provided by the Contractor, as an authorized employee of the Contractor/subcontractor. Each employee shall be required to complete NAB 1603 "Request for Identification Card." This card shall be submitted to the Government, who will then schedule the employee to come in and have his picture taken for issuance of an identification card. In addition, on those projects where identification is prescribed and furnished by the Government, it shall be displayed as required and it shall immediately be returned to the Contracting Officer for cancellation upon release of the assigned employee and or completion of project. (CENAB)

1.6 PURCHASE ORDER: (SEP 1975)

One readable copy of all purchase orders for material and equipment, showing firm names and addresses, and all shipping bills, or memoranda of shipment received regarding such material and equipment, shall be furnished the appointed Contracting Officer's Representative as soon as issued. Such orders, shipping bills or memoranda shall be so worded or marked that all material and each item, piece or member of equipment can be definitely identified on the drawings. Where a priority rating is assigned to a contract, this rating, the required delivery date, and the scheduled shipping date shall also be shown on the purchase order. At the option of the Contractor, the copy of the purchase order may or may not indicate the purchase price. (CENAB-CO-E)

1.7 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (EFARS 52.0231.5000 (OCT 1995))

(a) This clause does not apply to terminations. See 52.249-5000, Basis for settlement of proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable conditions owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual costs data for each piece of equipment or groups of similar serial and services for which the government can determine both ownership and operating costs from the

contractor's accounting records. When both ownership and operating costs can not be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP1110-1-8 Construction Equipment Ownership and Operating Expenses Schedule, Region East. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d) (ii) and Far 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established proactive of leasing the same or similar equipment to unaffiliated leasees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet. CENAB-CT/SEP 95 (EFARS 52.231-5000)

1.14 NEGOTIATED MODIFICATIONS: (OCT 84)

Whenever profit is negotiated as an element of price for any modification to this contract with either prime or subcontractor, a reasonable profit shall be negotiated or determined by using the OCE Weighted Guidelines method outlined in EFARS 15.902. (Sugg. NAB 84-232)

1.15 PHOTOGRAPHS

PHOTOGRAPHIC COVERAGE: (SEP 85) The Contractor shall furnish ten each 8" x 10" (commercial grade color photographs of the project (with negatives) to the Contracting Officer. These photographs shall be taken at systematic intervals during the contract where and when directed by the Contracting Officer. (CENAB-CO)

PART 2 PRODUCTS

NOT APPLICABLE

PART 3 EXECUTION

NOT APPLICABLE

ATTACHMENTS:

NADB Form 1153 ("Physical Construction Progress Chart")

-- End of Section --

SECTION 01050

JOB CONDITIONS

PART 1 GENERAL

1.1 LAYOUT OF WORK (1984)

The Contractor shall lay out his work and shall be held responsible for all measurement's in connection therewith. The Contractor shall furnish, at his own expense, all stakes, templates, platforms, equipment, tools, and materials and labor as may be required in laying out any part of the work. The Contractor will be held responsible for the execution of the work to such lines and grades as may be established or indicated by the Contracting Officer. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed, by the Contractor or through his negligence, prior to their authorized removal, they may be replaced by the Contracting Officer at his discretion. The expense of replacement will be deducted from any amounts due or to become due the Contractor. (CENAB)1.2 PHYSICAL DATA: (APR 1984)

Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation or conclusion drawn from the data or information by the Contractor. (CENAB)

1.2.1 Transportation Facilities

McMILLAN WATER TREATMENT PLANT, WASHINGTON, D.C.

McMillan Reservoir facility is located on Georgia Avenue and is serve by public transportation.

1.3 SUBMITTALS

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

SD-01 Preconstruction Submittals

Shut Down Utility Services; G WA.

Prior approval for service/utility interruptions.

Advance Notice

When changes and/or relocations are required.

1.4 UTILITIES

1.4.1 Availability of Utilities Including Lavatory Facilities: (JUN 1980)

It shall be the responsibility of the Contractor to provide all utilities he may require during the entire life of the contract. He shall make his own investigation and determinations as to the availability and adequacy of utilities for his use for construction purposes and domestic consumption. He shall install and maintain all necessary supply lines, connections, piping, and meters if required, but only at such locations and in such manner as approved by the Contracting Officer. Before final acceptance of work under this contract, all temporary supply lines, connections and piping installed by the Contractor shall be removed by him in a manner satisfactory to the Contracting Officer. (CENAB)

1.5 DISPOSAL OF EXISTING MATERIAL AND EQUIPMENT: (DEC 1975)

All removed, dismantled or demolished material and/or equipment including rubble, scrap and debris not specified or indicated to be Government salvaged, reinstalled under this contract or otherwise retained for disposal on Government land will become the property of the Contractor and shall be promptly removed from the site and disposed of by the Contractor at his own expense and responsibility. (CENAB)

1.6 COMPLIANCE WITH WATER TREATMENT PLANT REGULATIONS: (JUL 1980)

The site of the work is on Corps of Engineers property and all rules and regulations issued by the Chief, Washington Aqueduct covering general safety, security, sanitary requirements, pollution control, traffic regulations and parking, shall be observed by the Contractor. Information regarding these requirements may be obtained by contacting the Contracting Officer, who will provide such information or assist in obtaining same from appropriate authorities. (MEMO)

1.7 MAINTENANCE OF ACCESS: (DEC 1975)

The Contractor shall not block passage through sidewalks, roads, alleys or other entrance ways to the building during performance of work under this contract. In addition, the Contractor shall at all times maintain safe and clear passage through interior corridors and doorways to allow minimal disruption of normal activities within the building. No equipment or new materials are to be stored in the building except those items that are necessary for progress of the immediate work. All existing equipment, materials and debris removed during the work that are not to be reinstalled shall be removed daily by the Contractor from the building. (CENAB)

1.8 PROTECTION OF GOVERNMENT PROPERTY AND PERSONNEL: (DEC 1975)

1.8.1 Protection of Equipment

All existing Government owned equipment within the work area shall be protected by the Contractor from damage caused by construction operations. As a minimum, the Contractor shall cover all furniture, equipment and carpets in the work area with dust barriers and protect such items from any damage due to dust, vibration, water, heat or other conditions resulting

from construction activities. Existing work damaged by construction operations shall be promptly repaired by the Contractor at his own expense.

1.8.2 Protection of Personnel

The Contractor shall protect occupants of the building by installing safety rails and/or barricades as applicable to prevent injury from unauthorized entry of personnel into work areas. Warning signs shall be erected as necessary to indicate Construction areas or hazardous zones. Work shall proceed in such manner as to prevent the undue spread of dust and flying particles.

1.8.3 Measures to Prevent Damage/Injury

The Contractor shall take such additional measures as may be directed by the Contracting Officer to prevent damage or injury to Government property or personnel. (CENAB)

1.10 ORDER OF WORK AND COORDINATION WITH OTHER CONTRACTORS: (FEB 1979)

Other Contractors may be working in the same area. After award of this contract a meeting will be held with all contractor representatives and the Contracting Officer to develop a plan of work coordination. In case of disagreement regarding use of an area the decision of the Contracting Officer will control. (CENAB)

1.14 ASBESTOS HANDLING AND REMOVAL (FEB 85)

Through site investigations, friable asbestos has not been found, however if asbestos is encountered, its testing, removal and disposal is covered in "CHANGES" clause of the Contract Clauses. (CENAB)

1.17 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

1.17.1 Procedure for Determination

This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance the contract clause entitled "Default: (Fixed Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

- a. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.
- b. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

1.17.2 Anticipated Adverse Weather Delays

The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar

data for the project location and will constitute the base line for monthly weather time evaluations. The contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON (5) DAY WORK WEEK

Washington Aqueduct Division (WAD), Washington, D.C.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4	5	6	7	6	6	6	5	2	5	4	3

1.17.3 Impact

Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph "Anticipated Adverse Weather Delays", above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "Default (Fixed Price Construction)".

1.20 WORKING HOURS

WORKING HOURS: (DEC 93) It shall be the Contractors responsibility to obtain the working hours other than the normal five (5) day work week 07:00 am to 3:30 pm.

1.29 LOAD LIMITATIONS

The maximum uniformly distributed load imposed by construction equipment and materials excluding the weight of personnel on roof areas shall not exceed thirty (30) pounds per square feet.

PART 2 PRODUCTS

NOT APPLICABLE

PART 3 EXECUTION

NOT APPLICABLE

ATTACHMENT

-- End of Section --

SECTION 01060

SAFETY

PART 1 GENERAL

1.1 APPLICABLE PUBLICATION

The publications listed below form a part of this specification and are referred to in the text by the basic designation only. All interim changes (changes made between publications of new editions) to the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, will be posted on the Headquarters Website. The date that it is posted shall become the official effective date of the change and contracts awarded after this date shall require to comply accordingly. The website location where these changes can be found is under the button entitled "Changes to EM", located at: "http://www.hq.usace.army.mil/soh/hqusace_soh.htm".

U.S. ARMY CORPS OF ENGINEERS:

EM 385-1-1 (3 Sep 1996) U.S. Army Corps of Engineers
Safety and Health Requirements Manual

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Safety Supervisor; G WA.

A safety supervisor shall be responsible for overall supervision of accident prevention activities.

SD-07 Certificates

Language Certification

It is the Contractors responsibility to ensure that all employees understand the basic English language.

SD-09 Reports

Activity Phase Hazard Analysis Plan; G WA.

The addressing of the activity phase hazard analysis plan for each activity performed in a phase of work.

Outline Report

A report for each past activities review.

OSHA Log

A log shall be reported monthly for injuries.

1.3 GENERAL

The U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, and all subsequent revisions referred to in the Contract Clause ACCIDENT PREVENTION of this contract, are hereby supplemented as follows:

a. The Contractor shall designate an employee responsible for overall supervision of accident prevention activities. Such duties shall include: (1) assuring applicable safety requirements are (a) communicated to the workers in a language they understand (reference EM 385-1-1, September 1996, 01.A.04). It is the Contractor's responsibility to ascertain if there are workers on the job who do not speak and/or understand the English language, if such workers are employed by the prime contractor or subcontractors, at any tier, it is the prime contractor's responsibility to insure that all safety programs, signs, and tool box meetings are communicated to the workers in a language they understand, and that a bilingual employee is on site at all time. If the contractor contends that interpreters and/or bilingual signs are not required, language certification must be provided which verifies that all workers (whose native tongue is other than English) have a command of the English language sufficient to understand all direction, training and safety requirements, whether written or oral, and (b) incorporated in work methods, and (2) inspecting the work to ensure that safety measures and instructions are actually applied. The proposed safety supervisor name and qualifications shall be submitted in writing for approval to the Contracting Officer's Representative. This individual must have prior experience as a safety engineer or be able to demonstrate his/her familiarity and understanding of the safety requirements over a prescribed trial period. The safety engineer shall have the authority to act on behalf of the Contractor's general management to take whatever action is necessary to assure compliance with safety requirements. The safety supervisor is required to be on the site when work is being performed.

b. Prior to commencement of any work at a job site, a preconstruction safety meeting shall be held between the Contractor and the Contracting Officer to discuss the Contractor's safety program and in particular to review the following submittals:

(1) Contracts Accident Prevention Plan: An acceptable accident prevention plan, written by the prime Contractor for the specific work and implementing in detail the pertinent requirements of EM 385-1-1, shall be submitted for Government approval.

(2) Activity Phase Hazard Analysis Plan: Prior to beginning each major phase of work, an activity hazard analysis (phase plan) shall be prepared by the Contractor for that phase of work and submitted to the Contracting Officer's Representative for approval. A phase is defined as

an operation involving a type of work presenting hazards not experienced in previous operations or where a new subcontractor or work crew is to perform work. The analysis shall address the hazards for each activity performed in the phase and shall present the procedures and safeguards necessary to eliminate the hazards or reduce the risk to an acceptable level.

c. Subsequent jobsite safety meetings shall be held as follows:

(1) A safety meeting shall be held at least once a month for all supervisors on the project to review past activities, to plan ahead for new or changed operations and to establish safe working procedures to anticipated hazards. An outline report of each monthly meeting shall be submitted to the Contracting Officer's Representative.

(2) At least one safety meeting shall be conducted weekly, or whenever new crews begin work, by the appropriate field supervisors or foremen for all workers. An outline report of the meeting giving date, time, attendance, subjects discussed and who conducted it shall be maintained and copies furnished the designated authority on request.

1.4 ACCIDENTS

Chargeable accidents are to be investigated by both Contractor personnel and the Contracting Officer.

1.4.1 Accident Reporting, ENG FORM 3394

Section 1, Paragraph 01.D, OF EM 385-1-1 and the Contract Clause entitled ACCIDENT PREVENTION are amended as follows: The prime Contractor shall report on Eng Form 3394, supplied by the Contracting Officer, all injuries to his employees or subcontractors that result in lost time and all damage to property and/or equipment in excess of \$2,000 per incident. Verbal notification of such accident shall be made to the Contracting Officer within 24 hours. A written report on the above noted form shall be submitted to the Contracting Officer within 72 hours following such accidents. The written report shall include the following:

a. A description of the circumstances leading up to the accident, the cause of the accident, and corrective measures taken to prevent recurrence.

b. A description of the injury and name and location of the medical facility giving examination and treatment.

c. A statement as to whether or not the employee was permitted to return to work after examination and treatment by the doctor, and if not, an estimate or statement of the number of days lost from work. If there have been days lost from work, state whether or not the employee has been re-examined and declared fit to resume work as of the date of the report.

1.4.2 OSHA Requirements

1.4.2.1 OSHA Log

A copy of the Contractor's OSHA Log of Injuries shall be forwarded monthly

to the Contracting Officer.

1.4.2.2 OSHA Inspections

Contractors shall immediately notify the Contracting Officer when an OSHA Compliance official (Federal or State representative) presents his/her credentials and informs the Contractor that the work place will be inspected for OSHA compliance. Contractors shall also notify the Contracting Officer upon determination that an exit interview will take place upon completion of the OSHA inspection. (NABSA OCT 05, 1976)

1.5 GOVERNMENT APPROVAL

Submittals shall be in accordance with Section 01330 SUBMITTAL PROCEDURES. All required submittals of items specified in this section shall be for information only, except for those items including, but not limited to, the following which shall be submitted for Government approval:

- a. Written designation of safety representative.
- b. Written project specific accident prevention plan.
- c. Written activity phase hazard analysis plan.

PART 2 PRODUCT
NOT APPLICABLE

PART 3 EXECUTION
NOT APPLICABLE

-- End of Section --

SECTION 01200

WARRANTY REQUIREMENT

PART 1 GENERAL

1.1 WARRANTY OF CONSTRUCTION

The Contractor shall warranty all materials and workmanship in accordance with Contract Clause (FAR 52.246-21), "WARRANTY OF CONSTRUCTION"

1.2 MANUFACTURER'S WARRANTY:

The Contractor shall provide manufacturer's warranties, when available, on all equipment/work for one year starting from the day of facility acceptance by the Government. Any warranty offered by the manufacturer for periods greater than one year or required by other sections of the specifications shall also be provided.

1.3 WARRANTY PAYMENT

Warranty work is a subsidiary portion of the contract work, and has a value to the Government of \$5,000. The Contractor will assign a value of that amount in the breakdown for progress payments mentioned in the Contract Clause (FAR 52.232-5) "Payments Under Fixed-Price Construction". If the Contractor fails to respond to warranty items as provided in paragraph CONTRACTOR'S RESPONSE TO WARRANTY SERVICE REQUIREMENTS below, the Government may elect to acquire warranty repairs through other sources and, if so, shall backcharge the Contractor for the cost of such repairs. Such backcharges shall be accomplished under the Contract Clause (FAR 52.243-4) "CHANGES" of the contract through a credit modification(s).

1.4 PERFORMANCE BOND:

The Contractor's Performance Bond will remain effective throughout the construction warranty period and warranty extensions.

1.4.1 Failure to Commence

In the event the Contractor or his designated representative(s) fail to commence and diligently pursue any work required under this clause, and in a manner pursuant to the requirements thereof, the Contracting Officer shall have the right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Contracting Officer shall have the work performed by others, and after completion of the work, may demand reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

1.5 PRE-WARRANTY CONFERENCE:

Prior to contract completion and at a time designated by the Contracting

Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this specification. Communication procedures for Contractor notification of warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be reviewed at this meeting. The Contractor shall provide names, addresses, and telephone numbers of all subcontractors, equipment suppliers, or manufacturers with specific designation of their area of responsibilities if they are to be contacted directly on warranty corrections. This point of contact will be located within the local service area of the warranted construction, will be continuously available, and will be responsive to Government inquiry on warranty work action and status. Minutes of the meeting will be prepared by the Government and signed by both, the Contractor and the Contracting Officer. The minutes shall become part of the contract file.

1.7 ADDITIONAL REQUIREMENTS

1.7.1 Roof Survey

The Contractor shall during the ninth (9) month of the warranty period conduct an infrared roof survey on any project involving a membrane roofing system. This survey will be conducted in accordance with ASTM C1153-90, "Standard Practice for the Location of Wet Insulation in Roofing Systems Using Infrared Imaging". Contractor shall be required to replace all damaged materials and to locate and repair sources of moisture penetration.

1.8 CONTRACTOR'S RESPONSE TO WARRANTY SERVICE REQUIREMENTS.

1.8.1 Notification to Warranty Service Requirements

Following oral or written notification by authorized representative of the installation designated in writing by the Contracting Officer, the Contractor shall respond to warranty service requirements in accordance with the "Warranty Service Priority List" and the three categories of priorities listed below.

1.8.1.1 Categories of Priorities

- a. First Priority Code 1: Perform on site inspection to evaluate situation, determine course of action, initiate work within 24 hours and work continuously to completion or relief.
- b. Second Priority Code 2: Perform on site inspection to evaluate situation, determine course of action, initiate work within 48 hours and work continuously to completion or relief.
- c. Third Priority Code 3: All other work to be initiated within 5 work days end work continuously to completion or relief.

1.8.1.2 Warranty Service Priority List

ROOF LEAKS

Code 1

a. Temporary repairs will be made where major damage to property is occurring.

Code 2

a. Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

1.8.2 Availability of Required Parts

Should parts be required to complete the work and the parts are not immediately available the Contractor shall have a maximum of 12 hours after arrival at the job site to provide authorized representative of the installation with firm written plan for emergency alternatives and temporary repairs for Government participation with the Contractor to provide emergency relief until the required parts are available on site for the Contractor to perform permanent warranty repair. The Contractors plan shall include a firm date and time that the required parts shall be available on site to complete the permanent warranty repair.

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION - NOT APPLICABLE

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION

Submittals required are identified by SD numbers and titles as follows:

- SD-01 Preconstruction Submittals
- SD-02 Shop Drawings
- SD-03 Product Data
- SD-04 Samples
- SD-05 Design Data
- SD-06 Test Reports
- SD-07 Certificates
- SD-08 Manufacturer's Instructions
- SD-09 Manufacturer's Field Reports
- SD-10 Operation and Maintenance Data
- SD-11 Closeout Submittals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above. Submittal Register ENG FORM 4288, column labeled "Reviewer", this column is blank and is understood that the reviewer is "WA" (Washington Aqueduct).

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

PART 2 PRODUCTS (Not used)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

3.2 SUBMITTAL REGISTER

At the end of this section is one set of ENG Form 4288 listing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor will also be given the submittal register files, containing the computerized ENG Form 4288 and instructions on the use of the files. These submittal register files will be furnished on a separate diskette. Columns "c" through "f" have been completed by the Government; the Contractor shall complete columns "a" and "g" through "i" and submit the forms (hard copy plus associated electronic file) to the Contracting Officer for approval within 30 calendar days after Notice to Proceed. The Contractor shall keep this diskette up-to-date and shall submit it to the Government together with the monthly payment request. The approved submittal register will become the scheduling document and will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated.

3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

3.4 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and Information Only submittals in accordance with the instructions on the reverse side of this form. A copy of this form will be furnished to the Contractor. The Contractor shall submit a copy of this form with each submittal after properly filling out the form. Special care shall be exercised to ensure proper listing of the specification paragraphs and/or sheet numbers of the contract drawing pertinent to the data submitted for each item.

3.5 SUBMITTAL PROCEDURE

Six (6) copies of submittals shall be made as follows:

3.5.1 Procedures

In the signature block provided on ENG Form 4025 the Contractor certifies that each item has been reviewed in detail and is correct and is in strict conformance with the contract drawings and specifications unless noted otherwise. The accuracy and completeness of submittals is the responsibility of the Contractor. Any costs due to resubmittal of documents caused by inaccuracy, lack of coordination, and/or checking shall be the responsibility of the Contractor. This shall include the handling and

review time on the part of the Government. Each variation from the contract specifications and drawings shall be noted on the form; and, attached to the form, the Contractor shall set forth, in writing, the reason for and description of such variations. If these requirements are not met, the submittal may be returned for corrective action.

3.5.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

3.6 CONTROL OF SUBMITTALS

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

3.7 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four (4) copies of the submittal will be retained by the Contracting Officer and two (2) copies of the submittal will be returned to the Contractor.

3.8 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

3.9 STAMPS

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

<p>CONTRACTOR</p> <p>(Firm Name)</p> <p>_____ Approved</p> <p>_____ Approved with corrections as noted on submittal data and/or attached sheets(s).</p> <p>SIGNATURE: _____</p> <p>TITLE: _____</p> <p>DATE: _____</p>
--

3.10 CERTIFICATES OF COMPLIANCE: (MAY 1969)

Any Certificate required for demonstrating proof of compliance of materials with specification requirements shall be executed in four (4) copies. Each certificate shall be signed by an official authorized to certify in behalf on the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements. (CENAB)

-- End of Section --

INSTRUCTIONS

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

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION					CONTRACTOR												
McMillan WTP Roof Replacement																	
A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C I F I C S E C T	D E S C R I P T I O N	P A R A G R A P H G #	C L A S S I F I C A T I O N	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				M A I L E D T O C O N T R A C T O R /	R E M A R K S	
						S U B M I T	B Y	B Y	A C T I O N	D A T E O F	D A T E F R O M	D A T E F R O M	D A T E F R O M	D A T E F R O M			D A T E O F
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
	01000		SD-01 Preconstruction Submittals														
			Title Evidence														
			Invoice Copies														
			Payment Evidence														
			Photographs	1.15													
			SD-03 Product Data														
			Cost or Pricing Data	1.7													
			SD-05 Design Data														
			Progress Schedule	1.2	G WA												
	01050		SD-01 Preconstruction Submittals														
			Shut Down Utility Services		G WA												
			Advance Notice														
	01060		SD-01 Preconstruction Submittals														
			Safety Supervisor	1.3	G WA												
			SD-07 Certificates														
			Language Certification	1.3													
			SD-09 Manufacturer's Field														
			Reports														
			Activity Phase Hazard Analysis	1.3	G WA												
			Plan														
			Outline Report														
			OSHA Log														
	01451		SD-01 Preconstruction Submittals														
			CQC Plan	3.2	G WA												
			Phase Notification														
			CQC Mgr Qualification		G WA												

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

McMillan WTP Roof Replacement

CONTRACTOR

A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C I F I C S E C T	D E S C R I P T I O N	P A R A G R A P H	G O V T C L A S S I F I C A T I O N	C O N T R A C T O R : S C H E D U L E D A T E S			C O N T R A C T O R A C T I O N		A P P R O V I N G A U T H O R I T Y				M A I L E D T O C O N T R A C T O R	R E M A R K S	
						S U B M I T	B Y	B Y	A C T I O N	D A T E O F	D A T E F R O M	D A T E F R O M	D A T E F R O M	D A T E O F			D A T E O F
	01451		SD-05 Design Data														
			Notification of Changes	3.2.4													
			Punchlist	3.8.1													
			Minutes	3.3													
			SD-06 Test Reports														
			Tests	3.7.1													
			Documentation	3.9													
			Tests Performed	3.7.1													
			QC Records		G WA												
	01562		SD-01 Preconstruction Submittals														
			Implementation	1.5	G WA												
	01720		SD-11 Closeout Submittals														
			Progress Prints		G WA												
			Final Requirements	1.6	G WA												
			CADD Files														
	02220		SD-03 Product Data														
			Work Plan		G WA												
			SD-07 Certificates														
			Demolition plan	1.10	G WA												
			Notifications		G WA												
	07220		SD-03 Product Data														
			Application of Insulation	3.7	G WA												
			Inspection	3.8	G WA												
			SD-07 Certificates														
			Insulation	2.2	G WA												
	07510		SD-03 Product Data														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

McMillan WTP Roof Replacement

CONTRACTOR

A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C T S E C T	D E S C R I P T I O N	P A R A G R A P H G #	G O V T C L A S S I F I C A T I O N	C O N T R A C T O R : S C H E D U L E D A T E S			C O N T R A C T O R A C T I O N		A P P R O V I N G A U T H O R I T Y				M A I L E D T O C O N T R A C T O R / R E M A R K S			
						S U B M I T	B Y	B Y	A C T I O N	D A T E O F	D A T E F R O M	D A T E F R O M	D A T E F R O M	D A T E O F		D A T E F R O M	D A T E O F	D A T E F R O M
			07510	Inspection	3.19	G	WA											
				SD-07 Certificates														
				Bitumen	2.2	G	WA											
				Felt	2.5	G	WA											
				Cants	2.4	G	WA											
			07600	SD-02 Shop Drawings														
				Materials	2.1	G	WA											
			09200	SD-03 Product Data														
				Lathing Installation														
				SD-07 Certificates														
				Qualifications	1.3	G	WA											
				Gypsum Plaster	2.8	G	WA											

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

1. GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. ASTM B 564 Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ACI INTERNATIONAL (ACI)

P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
Internet: <http://www.aci-int.org>
AOK 6/00
LOK 6/00

ACOUSTICAL SOCIETY OF AMERICA (ASA)

2 Huntington Quadrangle
Melville, NY 11747-4502
Ph: 516-576-2360
Fax: 516-576-2377
email: asa@aip.org
Internet: <http://asa@aip.org>
AOK 6/00
LOK 6/00

AGRICULTURAL MARKETING SERVICE (AMS)

Seed Regulatory and Testing Branch
USDA, AMS, LS Div.

Room 209, Bldg. 306, BARC-East
Beltsville, MD 20705-2325
Ph: 301-504-9430
Fax: 301-504-8098
Internet: <http://www.ams.usda.gov/lsg>
e-mail: james_p_tripplitt@usda.gov
AOK 6/00
LOK 6/00

AIR CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

4301 North Fairfax Dr., Suite 425
ATTN: Pubs Dept.
Arlington, VA 22203
Ph: 703-524-8800
Fax: 703-528-3816
E-mail: ari@ari.org
Internet: www.ari.org
AOK 6/00
LOK 6/00

AIR CONDITIONING CONTRACTORS OF AMERICA (ACCA)

1712 New Hampshire Avenue, NW
Washington, DC 20009
Ph: 202-483-9370
FAX: 202-588-1217
Intrnet: www.acca.org
AOK 6/00
LOK 6/00

AIR DIFFUSION COUNCIL (ADC)

104 So. Michigan Ave., No. 1500
Chicago, IL 60603
Ph: 312-201-0101
Fax: 312-201-0214
Internet: www.flexibleduct.org
AOK 6/00
LOK 6/00

AIR MOVEMENT AND CONTROL ASSOCIATION (AMCA)

30 W. University Dr.
Arlington Heights, IL 60004-1893
Ph: 847-394-0150
Fax: 847-253-0088
Internet: www.amca.org
AOK 6/00
LOK 6/00

ALUMINUM ASSOCIATION (AA)

900 19th Street N.W.
Washington, DC 20006
Ph: 202-862-5100
Fax: 202-862-5164
Internet: www.aluminum.org
AOK 6/00
LOK 6/00

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

1827 Walden Ofc. Sq.
Suite 104
Schaumburg, IL 60173-4268
Ph: 847-303-5664
Fax: 847-303-5774
Internet: www.aamanet.org
AOK 6/00
LOK 6/00

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

444 N. Capital St., NW, Suite 249
Washington, DC 20001
Ph: 800-231-3475 202-624-5800
Fax: 800-525-5562 202-624-5806
Internet: www.aashto.org
AOK 6/00
LOK 6/00

NOTE: AASHTO documents with numbers beginning with M or T are available only in Standard Specifications for Transportation Materials and Methods of Sampling and Testing, 1998 @\$289.00\X

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

P.O. Box 12215
1 Davis Drive
Research Triangle Park, NC 27709-2215
Ph: 919-549-8141
Fax: 919-549-8933
Internet: aatcc.org
AOK 6/00
LOK 6/00

AMERICAN BEARING MANUFACTURERS ASSOCIATION (AFBMA)

1200 19th Street, NW, Suite 300
Washington, DC 20036-2422
Ph: 202-429-5155
Fax: 202-828-6042
Internet: abma-dc.org
AOK 6/00
LOK 6/00

AMERICAN BOILER MANUFACTURERS ASSOCIATION (ABMA)

950 North Glebe Road, Suite 160
Arlington, Virginia 22203-1824
Ph:703-522-7350
Fax: 703-522-2665
Internet: abma.com
AOK 6/00
LOK 6/00

AMERICAN CONCRETE PIPE ASSOCIATION (ACPA)

222 West Las Colinas Blvd., Suite 641
Irving, TX 75039-5423
Ph: 972-506-7216
Fax: 972-506-7682
Internet: <http://www.concrete-pipe.org>
e-mail: info@concrete-pipe.org
AOK 6/00
LOK 6/00

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

1330 Kemper Meadow Dr.
Suite 600
Cincinnati, OH 45240
Ph: 513-742-2020
Fax: 513-742-3355
Internet: www.acgih.org
E-mail: pubs@acgih.org
AOK 6/00
LOK 6/00

AMERICAN FOREST & PAPER ASSOCIATION (AF&PA)

American Wood Council
ATTN: Publications Dept.
1111 Nineteenth St. NW, Suite 800
Washington, DC 20036
Ph: 800-294-2372 202-463-2700
Fax: 202-463-2471
Internet: <http://www.afandpa.org>
AOK 6/00
LOK 6/00

AMERICAN GAS ASSOCIATION (AGA)

400 N. Capitol St. N.W. Suite 450
Washington, D.C. 20001
Ph: 202-824-7000
Fax: 202-824-7115
Internet: www.aga.org
AOK 6/00

LOK 6/00

AMERICAN GAL ASSOCIATION LABORATORIES (AGAL)

Address

Ph:

Fax:

Internet:

AMERICAN GEAR MANUFACTURERS ASSOCIATION (AGMA)

1500 King St., Suite 201
Alexandria, VA 22314-2730
Ph: 703-684-0211
Fax: 703-684-0242
Internet: www.agma.org
AOK 6/00
LOK 6/00

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

One East Wacker Dr., Suite 3100
Chicago, IL 60601-2001
Ph: 312-670-2400
Publications: 800-644-2400
Fax: 312-670-5403
Internet: www.aisc.org
AOK 6/00
LOK 6/00

AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC)

7012 So. Revere Parkway, Suite 140
Englewood, CO 80112
Ph: 303-792-9559
Fax: 303-792-0669
Internet: www.aitc-glulam.org
AOK 6/00
LOK 6/00

AMERICAN IRON AND STEEL INSTITUTE (AISI)

1101 17th St., NW Suite 1300
Washington, DC 20036
Ph: 202-452-7100
AOK 6/00
LOK 6/00

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

11 West 42nd St
New York, NY 10036
Ph: 212-642-4900

Fax: 212-398-0023
Internet: www.ansi.org/
Note: Documents beginning with the letter "S" can be ordered from:
Acoustical Society of America
P. O. Box 1020
Sweickley, PA 15143-9998
Ph: 412-741-1979
Fax: 412-741-0609
Internet: asa.aip.org
AOK 6/00
LOK 6/00

AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA)

1250 I St., NW, Suite 500
Washington, DC 20005-3922
Ph: 202-789-2900
FAX: 202-789-1893
AOK 6/00
LOK 6/00

AMERICAN PETROLEUM INSTITUTE (API)

1220 L St., NW
Washington, DC 20005-4070
Ph: 202-682-8000
Fax: 202-962-4776
Internet: <http://www.api.org>
AOK 6/00
LOK 6/00

AMERICAN RAILWAY ENGINEERING & MAINTENANCE-OF-WAY ASSOCIATION
(AREMA)

8201 Corporate Dr., Suite 1125
Landover, MD 20785-2230
Ph: 301-459-3200
Fax: 301-459-8077
Internet: www.arema.org
AOK 6/00
LOK 6/00

AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING (ASNT)

1711 Arlingate Lane
P.O. Box 28518
Columbus, OH 43228-0518
Ph: 800-222-2768
Fax: 614-274-6899
Internet: www.asnt.org
AOK 6/00
LOK 6/00

AMERICAN SOCIETY FOR QUALITY (ASQ)

611 East Wisconsin Ave.
P.O. Box 3005
Milwaukee, WI 53201-3005
Ph: 800-248-1946
Fax: 414-272-1734
Internet: <http://www.asq.org>
AOK 6/00
LOK 6/00

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
Ph: 610-832-9585
Fax: 610-832-9555
Internet: www.astm.org
AOK 6/00
LOK 6/00

NOTE: The annual ASTM Book of Standards (66 Vol) is available for \$3500.00. Prices of individual standards vary.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

1801 Alexander Bell Drive
Reston, VA 20190-4400
Ph: 703-295-6300 - 800-548-2723
Fax: 703-295-6222
Internet: www.asce.org
e-mail: marketing@asce.org
AOK 6/00
LOK 6/00

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

1791 Tullie Cir., NE
Atlanta, GA 30329
Ph: 800-527-4723 or 404-636-8400
Fax: 404-321-5478
Internet: <http://www.ashrae.org>
AOK 6/00
LOK 6/00

AMERICAN SOCIETY OF SANITARY ENGINEERING FOR PLUMBING AND SANITARY RESEARCH (ASSE)

901 Canterbury, Suite A
Westlake, OH 44145
Ph: 440-835-3040
Fax: 440-835-3488
E-mail: asse@ix.netcom.com

Internet: www.asse-plumbing.org
AOK 6/00
LOK 6/00

AMERICAN WATER WORKS ASSOCIATION(AWWA)

6666 West Quincy
Denver, CO 80235
Ph: 800-926-7337 - 303-794-7711
Fax: 303-347-0804
Internet: www.awwa.org
AOK 6/00
LOK 6/00

AMERICAN WELDING SOCIETY (AWS)

550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
Internet: <http://www.amweld.org>
AOK 6/00
LOK 6/00

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

P.O. Box 5690
Grandbury, TX 76049-0690
Ph: 817-326-6300
Fax: 817-326-6306
Internet: <http://www.awpa.com>
AOK 8/00
LOK 6/00

NOTE: AWPA Book of Standards is published yearly @\$75.00;
individual standards may be ordered separately for \$12.00 to
\$28.00 each.

APA - THE ENGINEERED WOOD ASSOCIATION (APA)

P.O.Box 11700
Tacoma, WA 98411-0700
Ph: 253-565-6600
Fax: 253-565-7265
Internet: www.apawood.org
AOK 8/00
LOK 6/00

Note: Prices are available only by calling APA

ARCHITECTURAL WOODWORK INSTITUTE (AWI)

1952 Isaac Newton Square West
Reston, VA 20190
Ph: 703-733-0600
Fax: 703-733-0584
Internet: www.awinet.org
AOK 8/00
LOK 6/00

ARMY ENVIRONMENTAL CENTER (AEC)

5179 Hoadley Road
Aberdeen Roving Ground, MD 21010-5401
Internet: www.aec.army.mil
AOK 8/00

ARMY PAMPHLET (DAPAM)

www.usace.army.mil/publications

ASBESTOS CEMENT PIPE PRODUCERS ASSOCIATION (ACPPA)

1745 Jefferson Davis Highway, Suite 406
Arlington, VA 22202
Ph: 703-412-1153
Fax: 703-412-1152

ASME INTERNATIONAL (ASME)

Three Park Avenue
New York, NY 10016-5990
Ph: 212-591-7722
Fax: 212-591-7674
Internet: www.asme.org
AOK 8/00
LOK 6/00

ASPHALT INSTITUTE (AI)

Research Park Dr.
P.O. Box 14052
Lexington, KY 40512-4052
Ph: 606-288-4960
Fax: 606-288-4999
Internet: www.asphaltinstitute.org
AOK 8/00
LOK 6/00

ASSOCIATED AIR BALANCE COUNCIL (AABC)

1518 K St., NW, Suite 503
Washington, DC 20005

Ph: 202-737-0202
Fax: 202-638-4833
Internet: www.aabchq.com
8/00
LOK 6/00

ASSOCIATION FOR THE ADVANCEMENT OF MEDICAL INSTRUMENTATION (AAMI)

1110 N. Globe Rd., Suite 220
Arlington, VA 22201-5762
Ph: 703-525-4890
Fax: 703-525-1424
Internet: www.aami.org
AOK 8/00
LOK 6/00

ASSOCIATION OF EDISON ILLUMINATING COMPANIES (AEIC)

600 No. 18th St.
P.O. Box 2641
Birmingham, AL 35291
Ph: 205-257-2530
Fax: 205-257-2540
Internet: <http://www.aeic.org>
AOK 8/00
LOK 6/00

ASSOCIATION OF HOME APPLIANCE MANUFACTURERS (AHAM)

1111 19th St. NW., Suite 402
Washington, DC 20036
Ph: 202-872-5955
Fax: 202-872-9354
Internet: <http://www.aham.org>
AOK 8/00
LOK 6/00

ASSOCIATION OF IRON AND STEEL ENGINEERS (AISE)

Three Gateway Center, Suite 1900
Pittsburg, PA 15222-1004
Ph: 412-281-6323
Fax: 412-281-4657
Internet: <http://www.aise.org>
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-- End of Section --

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740	(1999b) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(1998a) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 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.

1.3 SUBMITTALS

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

SD-01 Preconstruction Submittals

CQC Plan; G WA.

Identifies personnel, procedures, control, instructions, test, records, and forms to be used.

Phase Notification

The Government shall be notified in a specified amount of time in advance of beginning the preparatory control phase.

CQC Mgr Qualification; G WA.

The evaluation of the project to determine the level of CQC System Manager

required.

SD-05 Design Data

Notification of Changes

Any changes made by the Contractor.

Punchlist

Near the completion of all work, the CQC System Manager shall prepare a list of items which do not conform to the approved drawings and specifications.

Minutes

Prepared by the Government and signed by both the Contractor and the Contracting Officer and shall become a part of the contract file.

SD-06 Test Reports

Tests

Specified or required tests shall be done by the Contractor to verify that control measures are adequate.

Documentation

Results of tests taken.

Tests Performed

An information copy provided directly to the Contracting Officer.

QC Records; G WA.

Provide factual evidence that required quality control activities and/or tests have been performed.

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 operations, both on site 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 CQC PLAN

3.2.1 General

The Contractor shall furnish for review by the Government, not later than 30 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 60 days of operation. 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.

3.2.2 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both on site and offsite, including work by subcontractors, 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 agents. These procedures

shall be in accordance with Section 01330 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. The Contractor shall include a copy of his proposed laboratory's latest Corps of Engineers inspection report in the Quality Control Plan. The inspection report details the tests that the lab has been validated to perform under Corps of Engineers contracts. (Laboratory facilities will be approved by the Contracting Officer.)
- f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- g. Procedures for tracking 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.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the 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.

3.2.4 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, 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 14 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, control activities, testing, administration of the system for both on site 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 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, show 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 on site 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 5 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.

3.4.5 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

Submittals, if needed, shall be made as specified in Section 01330 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 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 72 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 72 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 on site, 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, on site 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.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2 Laboratory Approval

The Contractor shall use a testing laboratory that has been previously approved by the Corps of Engineers or obtain approval for a laboratory established at the project site. Approved laboratories are listed at the following web site: <http://www.wes.army.mil/SL/MTC/ValStatesTbl.htm> If the Contractor elects to set up an on-site laboratory at the project site, the Contractor will be assessed \$4500.00 for the cost of inspection of this lab by the Corps of Engineers.

3.7.3 On site Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing

Furnishing or Transportation of Samples for Testing: Costs incidental to the transportation of samples or materials will be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the following address:

Field Exploration Unit
Fort McHenry Yard
Baltimore, Maryland 21230"

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the completion of all work or any increment thereof established by a completion time stated in the Special Clause in Section 00800 of the Solicitation entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the CQC System Manager shall conduct an inspection of the work and develop a punchlist of items which do not conform to the approved drawings and specifications. Such a list of deficiencies shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and 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 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 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. Off-site 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 24 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 SAMPLE FORMS

Sample forms enclosed at the end of this section.

3.11 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 --

Contractor's Name:	_____
Address:	_____ _____
Phone Number:	_____

CONSTRUCTION QUALITY CONTROL REPORT

PROJECT NAME: _____
 LOCATION: _____ DATE: _____
 CONTRACT NUMBER: _____ REPORT NO.: _____

SUPERINTENDENT: _____			
TYPE OF WORKERS	NUMBER	TYPES OF CONSTRUCTION EQUIPMENT ON SITE	NUMBER
SUBCONTRACTORS			
COMPANY	RESPONSIBILITY	FOREMAN	NO. OF WORKERS
TOTALS			
NO. OF WORKERS TODAY	MANHOURS TODAY	MANHOURS FOR THIS PERIOD	
CONTRACT MATERIALS AND EQUIPMENT DELIVERED TO SITE:			
WEATHER: _____		SITE CONDITIONS: _____	
DID A DELAY OR WORK STOPPAGE OCCUR TODAY? _____ IF YES, EXPLAIN.			
HAS ANYTHING DEVELOPED IN THE WORK WHICH MAY LEAD TO A CHANGE OR FINDING OF FACT? _____ IF YES, EXPLAIN.			

DESCRIPTION OF ALL WORK PERFORMED TODAY
(LIST BY DEFINABLE FEATURES OF WORK)

PREPARATORY INSPECTION:

LIST ALL INSPECTIONS BY SUBJECT AND SPECIFICATION LOCATION.
ATTACH MINUTES OF MEETING AND LIST OF ALL ATTENDEES.

HAVE ALL REQUIRED SUBMITTALS AND SAMPLES OF CONSTRUCTION BEEN
APPROVED.

DO THE MATERIALS AND EQUIPMENT TO BE USED CONFORM TO THE SUBMITTALS?

HAS ALL PRELIMINARY WORK BEEN INSPECTED, TESTED, AND COMPLETED?

TEST REQUIRED AND INSPECTION TECHNIQUES TO BE EXECUTED TO PROVE
CONTRACT COMPLIANCE (INCLUDE BOTH EXPECTED AND ACTUAL RESULTS)

HAS A PHASE HAZARD ANALYSIS BEEN PERFORMED?

COMMENTS AND DEFICIENCIES NOTED AND CORRECTIVE ACTIONS TAKEN:

ALL INSTRUCTIONS RECEIVED FROM QA PERSONNEL AND ACTIONS TAKEN:

JOB SAFETY (INCLUDE MEETINGS HELD AND DEFICIENCIES NOTED WITH CORRECTIVE ACTIONS):

INITIAL INSPECTION:

LIST ALL INSPECTIONS BY SUBJECT AND SPECIFICATION LOCATION.
COMMENTS AND/OR DEFICIENCIES NOTED AND CORRECTIVE ACTION TAKEN:

FOLLOW-UP INSPECTION:

LIST ALL INSPECTIONS BY SUBJECT AND SPECIFICATION LOCATION.
COMMENTS AND/OR DEFICIENCIES NOTED AND CORRECTIVE ACTION TAKEN.

SIGNATURE: _____
QUALITY CONTROL REPRESENTATIVE/MANAGER

THE ABOVE REPORT IS COMPLETE AND CORRECT. ALL MATERIALS AND EQUIPMENT USED AND ALL WORK PERFORMED DURING THIS REPORTING PERIOD ARE IN COMPLIANCE WITH THE CONTRACT SPECIFICATIONS, AND SUBMITTALS, EXCEPT AS NOTED ABOVE.

SIGNATURE: _____
CONTRACTOR'S APPROVED AUTHORIZED REPRESENTATIVE

SECTION 01510

TEMPORARY CONSTRUCTION ITEMS

PART 1 GENERAL

1.1 General

The work covered by this section consists of furnishing all labor, materials, equipment, and services and performing all work required for or incidental to the items herein specified. No separate payment will be made for the construction and services required by this section, and all costs in connection therewith shall be included in the overall cost of the work unless specifically stated otherwise.

1.3 PROJECT SIGN: (AUG 1974)

A project sign shall be provided and erected at a location designated by the Contracting Officer. The sign shall conform to the requirements as shown on Attachment No. 1, a copy of which is attached hereto. The sign shall be erected as soon as possible and within 15 days after the date of receipt of notice to proceed. Upon completion of the project, the sign shall be removed and disposed of by the Contractor. (CENAB)

1.4 SAFETY SIGN (AUG 1974)

A safety sign shall be provided and erected at a location designated by the Contracting Officer. The sign shall conform to the requirements as shown on Attachment No. 2, a copy of which is attached hereto. The sign shall be erected as soon as possible and within 15 days after the date of receipt of notice to proceed. The data required by the sign shall be corrected daily, with light colored metallic or non-metallic numerals. Numerals, including mounting hardware, shall be subject to the approval of the Contracting Officer. Upon completion of the project, the sign shall be removed and disposed of by the Contractor. (CENAB)

1.12 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 hazardous areas during both day and night. (CENAB)

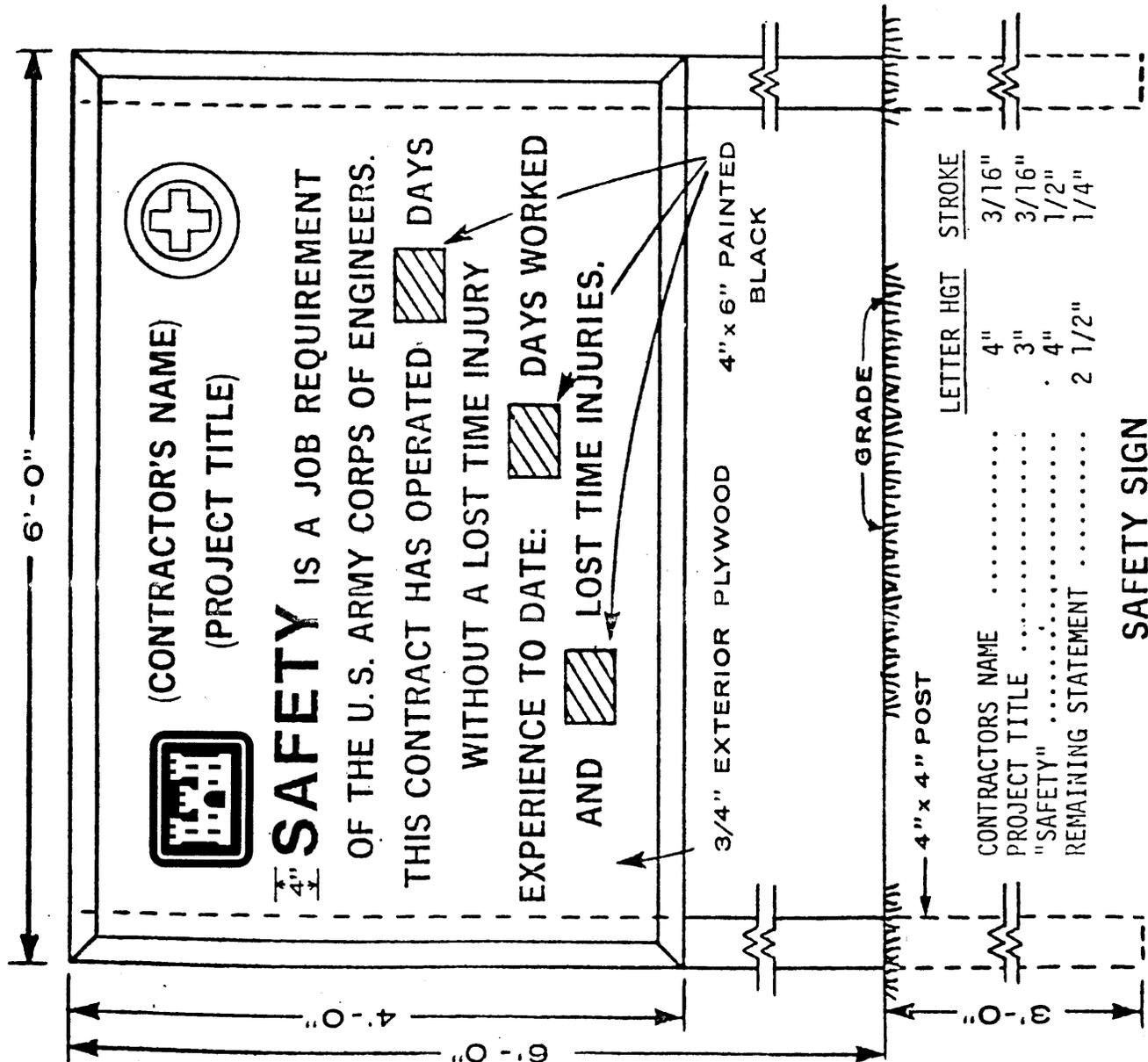
PART 2 PRODUCT
NOT APPLICABLEPART 3 EXECUTION
NOT APPLICABLE

ATTACHMENTS:

Attachment 1 Project Sign

Attachment 2 Safety Sign

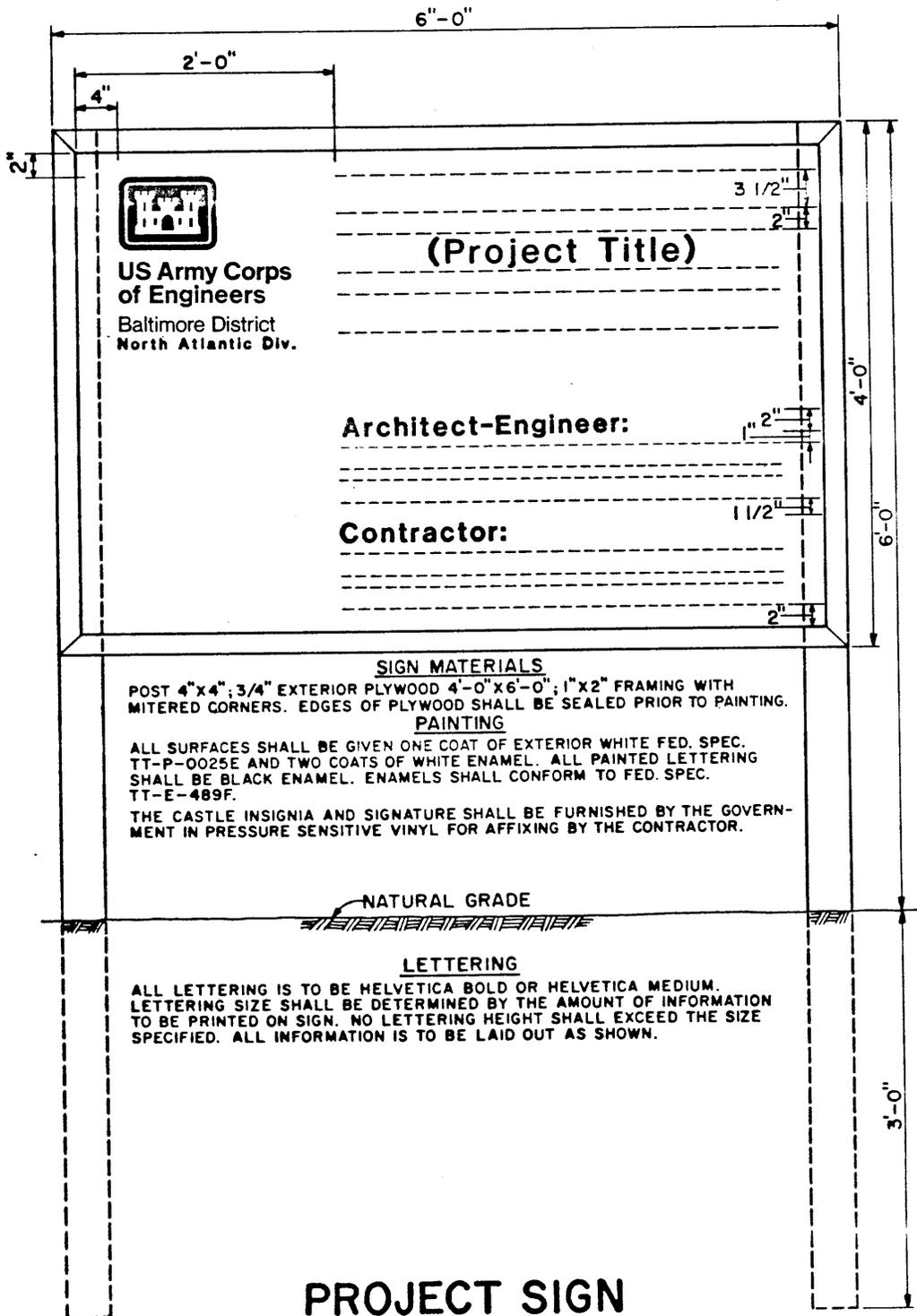
-- End of Section --



SIGN MATERIALS

POST 4"x4"; 3/4" EXTERIOR PLYWOOD 4'-0"x6'-0", 2"x2" FRAMING WITH MITERED CORNERS. FRAMING ENCLOSED EDGES OF PLYWOOD AND BE INSTALLED FLUSH ON BACK SIDE AND PROJECTING IN FRONT. OUTSIDE WHITE, HOUSE PAINT-2 COATS; BOTH SIDES AND EDGES; COLORS IN OIL FOR LETTERING - LAMP BLACK AND BULLETIN RED; CASTLE SHALL BE RED; LETTERING SHALL BE BLACK; THE CROSS SHALL BE GREEN

THE CASTLE INSIGNIA SHALL BE FURNISHED BY THE GOVERNMENT IN PRESSURE SENSITIVE VINYL FOR AFFIXING BY THE CONTRACTOR.



SECTION 01562

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

The work covered by this section consists of furnishing all labor, materials and equipment and performing all work required for the prevention of environmental pollution during and as the result of construction operations under this contract except for those measures set forth in other Technical Provisions of these specifications. For the purpose of this specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importances to human life or affect other species of importance to man. The control of environmental pollution requires consideration of air, water, and land.

1.1 APPLICABLE REGULATIONS

In order to prevent, and to provide for abatement and control of any environmental pollution arising from construction activities, the Contractor and his subcontractors in the performance of this contract, shall comply with all applicable Federal, State, and local laws, and regulations concerning environmental pollution control and abatement, and all applicable provisions of the Corps of Engineers Manual, EM 385-1-1, entitled "Safety and Health Requirements Manual" in effect on the date of solicitation as well as the specific requirements stated elsewhere in the contract specifications.

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Implementation; G WA.

Contractor's proposal to put into practice the environmental pollution control.

1.3 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any non-compliance 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 authorized representative at the site of the work, shall be deemed sufficient notification for the purpose. 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 any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it was later determined that the Contractor was in compliance.

1.4 SUBCONTRACTORS

Compliance with the provisions of this section by subcontractors will be the responsibility of the Contractor.

1.5 IMPLEMENTATION

Prior to commencement of the work the Contractor will:

1.5.1 Approval

Submit in writing, for approval, his proposals for implementing this section for environmental pollution control;

1.5.2 Environmental Pollution Control

Meet with the representatives of the Contracting Officer to develop mutual understanding relative to compliance with this provision and administration of the environmental pollution control program.

1.6 PROTECTION OF WATER RESOURCES

The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acid construction wastes or other harmful materials. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County and Municipal laws concerning pollution of rivers and streams. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in streams through or adjacent to the project areas.

1.7 BURNING

Unless otherwise specified in other sections of the specifications, burning will be allowed only if authorized in writing by the Contracting Officer. However, the specific time, location and manner of burning shall be subject to the approval of the Contracting Officer. Fires shall be guarded at all times and shall be under constant surveillance until they have burned out or have been extinguished. All burning shall be so thorough that the materials will be reduced to ashes.

1.8 DUST CONTROL

The Contractor shall maintain all work areas free from dust which would contribute to air pollution. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust.

Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

1.9 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

During the life of this contract, the Contractor shall maintain all facilities constructed for pollution control under this contract as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

PART 2 PRODUCT
NOT APPLICABLE

PART 3 EXECUTION
NOT APPLICABLE

-- End of Section --

SECTION 01720

AS-BUILT DRAWINGS - CADD

PART 1 GENERAL

1.1 Preparation

This section covers the preparation of as-built drawings complete, as a requirement of this contract. The terms "drawings," "contract drawings," "drawing files," and "final as-built drawings" refer to a set of computer-aided design and drafting (CADD) contract drawings in electronic file format which are to be used for as-built drawings.

1.2 PROGRESS MARKED UP AS-BUILT PRINTS

The Contractor shall revise one set of paper prints to show the as-built conditions during the prosecution of the project. These as-built marked prints shall be kept current and available on the jobsite at all times. All changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. The as-built marked prints will be jointly reviewed for accuracy and completeness by the Contracting Officer and a responsible representative of the construction Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the as-built drawings as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the as-built drawings and will continue the monthly deduction of the 10% retainage even after 50% completion of the contract. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and a representative of the Contractor regarding the accuracy and completeness of updated drawings. The prints shall show the following information, but not be limited thereto:

1.2.1 Location and Description

The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions to permanent features.

1.2.2 Location and Dimensions

The location and dimensions of any changes within the building or structure.

1.2.3 Corrections

Correct grade, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

Correct elevations if changes were made in site grading.

1.2.4 Changes

Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

The topography, invert elevations and grades of all drainage installed or affected as a part of the project construction.

All changes or modifications which result from the final inspection.

1.2.5 Options

Where contract drawings or specifications present options, only the option selected for construction shall be shown on the as-built prints.

1.3 SUBMITTALS

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

SD-11 Closeout Submittals

Progress Prints; G WA.

Preparation of two copies of as-builts from the Contractor to the Contracting Officer for review and approval.

Final Requirements; G WA.

CADD Files.

Shall consist of two sets of completed as-built contract drawings on separate media consisting of both CADD files (compatible with the Auto CAD Release 2000) and a CALS Type 1, Group 4, Raster Image File of each contract drawing.

Receipt by the Contractor of the approved marked as-built prints.

1.4 PRELIMINARY SUBMITTAL

At the time of final inspection, the Contractor shall prepare two copies of the progress as-built prints and these shall be delivered to the Contracting Officer for review and approval. These as-built marked prints shall be neat, legible and accurate. The review by Government personnel will be expedited to the maximum extent possible. Upon approval, one copy of the as-built marked prints will be returned to the Contractor for use in preparation of final as-built drawings. If upon review, the as-built marked prints are found to contain errors and/or omissions, they shall be returned to the Contractor for corrections. The Contractor shall complete

the corrections and return the as-built marked prints to the Contracting Officer within ten (10) calendar days.

1.5 DRAWING PREPARATION

1.5.1 As-Built Drawings Approval

Upon approval of the as-built prints submitted, the Contractor will be furnished by the Government one set of contract drawings, with all amendments incorporated, to be used for as-built drawings. These contract drawings will be furnished on CD-ROM. These drawings shall be modified as may be necessary to correctly show all the features of the project as it has been constructed by bringing the contract set into agreement with the approved as-built prints, adding such additional drawings as may be necessary. These drawings are part of the permanent records of this project and the Contractor shall be responsible for the protection and safety thereof until returned to the Contracting Officer. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at no expense to the Government.

1.5.2 Proficient Personnel

Only personnel proficient in the preparation of engineering CADD drawings to standards satisfactory and acceptable to the Government shall be employed to modify the contract drawings or prepare additional new drawings. All additions and corrections to the contract drawings shall be equal in quality to that of the originals. Line work, line weights, lettering, layering conventions, and symbols shall be the same as the original line work, line weights, lettering, layering conventions, and symbols. If additional drawings are required, they shall be prepared using the specified electronic file format applying the same guidance specified for original drawings. The title block and drawing border to be used for any new as-built drawings shall be identical to that used on the contract drawings. All additions and corrections to the contract drawings shall be accomplished using CADD media files supplied by the Government. These contract drawings will already be compatible with the Using Agency/Sponsor's system when received by the Contractor. The Using Agency/Sponsor uses AutoCAD Release 2000 and CAD Overlay Release 2000 CADD software system. The mediafiles will be supplied on ISO 9660 Format CD-ROM.

The Contractor is responsible for providing all program files and hardware necessary to prepare as-built drawings. The Contracting Officer will review all as-built drawings for accuracy and the Contractor shall make all required corrections, changes, additions, and deletions.

1.5.3 Final Revisions

When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the General Contractor in letters at least 3/16 inch high. All other contract drawings shall be marked either "As-Built" drawing denoting no revisions on the sheet or "Revised As-Built" denoting one or more revisions. All original contract drawings shall be dated in the revision block (SEE ATTACHMENTS 1 and 2) located at the end of this section.

1.6 FINAL REQUIREMENTS

After receipt by the Contractor of the approved marked as-built prints and the original contract drawing files the Contractor will, within 30 days for contracts less than \$5 million or 60 days for contracts \$5 million and above, make the final as-built submittal. The submittal shall consist of the following:

a) Two sets of the as-built contract drawings on separate CD's (ISO 9660 Format CD-ROM) consisting of the updated CADD files and a CALS Type 1 Group 4 Raster Image File of each contract drawing plate. The CALS files shall be exact duplicates of the full sized plots of the completed as-built contract drawings at a resolution of 400 dpi and may be either plotted to CALS files directly from the CADD files, or scanned to file from the prints.

b) Two sets of full size paper prints (plots) of the completed as-built contract drawings.

c) The return of the approved marked as-built prints.

They shall be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any translations or adjustments necessary to accomplish this is the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with its CADD system. All paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Failure to submit as-built drawing files and marked prints as required herein shall be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

PART 2 PRODUCT
NOT APPLICABLE

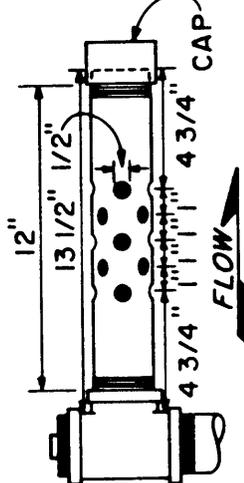
PART 3 EXECUTION
NOT APPLICABLE

-- End of Section --

RECORD DRAWING AS-BUILT XYZ CONTRACTOR

3	DEC 84	REVISED AS-BUILT	
2	29 APR 84	REVISED PER AMENDMENT NO.2 (DESCRIPTIVE)	A.E.P.
1	2 APR 84	REVISED PER AMENDMENT NO.1 (DESCRIPTIVE)	E.D.P.
REV	DATE	DESCRIPTION	BY
 U.S. ARMY ENGINEER DISTRICT, BALTIMORE CORPS OF ENGINEERS BALTIMORE, MARYLAND			
		FT. INDIANTOWN GAP	PENNSYLVANIA
<h2 style="margin: 0;">EQUIPMENT CONCENTRATION SITE & AMSA</h2> <h1 style="margin: 0;">COVER SHEET</h1>			
		DRAWING NUMBER	PLATE
		X-000-00-00	3
SCALE: AS SHOWN		DATE: 1 APR 84	SHEET 1

NOTE: USE STANDARD
2" STAINLESS STEEL
PIPE & FITTINGS.
EDGES OF HOLES TO
BE FREE OF BURRS
BUT NOT ROUNDED.
TUBE TO BE FIXED
IN A HORIZONTAL
POSITION.



2 DESIGN FOR 2" STATIC TUBE
NTS

SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.6 (1990) Safety Requirements for Demolition Operations

AIR CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

ARI Guideline K (1997) Containers for Recovered Fluorocarbon Refrigerants

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

40 CFR 61-SUBPART M National Emission Standard for Asbestos

40 CFR 82 Protection of Stratospheric Ozone; Refrigerant Recycling

49 CFR 173.301 Shipment of Compressed Gas Cylinders

U.S. DEFENSE LOGISTICS AGENCY (DLA)

DLA 4145.25 (June 2000) Storage and Handling of Liquefied and Compressed Gases and Their Full and Empty Cylinders

U.S. DEPARTMENT OF DEFENSE (DOD)

DOD 4000.25-1-M Requisitioning and Issue Procedures

MIL-STD-129 (Rev. N) Marking for Shipment and Storage

U.S. ARMY CORPS OF ENGINEERS (USACE)

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

1.2 GENERAL REQUIREMENTS

Do not begin demolition until authorization is received from the Contracting Officer. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless

otherwise directed, to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Contracting Officer. In the interest of occupational safety and health, the work shall be performed in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections.

1.3 SUBMITTALS

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

SD-03 Product Data

Work Plan; G WA

The procedures proposed for the accomplishment of the work. The procedures shall provide for safe conduct of the work, including procedures and methods to provide necessary supports, lateral bracing and shoring when required, careful removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations in accordance with EM 385-1-1.

SD-07 Certificates

Demolition plan; G WA

Notifications; G WA

Submit proposed demolition and removal procedures to the Contracting Officer for approval before work is started.

1.4 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," safety requirements shall conform with ANSI A10.6.

1.5 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris to occupied portions of the building and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

1.6 PROTECTION

1.6.2 Existing Work

Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government; any damaged items shall be repaired or replaced as approved by the Contracting Officer. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements.

1.6.3 Weather Protection

Where removal of existing roofing is necessary to accomplish work, have materials and workmen ready to provide adequate and temporary covering for protection from rainfall.

1.6.4 Trees

Trees within the project site which might be damaged during demolition shall be protected by a 6 foot high fence. The fence shall be securely erected a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Any tree that is damaged during the work under this contract shall be replaced in kind or as approved by the Contracting Officer.

1.6.5 Facilities

Protect electrical and mechanical services and utilities, if any and other structural components that are to remain. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.6.6 Protection of Personnel

During the demolition work the Contractor shall continuously evaluate the condition of the roof components being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.7 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.9 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by the Contracting Officer.

1.10 Required Data

Demolition plan shall include procedures for a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Include statements affirming Contractor inspection of the existing roof deck and its suitability to perform as a safe working platform or if inspection reveals a safety hazard to workers, state provisions for securing the safety of the workers throughout the performance of the work.

1.11 Environmental Protection

The work shall comply with the requirements of Section 01562 ENVIRONMENTAL PROTECTION.

1.12 USE OF EXPLOSIVES

Use of explosives will not be permitted.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

3.1.4 Roofing

Remove existing roof system and associated components in their entirety down to existing roof deck. Remove roofing system and insulation without damaging the roof deck. Sequence work to minimize building exposure between demolition and new roof materials installation. Install temporary roofing and flashing as necessary to maintain a watertight condition throughout the course of the work. Remove temporary work prior to installation of permanent roof system materials unless approved otherwise by the Contracting Officer. Make provisions for worker safety during demolition and installation of new materials as described in paragraphs entitled "Statements" and "Regulatory and Safety Requirements." Sequence the work to minimize hazard to workers.

3.1.4.1 Reroofing

When removing the existing roofing system from the roof deck, remove only as much roofing as can be recovered by the end of the work day, unless approved otherwise by the Contracting Officer. No opening in the roof

cover shall be attempted in threatening weather and any opening made shall be resealed prior to suspension of work the same day.

3.1.8 Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish.

3.2 FILLING

Holes and other hazardous openings shall be filled as specified to match the existing work.

3.3 DISPOSITION OF MATERIAL

3.3.1 Title to Materials

Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contracting Officer of the Contractor's demolition and removal procedures, and authorization by the Contracting Officer to begin demolition. The Government will not be responsible for the condition or loss of, or damage to, such property after contract award.

Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

3.3.2 Reuse of Materials and Equipment

Remove and store materials and equipment that are to be reused or relocated to prevent damage, and reinstall as the work progresses.

3.4 CLEANUP

Debris and rubbish shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

-- End of Section --

SECTION 07220

ROOF INSULATION

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A208.1 (1999) Particleboard Mat Formed Woods

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 208 (1995) Cellulosic Fiber Insulating Board

ASTM C 552 (2000) Cellular Glass Thermal Insulation

ASTM C 578 (1995) Rigid, Cellular Polystyrene Thermal Insulation

ASTM C 726 (2000) Mineral Fiber Roof Insulation Board

ASTM C 728 (1997) Perlite Thermal Insulation Board

ASTM C 1050 (1991) Rigid Cellular Polystyrene-Cellulosic Fiber Composite Roof Insulation

ASTM C 1177/C 1177M (1999) Glass Mat Gypsum Substrate for Use as Sheathing

ASTM C 1289 (1998) Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board

ASTM D 41 (1994) Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing

ASTM D 226 (1997a) Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

ASTM D 312 (2000) Asphalt Used in Roofing

ASTM D 2178 (1997a) Asphalt Glass Felt Used in Roofing and Waterproofing

ASTM D 4586 (1993; R 1999) Asphalt Roof Cement, Asbestos Free

ASTM D 4897 (1998) Asphalt-Coated Glass-Fiber Venting
Base Sheet Used in Roofing

FACTORY MUTUAL ENGINEERING AND RESEARCH (FM)

FM P9513 (1996) Loss Prevention Data for Roofing
Contractors

FM P7825a (1998) Approval Guide Fire Protection

FM P7825c (1998) Approval Guide Building Materials

UNDERWRITERS LABORATORIES (UL)

UL Bld Mat Dir (1999) Building Materials 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 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Application of Insulation; G WA

Insulation manufacturer's recommendations for the application and installation of insulation.

Inspection; G WA

The inspection procedure for insulation installation, prior to start of roof insulation work.

SD-07 Certificates

Insulation; G WA

Certificate attesting that the expanded perlite or polyisocyanurate insulation contains recovered material and showing estimated percent of recovered material. Certificates of compliance for felt materials.

1.3 STORAGE OF MATERIALS

Insulation materials shall be stored in accordance with manufacturer's instructions. Insulation shall be kept dry at all times, before, during, and after delivery to the site and shall be stored in an enclosed building or in a closed trailer. Wet insulation shall be permanently removed from the site.

1.4 FIRE CLASSIFICATION

Insulation shall have been tested as part of a roof construction assembly of the type used in this project, and the construction shall be listed as Fire-Classified in UL Bld Mat Dir or Class I in FM P7825a, except for installation on poured concrete decks or precast concrete roof deck panels.

PART 2 PRODUCTS

2.1 BITUMINOUS MATERIALS

Bituminous materials shall conform to the following requirements:

2.1.1 Asphalt Bitumen

ASTM D 312, Type III or IV. Asphalt flash point, finished blowing temperature, and equiviscous temperature (EVT) for mop and for mechanical spreader application shall be indicated on bills of lading or on individual containers.

2.1.2 Asphalt Cement

ASTM D 4586, Type I for surfaces sloped from 0 to 3 inches per foot; Type II for slopes greater than 3 inches per foot.

2.1.3 Asphalt Primer

ASTM D 41.

2.2 INSULATION

Insulation shall be a standard product of the manufacturer and shall be factory marked with the manufacturer's name or trade mark, the material specification number, the R-value at 75 degrees F, and the thickness. Minimum thickness shall be as recommended by the manufacturer. Boards shall be marked individually. The thermal resistance of insulation shall be not less than the R-value shown on the drawings. The insulation manufacturing process shall not include chlorofluoro carbons (CFC) or formaldehydes. Insulation shall be one, or a combination of the following materials:

2.2.3 Expanded-Perlite Insulation Board

ASTM C 728 with a minimum recovered material content of 23 percent of the expanded perlite portion of the board.

2.2.6 Polyisocyanurate

ASTM C 1289, Type I, or ASTM C 1289 Type II, having minimum recovered material content of 9 percent by weight of the polyisocyanurate portion of the board.

2.3 ADHESIVES

Adhesives shall be per insulation manufacturer's recommendations.

2.7 WOOD NAILERS

Wood nailers shall be pressure treated. Edge nailers shall be not less than nominal 6 inches wide and of thickness to finish flush with the top surface of the insulation. Surface mounted nailers shall be a nominal 3 inches wide by the full thickness of the insulation.

PART 3 EXECUTION

3.1 COORDINATION REQUIREMENTS

Insulation and roofing membrane shall be finished in one operation up to the line of termination at the end of each day's work. Completed sections shall be glaze coated when more than one day is required to finish the roofing. Phased construction will not be permitted.

3.2 ENVIRONMENTAL CONDITIONS

The temperature of the roofing materials shall be as required by the manufacturer. Air temperature shall be above 40 degrees F and there shall be no visible ice, frost, or moisture on the roof deck when the insulation and roofing are installed. Wind conditions shall be suitable for installation of insulation: Wind chill may affect the proper application temperatures of materials; hot materials may be blown about, creating safety dangers; insulation boards may become difficult and hazardous to handle; wrappers, coverings, and other debris may become airborne, and possibly contaminate laps and seams.

3.3 SUBSTRATE PREPARATION

The substrate construction of any bay or section of the building shall be completed before insulation work is begun thereon. Vents and other items penetrating the roof shall be secured in position and properly prepared for flashing. Prior to application of insulation, substrate joints shall be covered with a 4 inch strip of roofing felt, embedded in and coated with asphalt cement. Substrate surface shall be smooth, clean, and dry at time of application.

3.4 HEATING OF ASPHALT

Asphalt shall not be heated higher than 105 degrees F above the EVT or 50 degrees F below the flash point, or 525 degrees F, whichever is lower. EVT and flash point temperatures of asphalt in the kettle shall be conspicuously posted on the kettle. Kettle shall be provided with automatic thermostatic controls and an accurate thermometer. Kettle operators shall be in attendance at all times during heating to ensure that the maximum temperature is not exceeded. Asphalt shall be applied within a range of 25 degrees F below or above the EVT, or as specified by the manufacturer. Application temperature shall be measured at the mop bucket or mechanical applicator. Asphalt at a temperature below this range shall be returned to the kettle. Flame-heated equipment shall not be placed on the roof.

3.6 INSTALLATION OF WOOD NAILERS

Nailers shall be secured to cast-in-place deck materials by not less than 3/8 inch diameter anchors embedded in the deck not over 47 inches on centers. Nailers shall be secured to precast deck materials as indicated.

Bolt anchors shall have nuts and washers countersunk, and bolts shall be cut flush with top of nailer. Powder-actuated fasteners, sized and spaced for nailer anchorage equivalent to that specified and indicated, may be used when approved. Surface mounted nailers shall be installed parallel with the roof slope and shall be spaced not over 47 inches face-to-face, except that where the insulation units are less than 47 inches in length the nailers shall be spaced to minimize cutting of the insulation.

3.7 APPLICATION OF INSULATION

Insulation shall be laid in two or more layers. Units of insulation shall be laid in courses parallel with the roof slope. End joints shall be staggered. Insulation shall be cut to fit neatly against adjoining surfaces. Joints between insulation boards shall not exceed 1/4 inch. Joints in successive layers shall be staggered with respect to joints of preceding layer. Insulation which can be readily lifted after installation is not considered to be adequately secured. Insulation shall be applied so that all roof insulation applied each day is waterproofed the same day. Phased construction will not be permitted. Application of impermeable faced insulation shall be performed without damage to the facing.

3.7.3 Foam Insulation

Polyisocyanurate foam insulation shall be isolated from built-up roof and modified bitumen membrane by a separate or composite layer perlite board.

3.7.4 Installation

Except for the first layer on steel deck, insulation layers shall be laid in solid moppings of hot asphalt applied at a rate of at least 20 pounds per square. Asphalt shall not be applied further than one panel length ahead of roof insulation being installed. Where roof slopes are greater than 1/2 inch/foot, roof insulation shall be held in place by both asphalt mopping and mechanical fasteners. Asphalt primer shall be applied at the rate of 1 gallon per square over the entire surface to be mopped when the insulation is applied over concrete deck. The edges of insulation boards adjoining vented nailers shall be kept free of asphalt.

3.7.5 Protection Requirements

The insulation shall be kept dry at all times. Insulation boards shall not be kicked into position. Exposed edges of the insulation shall be protected by cutoffs at the end of each work day or whenever precipitation is imminent. Cutoffs shall be 2 layers of bituminous-saturated felt set in plastic bituminous cement. Cutoffs shall be removed when work is resumed. Edges of insulation at open spaces between insulation and parapets or other walls and spaces at curbs, scuttles, and expansion joints, shall be protected until permanent roofing and flashing is applied. Storing, walking, wheeling, or trucking directly on insulation or on roofed surfaces

will not be permitted. Smooth, clean board or plank walkways, runways, and platforms shall be used, as necessary to distribute weight not to exceed live load limits of roof construction of 30 psf.

3.8 INSPECTION

The Contractor shall establish and maintain an inspection procedure to assure compliance of the installed roof insulation with the contract requirements. Any work found not to be in compliance with the contract shall be promptly removed and replaced or corrected in an approved manner. Quality control shall include, but not be limited to, the following:

- a. Observation of environmental conditions; number and skill level of insulation workers; start and end time of work.
- b. Verification of certification, listing or label compliance with FM P9513.
- c. Verification of proper storage and handling of insulation before, during, and after installation.
- d. Inspection of mechanical fasteners; type, number, length, and spacing.
- e. Coordination with other materials, cants, sleepers, and nailing strips.
- f. Inspection of insulation joint orientation and laps between layers, joint width and bearing of edges of insulation on deck.
- g. Installation of cutoffs and proper joining of work on subsequent days.
- h. Continuation of complete roofing system installation to cover insulation installed same day.

-- End of Section --

SECTION 07510

BUILT-UP ROOFING

PART 1 GENERAL

1.1 REFERENCES

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

ASME INTERNATIONAL (ASME)

ASME A112.21.2M (1983) Roof Drains

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 208 (1995) Cellulosic Fiber Insulating Board

ASTM C 728 (1997) Perlite Thermal Insulation Board

ASTM C 1153 (1997) Location of Wet Insulation in Roofing Systems Using Infrared Imaging

ASTM C 1177/C 1177M (1999) Glass Mat Gypsum Substrate for Use as Sheathing

ASTM D 41 (1994) Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing

ASTM D 43 (2000) Coal Tar Primer Used in Roofing, Dampproofing, and Waterproofing

ASTM D 226 (1997a) Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

ASTM D 227 (1998) Coal-Tar Saturated Organic Felt Used in Roofing and Waterproofing

ASTM D 312 (2000) Asphalt Used in Roofing

ASTM D 450 (1996) Coal-Tar Pitch Used in Roofing, Dampproofing, and Waterproofing

ASTM D 517 (1998) Asphalt Plank

ASTM D 1668 (1997a) Glass Fabrics (Woven and Treated) for Roofing and Waterproofing

ASTM D 1863 (1993; R 1996) Mineral Aggregate Used on Built-Up Roofs

ASTM D 2178 (1997a) Asphalt Glass Felt Used in Roofing

and Waterproofing

ASTM D 2626	(1997b) Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing
ASTM D 3617	(1983; R 1994e1) Sampling and Analysis of New Built-Up Roof Membranes
ASTM D 3909	(1997b) Asphalt Roll Roofing (Glass Felt) Surfaced With Mineral Granules
ASTM D 4022	(1994) Coal Tar Roof Cement, Asbestos Containing
ASTM D 4586	(1993; R 1999) Asphalt Roof Cement, Asbestos Free
ASTM D 4601	(1998) Asphalt-Coated Glass Fiber Base Sheet Used in Roofing
ASTM D 4897	(1998) Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing

FACTORY MUTUAL ENGINEERING AND RESEARCH (FM)

FM P7825c	(1998) Approval Guide Building Materials
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1.2 SUBMITTALS

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

SD-03 Product Data

Inspection; G WA

The inspection procedure for roofing installation, prior to the start of roofing work.

SD-07 Certificates

Bitumen; G WA
Felt; G WA

Certificates of Compliance for felts and bitumens.

Cants; G WA

Certificate attesting that the fiberboard furnished for the project contains recovered material, and showing an estimated percent of such recovered material.

1.3 STORAGE OF MATERIALS

Felts, fabrics, and roll roofing shall be kept dry before, during, and after delivery to the site and shall be stored in an enclosed building or in a closed trailer, and stored on end 1 level high. Felt rolls shall be maintained at a temperature above 50 degrees F for 24 hours immediately before laying. Aggregate shall be kept dry as defined by ASTM D 1863.

PART 2 PRODUCTS

2.1 PRIMER

ASTM D 41 for asphalt roofing systems.

2.2 BITUMEN

2.2.1 Asphalt

ASTM D 312, Type II on slopes from 1/4 inch per foot up to and including 1/2 inch per foot; Type II or Type III on slopes above 1/2 inch per foot up to and including 1 inch per foot; Type III on slopes above 1 inch per foot up to and including 3 inches per foot. Bills of lading shall indicate the flash point and equiviscous temperature (EVT) or this information shall be shown on labels for each container of asphalt.

2.3 BITUMINOUS CEMENT

ASTM D 4586 for use with asphalt roofing systems. Preference shall be given to cements whose mineral fillers exclude asbestos fibers.

2.4 CANTS

Cants shall be made from treated wood or Perlite board cut to reduce change in direction of the membrane to 45 degrees or less. Treated wood shall be of water-borne preservative-treated material. Perlite board shall conform to ASTM C 728 with a minimum recovered material content of 23 percent of the expanded perlite portion of the board.

2.5 FELT

2.5.3 Glass Roofing Felt

ASTM D 2178, Type IV or VI.

2.5.5 Organic Felt

ASTM D 226 for use with asphalt roofing system. Organic felts may be used for bitumen stops, and edge envelopes.

2.7 NAILS AND FASTENERS

Nails and fasteners shall be an approved type recommended by the roofing felt manufacturer. Fasteners for concrete deck shall conform to FM P7825c

for Class I roof deck construction, to withstand an uplift pressure of 90 pounds per square foot.

2.8 AGGREGATE SURFACING MATERIALS

Crushed stone, gravel, or crushed slag conforming to ASTM D 1863. Subject to approval, other materials may be used when blended to the grading requirements of ASTM D 1863. Aggregate shall be light-colored and opaque. The size and color shall match existing aggregate on the adjacent Ammonia/Chlorine facility building.

2.10 WOVEN GLASS FABRIC

ASTM D 1668, Type I for asphalt roofing systems.

2.11 INSULATION

Insulation shall be expanded perlite, and polyisocyanurate, as specified in Section 07220 ROOF INSULATION. The roof insulation at Chemical Building, (which is heated and cooled), shall be 2-inch thick polyisocyanurate and a top layer of 3/4-inch thick expanded perlite having a total R value of 15 or better. The insulation at Filter Building, (which is not heated or cooled), shall be 3/4-inch thick expanded perlite, having R value of 2.08.

2.13 FLASHINGS

Bituminous flashings in accordance with these specifications shall be used throughout unless otherwise specified or indicated.

2.14 ROOF DRAINS AND EXPANSION JOINTS

Roof drains shall conform to ASME A112.21.2M, with dome and integral flange, and shall have a device for making a watertight connection between roofing and flashing. The whole assembly shall be galvanized heavy pattern cast iron. For aggregate surface roofing, the drain shall be provided with a gravel stop. A clamping device for attaching flashing or waterproofing membrane to the seepage pan without damaging the flashing or membrane shall be provided when required to suit the building construction. Strainer openings shall have a combined area equal to twice that of the drain outlet. The outlet shall be equipped to make a proper connection to threaded pipe of the same size as the downspout. An expansion joint of proper size to receive the conductor pipe shall be provided. The expansion joint shall consist of a heavy cast-iron housing, brass or bronze sleeve, brass or bronze fastening bolts and nuts, and gaskets or packing. The sleeve shall have a nominal thickness of not less than 0.134 inch. Gaskets and packing shall be close-cell neoprene, O-ring packing shall be close-cell neoprene of 70 durometer. Packing shall be held in place by a packing gland secured with bolts.

PART 3 EXECUTION

3.1 COORDINATION

The entire roofing system, excluding flood coat and aggregate surfacing,

shall be finished in 1 operation up to the line of termination at end of day's work. Glaze coating may be considered part of the flood coat as specified in paragraph GLAZE COAT. Phased construction will not be permitted.

3.1.1 Insulation

Application of roofing shall immediately follow application of insulation as a continuous operation. Roofing operations shall be coordinated with insulation work so that all roof insulation applied each day is waterproofed the same day. Insulation is specified in Section 07220 ROOF INSULATION.

3.1.2 Sheet Metalwork

Roofing operations shall be coordinated with sheet metalwork so that sheet metal items are installed to permit continuous roof surfacing operations the same day felts are installed. Sheet metalwork is specified in Section 07600 SHEET METALWORK, GENERAL.

3.2 ENVIRONMENTAL CONDITIONS

Air temperature shall be above 40 degrees F and there shall be no visible ice, frost, or moisture on the roof deck at the time roofing is installed.

3.3 PREPARATION REQUIREMENTS

The substrate construction of a bay or section of the building shall be completed before roofing work is begun thereon. Vents and other items penetrating the roof shall be secured in position and properly prepared for flashing. Nailers, curbs and other items attached to roof surface shall be in place before roofing is begun.

3.4 INSTALLATION OF CANTS

Cants shall be installed in the angles formed between the roof and walls or other vertical surfaces. Cants shall be laid in a solid coat of bituminous cement just prior to laying the roofing plies. Cants shall be continuous, and shall be installed in lengths as long as practicable. Additional cants are not required at locations where cast-in-place cants are integrally formed with the structural deck or roof fill.

3.5 CONDITION OF SURFACES

Surfaces shall be inspected and approved immediately before application of roofing and flashings. The roofing and flashings shall be applied to a smooth and firm surface free from ice, frost, visible moisture, dirt, projections, and foreign materials. Prior to application of primer on precast concrete decks, joints shall be covered with a 4 inch strip of roofing felt, embedded in and coated with bituminous cement.

3.6 MECHANICAL APPLICATION DEVICES

Mechanical application devices shall be mounted on pneumatic-tired wheels,

and shall be designed and maintained to operate without damaging the insulation, roofing membrane, or structural components.

3.7 PRIMING

Concrete surfaces to receive bitumen shall be uniformly coated with primer at a rate of not less than 1 gallon per square and allowed to dry. Primer shall be compatible with the bitumen to be used.

3.8 HEATING OF BITUMEN

Asphalt shall not be heated higher than 75 degrees F above the EVT or 50 degrees below the flash point or 525 degrees F (maximum) whichever is lower. EVT and flash point temperatures of asphalt in the kettle shall be conspicuously posted on the kettle. Heating kettles shall be provided with automatic thermostatic controls and an accurate thermometer. Kettle operators shall be in attendance at all times during the heating to ensure that the maximum temperature specified is not exceeded. Equipment utilizing flame-heat shall not be placed on the roof.

3.9 BITUMEN STOPS

Bitumen stops shall be installed at roof edges, openings and vertical projections before application of roofing plies unless otherwise recommended by the manufacturer's printed instructions. Bitumen stops shall be formed of two 18 inch wide strips of organic felt. Nine inches of the width shall be attached to the roof surface with 9 inches extending beyond the edge. The first strip shall be applied in a 9 inch wide layer of bituminous roofing cement and nailed 1/2 inch from the roof edge at 6 inch spacing. The second strip shall be applied to the first in a 9 inch wide mopping of bitumen. The free portion of each strip shall be protected from damage throughout the roofing period. After the roofing plies are in place, the free portion of each strip shall be folded back over the roofing membrane and embedded in a continuous coating of bituminous cement and secured with roofing nails spaced 3 inches on centers.

3.10 BITUMEN APPLICATION

Asphalt shall be applied within a range of 25 degrees F below to 25 degrees F above the EVT. Temperature of asphalt at the time it is applied shall be in accordance with the bitumen manufacturer's recommendations. Application temperatures shall be measured at the mop bucket or mechanical applicator. Bitumen at a temperature below the recommended temperature shall be returned to the kettle. Each layer of felt shall be laid in not less than 20 pounds nor more than 35 pounds of asphalt per square. Where solid moppings are required, the following requirements as evidenced in any one roof cut-out sample shall apply:

- a. Overlapping voids between two or more plies are not acceptable.
- b. The maximum length of any individual void that is encapsulated in bitumen shall be 2 inches.
- c. The total length of all voids encapsulated in bitumen shall not

exceed 4 inches between any two plies.

- d. Dry voids (the absence of bitumen between plies) are not acceptable.
- e. Voids continuous through the specimen are not acceptable.
- f. Visual interply moisture in voids is not acceptable.

3.11 APPLICATION OF FELTS

Felt plies shall be laid at right angles to the slope of the deck with minimum 6 inch end-laps staggered at least 12 inches. Felts shall be applied in 36 inch widths with 24 2/3 inch side laps and starter sheets 12, 24 and 36 inches wide along eaves to maintain 4 full plies including the base sheet when used. The full 36 inch width of each ply shall be placed in hot bitumen immediately behind the applicator. A squeegee shall be used to eliminate air pockets and obtain complete adhesion between plies. Bitumen shall be visible beyond all edges of each ply as it is being installed. Plies shall be laid free of wrinkles, creases or fishmouths. Each layer of roofing felt shall be carried up to the top of the cant. Workers shall not walk on mopped surfaces when the bitumen is fluid. For slopes exceeding 1/2 inch per foot, each felt ply, other than venting base sheet, shall be nailed 2 inches and 6 inches from upper edge with nails spaced 12 inches on centers in each row.

3.11.2 On Concrete or Insulation Surfaces

Four plies of 36 inch wide glass roofing felts shall be placed shingle-fashion in solid mopped bitumen.

3.12 MECHANICAL FASTENING

Nails and fasteners for securing roofing shall be flush driven through flat metal disks of not less than 1 inch diameter. Metal disks may be omitted where heads of fasteners are equivalent in size to the 1 inch diameter disks. Fasteners, when required, shall be spaced within 20 percent of the indicated spacing dimensions. There shall be no less than the total number of indicated fasteners in any 100 square feet area. Fastener pull-out resistance shall be not less than 40 pounds each.

3.13 PROTECTION OF APPLIED ROOFING

At end of day's work or whenever precipitation is imminent, the terminated edge of built-up roofing shall be sealed with 2 full width strips of roofing felt set in and coated with bituminous cement. One half-width of the strips shall be extended up and over the finished roofing and the other half-width extended out and onto the bare roof deck. Sealing strips shall be removed before continuing installation of roofing. To facilitate sealing, termination edges may be straightened with pieces of insulation board which shall be removed when work is resumed.

3.14 FLASHINGS

Flashings shall be provided over cants in the angles formed at walls and other vertical surfaces and where required to make the work watertight. Bituminous flashings described below shall be used, except where metal flashings are specified in other sections of the specifications. Flashings shall be provided and installed immediately after the top ply of felt is placed and before the flood coat and aggregate are placed, adjacent to the flashing. Modified bituminous flashing may be used when it is specified in the roofing manufacturer's instructions.

3.14.1 Base Flashings

Base Flashings shall be a 3-ply system using woven glass fabric, laid in roofing cement, with mineral surfaced roll roofing as the outer ply. The top of the base flashing shall be at least 8 inches above the roof membrane surface. Mineral surfaced roofing strips shall be cut from the width of the rolls, and shall extend from the reglet or top of curb onto the roof at least 2 inches beyond the widest flashing ply. Laps shall be well cemented, and where possible, shall be shingled in a direction down slope or away from the prevailing wind. The top edge of base flashing systems shall be nailed a maximum of 8 inches on center.

3.14.2 Strip Flashings

Sheet metal flashings, bitumen stops and gravel stops installed over the roofing top ply shall be strip flashed with 2 layers of roofing felt, 9 inches and 12 inches wide and successively cemented in place.

3.14.3 Valleys and Ridges

Felt plies shall continue across valleys and ridges and terminate approximately 12 inches from the valley or ridge. Exposed lap shall terminate on a line approximately 12 inches from, and parallel to the valley or ridge. Two plies of roofing felt 9 inch wide bottom ply, and 12 inch wide top ply, shall be successively mopped-in over each felt line of termination.

3.16 AGGREGATE SURFACING

After roofing felts have been laid and flashings installed, the roof surface, except for cants, shall be flood-coated uniformly with 60 pounds of hot asphalt per square. Aggregate surfacing materials shall be spread on the hot bitumen at a rate of 400 pounds per square for gravel or 300 pounds per square for other approved surfacing aggregate.

3.17 GLAZE COAT

Glaze coating shall be used to waterproof completed sections when more than one day is required to finish the roofing. If there is a probability of rain falling on the felts before the flood coat and aggregate can be applied, a light glaze coat of bitumen 10 to 15 pounds per square, shall be applied over the exposed felts. The surfacing operation shall be completed within 48 hours after application of the glaze coat. Where glaze coat is used, surface treatment shall be completed as soon as weather conditions permit.

3.18 ROOF CUT-OUT TESTS

Roof cut-out samples shall be taken and analyzed in accordance with ASTM D 3617 as directed by the Contracting Officer when there is reason to believe that deficiencies exist in the roofing membrane. When samples indicate deficiencies in the built-up roofing, corrective action shall be taken as directed.

3.19 INSPECTION

The Contractor shall establish and maintain an inspection procedure to assure compliance of the installed roofing with the contract requirements. Any work found not to be in compliance with the contract shall be promptly removed and replaced or corrected in an approved manner. Inspection shall include, but not be limited to, the following:

- a. Environmental conditions; number and skill level of roofing workers; start and end time of various tasks; condition of substrate.
- b. Verification of compliance of materials before, during, and after installation.
- c. Inspection of condition of equipment and accuracy of thermometers and metering devices.
- d. Inspection of flashings, cants and curbs.
- e. Inspection of membrane placement, including edge envelopes, widths of starter sheets, laps, proper use of squeegee, and mechanical fastening.
- f. Inspection of application of bitumen, aggregate, and walkways.
- g. Inspection of embedment of aggregate for required weight and coverage.
- h. Cutout sampling and analysis as directed.

3.20 BUILT-UP ROOF AND ROOF DRAIN TESTING

On completion of the roof installation work and prior to placing aggregate on the roof, the Contractor shall test each section of the new built-up roof and their corresponding roof drains by flooding with water. The Government shall be given a minimum of 48 hours notice prior to performing each test and all tests shall be done in the presence of the Contracting Officer's Representative. Roof drains in each section shall be plugged and filled with water from nearby fire hydrants located where shown on the Site plan. Each roof section shall be filled to its high point and left to stand for an hour, during which there should be no noticeable decrease in the volume of standing water. During the test, intermittent visual inspections shall be made underneath the roof from inside the building to ensure that there are no water leaks. If any roof leaks are detected, all damaged

materials shall be removed and replaced at no additional cost to the Government. On satisfactory completion of the roof leakage test, the plugs shall be removed and the water allowed to drain through the existing roof drains.

-- End of Section --

SECTION 07600

SHEET METALWORK, GENERAL

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 167	(1999) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM B 209	(2000) Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 209M	(2000) Aluminum and Aluminum-Alloy Sheet and Plate (Metric)
ASTM B 221	(2000) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B 221M	(2000) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM B 32	(1996) Solder Metal
ASTM B 370	(1998) Copper Sheet and Strip for Building Construction
ASTM D 1784	(1999a) Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
ASTM D 226	(1997a) Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
ASTM D 2822	(1991; R 1997e1) Asphalt Roof Cement
ASTM D 3656	(1997) Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns
ASTM D 4022	(1994) Coal Tar Roof Cement, Asbestos Containing
ASTM D 4586	(1993; R 1999) Asphalt Roof Cement, Asbestos Free

ASTM D 543	(1995) Evaluating the Resistance of Plastics to Chemical Reagents
ASTM D 822	(1996) Conducting Tests on Paint and Related Coatings and Materials Using Filtered Open-Flame Carbon-Arc Exposure Apparatus
ASTM D 828	(1997) Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation-Apparatus
ASTM E 96	(2000) Water Vapor Transmission of Materials

INSECT SCREENING WEAVERS ASSOCIATION (ISWA)

ISWA IWS 089	(1990) Recommended Standards and Specifications for Insect Wire Screening (Wire Fabric)
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SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA Arch. Manual	(1993; Errata; Addenda Oct 1997) Architectural Sheet Metal Manual
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1.2 GENERAL REQUIREMENTS

Sheet metalwork shall be accomplished to form weathertight construction without waves, warps, buckles, fastening stresses or distortion, and shall allow for expansion and contraction. Cutting, fitting, drilling, and other operations in connection with sheet metal required to accommodate the work of other trades shall be performed by sheet metal mechanics. Installation of sheet metal items used in conjunction with roofing shall be coordinated with roofing work to permit continuous roofing operations.

1.3 SUBMITTALS

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

SD-02 Shop Drawings

Materials; G WA

Drawings of sheet metal items showing weights, gauges or thicknesses; types of materials; expansion-joint spacing; fabrication details; and installation procedures.

1.4 DELIVERY, STORAGE, AND HANDLING

Materials shall be adequately packaged and protected during shipment and shall be inspected for damage, dampness, and wet-storage stains upon delivery to the jobsite. Materials shall be clearly labeled as to type and manufacturer. Sheet metal items shall be carefully handled to avoid damage. Materials shall be stored in dry, ventilated areas until immediately before installation.

PART 2 PRODUCTS

2.1 MATERIALS

Lead, lead-coated metal, and galvanized steel shall not be used. Any metal listed by SMACNA Arch. Manual for a particular item may be used, unless otherwise specified or indicated. Materials shall conform to the requirements specified below and to the thicknesses and configurations established in SMACNA Arch. Manual.

2.1.1 Accessories

Accessories and other items essential to complete the sheet metal installation, though not specifically indicated or specified, shall be provided.

2.1.2 Aluminum Extrusions

ASTM B 221, Alloy 6063, Temper T5.

2.1.3 Bituminous Cement

Type I asphalt cement conforming to ASTM D 2822 or ASTM D 4586.

2.1.4 Sealant

Unless otherwise specified, sealant shall be an elastomeric weather resistant sealant.

2.1.5 Fasteners

Fasteners shall be compatible with the fastened material and shall be the type best suited for the application.

2.1.6 Felt

ASTM D 226, Type I.

2.1.8 Aluminum Alloy Sheet and Plate

ASTM B 209, form, alloy, and temper appropriate for use. Unless noted otherwise, all sheet metal work shall be 0.040" thick aluminum and shall be standard mill finish. Exception to the above finish shall be the copings, gravel stop and sloped skylight flashing, which will have Kynar finish with the color to match the existing sloped skylight frames.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Unless otherwise specified or indicated, exposed edges shall be folded back to form a 1/2 inch hem on the concealed side, and bottom edges of exposed vertical surfaces shall be angled to form drips. Bituminous cement shall not be placed in contact with roofing membranes other than built-up roofing.

3.2 EXPANSION JOINTS

Expansion joints shall be provided as indicated. Expansion joints in continuous sheet metal shall be provided at 32 foot intervals for aluminum, except extruded aluminum gravel stops and fasciae which shall have expansion joints at not more than 12 foot spacing. Joints shall be evenly spaced. An additional joint shall be provided where the distance between the last expansion joint and the end of the continuous run is more than half the required interval spacing.

3.3 PROTECTION OF ALUMINUM

Aluminum shall not be used where it will be in contact with copper or where it will contact water which flows over copper surfaces. Aluminum that will be in contact with wet or pressure-treated wood, mortar, concrete, masonry, or ferrous metals shall be protected against galvanic or corrosive action by one of the following methods:

3.3.1 Paint

Aluminum surfaces shall be solvent cleaned and given one coat of zinc-molybdate primer and one coat of aluminum paint.

3.3.2 Nonabsorptive Tape or Gasket

Nonabsorptive tape or gasket shall be placed between the adjoining surfaces and cemented to the aluminum surface using a cement compatible with aluminum.

3.4 CONNECTIONS AND JOINTING

3.4.2 Riveting

Joints in aluminum sheets 0.040 inch or less in thickness shall be mechanically made.

3.4.3 Seaming

Flat-lock and soldered-lap seams shall finish not less than 1 inch wide. Unsoldered plain-lap seams shall lap not less than 3 inches unless otherwise specified. Flat seams shall be made in the direction of the flow.

3.5 CLEATS

A continuous cleat shall be provided where indicated or specified to secure loose edges of the sheet metalwork. Butt joints of cleats shall be spaced approximately 1/8 inch apart. The cleat shall be fastened to supporting wood construction with nails evenly spaced not over 12 inches on centers. Where the fastening is to be made to concrete or masonry, screws shall be used and shall be driven in expansion shields set in concrete or masonry.

3.7 FLASHINGS

Flashings shall be installed at locations indicated and as specified below. Sealing shall be according to the flashing manufacturer's recommendations.

Flashings shall be installed at intersections of roof with vertical surfaces and at projections through roof. Except as otherwise indicated, counter flashings shall be provided over base flashings. Perforations in flashings made by masonry anchors shall be covered up by an application of bituminous plastic cement at the perforation. Flashing shall be installed on top of joint reinforcement. Flashing shall be formed to direct water to the outside of the system.

3.7.1 Base Flashing

Metal base flashing shall be coordinated with roofing work. Metal base flashing shall be set in plastic bituminous cement over the roofing membrane, nailed to nailing strip, and secured in place on the roof side with nails spaced not more than 3 inches on centers.

3.7.2 Counter Flashings

Except as otherwise indicated, counter flashings shall be provided over base flashings. Counter flashing shall be installed as shown on the drawings. Where bituminous base flashings are provided, the counter flashing shall extend down as close as practicable to the top of the cant strip. Counter flashing shall be factory formed to provide spring action against the base flashing.

3.7.3 Stepped Flashing

Stepped flashing shall be installed where sloping roofs surfaced with shingles abut vertical surfaces. Separate pieces of base flashing shall be placed in alternate shingle courses.

3.7.4 Sill Flashing at Existing Doors (Two Each)

Sill flashing shall extend the full width of the sill and shall be terminated and sealed at door thresholds.

3.8 GRAVEL STOPS AND FASCIA

Gravel stops and fascia shall be fabricated and installed as indicated and in accordance with SMACNA Arch. Manual.

3.11 CONTRACTOR QUALITY CONTROL

The Contractor shall establish and maintain a quality control procedure for

sheet metal used in conjunction with roofing to assure compliance of the installed sheet metalwork with the contract requirements. Any work found not to be in compliance with the contract shall be promptly removed and replaced or corrected in an approved manner. Quality control shall include, but not be limited to, the following:

- a. Observation of environmental conditions; number and skill level of sheet metal workers; condition of substrate.
- b. Verification of compliance of materials before, during, and after installation.
- c. Inspection of sheet metalwork for proper size and thickness, fastening and joining, and proper installation.

The actual quality control observations and inspections shall be documented and a copy of the documentation furnished to the Contracting Officer at the end of each day.

3.12 PAINTING

Items specified to be painted shall be prepared and painted as specified below. The paint color shall be as selected by the Contracting Officer's Representative.

3.12.1 Roof Ventilators, Covers and Vents

Roof ventilators, covers and plumbing vents shall be solvent-cleaned to ensure they are free from foreign matter before application of paint or surface treatment. They shall then be coated with a tannic acid based rust transformer. The prime coat shall be a hydrocarbon modified polyamine epoxy primer. The Contractor shall then apply two coats of a solvent-based, high gloss polyamide epoxy as a finish coat.

-- End of Section --

SECTION 09200

LATHING AND PLASTERING

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 580/A 580M	(1998) Stainless Steel Wire
ASTM A 853	(1993; R 1998) Steel Wire, Carbon, for General Use
ASTM B 164	(1998) Nickel-Copper Alloy Rod, Bar, and Wire
ASTM C 28	(1996el) Gypsum Plasters
ASTM C 29/C 29M	(1997) Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C 35	(1995) Inorganic Aggregates For Use in Gypsum Plaster
ASTM C 37/C 37M	(1999) Gypsum Lath
ASTM C 61	(1995) Gypsum Keene's cement
ASTM C 150	(1999a) Portland Cement
ASTM C 206	(1984; R 1997) Finishing Hydrated Lime
ASTM C 472	(1999) Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
ASTM C 587	(1997) Gypsum Veneer Plaster
ASTM C 588/C 588M	(1999) Gypsum Base for Veneer Plasters
ASTM C 645	(2000) Nonstructural Steel Framing Members
ASTM C 754	(1999a) Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
ASTM C 841	(1999) Installation of Interior Lathing and Furring

ASTM C 842	(1999) Application of Interior Gypsum Plaster
ASTM C 843	(1999) Application of Gypsum Veneer Plaster
ASTM C 844	(1999) Application of Gypsum Base to Receive Gypsum Veneer Plaster
ASTM C 847	(1995) Metal Lath
ASTM C 897	(1996) Aggregate for Job-Mixed Portland Cement-Based Plasters
ASTM C 926	(1998a) Application of Portland Cement-Based Plaster
ASTM C 933	(1996a) Welded Wire Lath
ASTM C 955	(1998) Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases
ASTM C 1002	(1998) Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases
ASTM C 1032	(1996) Woven Wire Plaster Base

1.2 SUBMITTALS

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

SD-03 Product Data

Lathing Installation;

Manufacturer's pre-printed descriptive data, catalog cuts, and installation instructions for plastering materials and accessories.

SD-07 Certificates

Qualifications; G WA

Manufacturer's experience in specified work.

Gypsum Plaster; G WA

Certification indicating that factory-mixed plaster provides a minimum compressive strength of not less than 1000 psi when tested in accordance with ASTM C 472.

1.3 QUALIFICATIONS

Manufacturer shall specialize in manufacturing the types of material specified, and shall have a minimum of 5 years of documented successful experience. Applicator shall specialize in the type of lath and plaster work required to meet requirements, with a minimum of 3 years of documented experience.

1.4 DELIVERY, STORAGE AND HANDLING

Materials shall be delivered to project site in the original containers bearing the name of manufacturer, contents, and brand name. Plaster, shall be stored off the ground under weathertight cover and away from sweating walls and other damp surfaces until ready for use. Accessories shall be stored off the ground in a weathertight structure for protection. Damaged or deteriorated materials shall be removed from project site.

1.5 ENVIRONMENTAL CONDITIONS

A temperature between 40 degrees F and 80 degrees F shall be evenly maintained in the building for a period of not less than 1 week prior to application of plaster, and for a period of at least 1 week after the gypsum plaster is set, in accordance with ASTM C 842. Interior spaces shall be ventilated in accordance with ASTM C 842 immediately after applying plaster.

PART 2 PRODUCTS

2.1 NON-LOADBEARING WALLS

2.1.1 Studs

Studs for non-loadbearing walls shall conform to ASTM C 645. Studs shall be C-shaped, roll-formed steel with minimum uncoated design thickness of 0.0329 in made from G40 hot-dip galvanized coated sheet. The studs shall be installed at 16" on centers.

2.1.2 Runner Tracks

Prefabricated floor and ceiling runner tracks shall conform to ASTM C 645. Tracks shall be prefabricated, U-shaped, unpunched web, thickness to match studs, made from G40 hot-dip galvanized coated sheet.

2.5 TRIM, MOLDINGS, AND ACCESSORIES

2.5.2 Fastenings

Tie wire, rings, and other fastenings shall be corrosion-resisting steel conforming to ASTM A 580/A 580M, composition 302, 304, or 316, Condition A, or nickel-copper alloy conforming to ASTM B 164, annealed condition.

Walls, partitions, and other vertical surfaces not incorporated in ceiling construction may be erected with soft, annealed steel conforming to ASTM A 853.

2.5.2.1 Tie Wire

Tie wire shall be not less than No. 16 SWG diameter.

2.5.4 Expanded Flange Corner Beads

Expanded flange corner beads shall be fabricated of aluminum 0.0210 in galvanized steel with 2-1/2 inch wide flanges and 1/8 inch wide bead.

2.5.6 Cornerites

Cornerites shall conform to ASTM C 847. Cornerites shall be fabricated of galvanized expanded metal lath to form an angle of at least 100 degrees, with outstanding legs of not less than 2 inches.

2.5.7 Striplath

Striplath shall conform to ASTM C 847. Striplath shall be fabricated of galvanized steel sheet, 2.5 pounds per square yard.

2.5.9 Casing Beads

Casing beads shall be fabricated of galvanized 0.0276 inch thick steel 1/2 inch depth, 2 inch wide expansion wings, front edge of face flange shaved for intended use, back slightly arched to provide a spring effect.

2.5.13 Screws

Self-drill steel screws shall conform to ASTM C 1002. Screws shall be Type S for use with steel framing.

2.7 GYPSUM LATH AND VENEER PLASTER BASE

2.7.2 Veneer Plaster Base

Veneer plaster base shall conform to ASTM C 588/C 588M. Base shall be 1/2" thick aluminum foil backed, and shall be designed to be used as a base for gypsum veneer plaster.

2.8 GYPSUM PLASTER

2.8.1 Ready-Mixed Gypsum Plaster (Veneer Finish Coat)

Ready-mixed plaster for use over veneer plaster bases shall conform to ASTM C 587 and shall be 1/16" thick.

2.11 INSULATION

Insulation placed between steel studs shall be batt or blanket type mineral wool conforming to ASTM C 665, Type II.

PART 3 EXECUTION

3.1 PREPARATION

Project conditions shall be verified as ready to receive the work. Field measurements shall be verified for compliance with approved detail drawings and manufacturer's published recommendations. Beginning of installation means installer accepts existing conditions.

3.4 WALL FRAMING INSTALLATION

3.4.2 Non-Loadbearing Wall Framing

Non load-bearing steel studs shall be installed in accordance with ASTM C 754 with spacings as indicated in ASTM C 841 for the type of lath used. Studs shall be aligned and secure in top and bottom runners at spacings indicated on drawings. One bead of acoustic sealant shall be placed between runners and substrate to achieve the required air seal. Stud splicing is not acceptable. Corners shall be constructed with a minimum of three studs. Stud framing system shall be braced and made rigid.

3.4.3 Adjoining Walls and Columns

Studs which adjoin walls or columns shall be secured near the top and bottom, and at least one intermediate point, but not more than 5 feet on centers, with wire inserts, dovetail anchors, toggle bolts, or bolts set in expansion shields.

3.4.4 Wall Bracing

Partitions more than 10 feet long or 9 feet high shall be braced with 3/4 inch steel channel stiffeners concealed horizontally. Stiffeners shall be spaced vertically not more than 6 feet and shall be secured to each stud.

3.4.5 Corners and Intersection

Corners and intersections of partitions shall be formed of three studs. Studs at internal corners shall be placed not more than 2 inches from partition intersection.

3.4.7 Bucks, Anchors and Blocking

Installation of bucks, anchors, and blocking shall be coordinated with electrical and mechanical work to be placed in or behind stud framing, and shall be coordinated with blocking requirements for support of plumbing fixtures, wall cabinets, toilet accessories, hardware and similar items scheduled for installation.

3.8 INSTALLATION OF GYPSUM BASE TO RECEIVE VENEER PLASTER

Gypsum base shall be installed in accordance with ASTM C 844. Base shall be cut and fitted to allow slight clearance around openings. Horizontal or vertical joints are not acceptable at corners of openings. End joints

shall be made over supports. Where clip systems are approved, end joints shall be staggered in alternate courses. End joints shall not coincide with ceiling joints, and shall not occur in the same course on opposite side of support. Internal corners shall be reinforced with cornerites, and external corners shall be reinforced with corner beads. Internal corners of unrestrained ceilings shall not be reinforced with cornerites.

3.9 OPENINGS

Reinforcement shall be provided at corners of openings in plastered areas extending 12 inches or more in any dimension by securing striplath diagonally at corners. Striplath shall be at least 6 inches wide by 16 inches long. Shorter lengths shall be used to preclude lapping striplath. Striplath shall be secured to lathing without extending fastenings into or around supporting members.

3.9.6 Cross Bracing

Cross bracing between partitions or similar bracing may be substituted for angle bracing as approved. Minor frames such as those required for access panels may be provided with expanded metal flanges which shall be attached to lath.

3.10 INSTALLATION OF TRIM, MOLDINGS, AND ACCESSORIES

Trim, moldings, and accessories shall be installed in standard lengths level and plumb to straight lines and as indicated on drawings. Fastenings shall be spaced not over 12 inches on centers for single-flanged accessories and not over 24 inches on centers on each flange of double-flanged accessories. Items shall be mitered or coped at corners, or prefabricated corners shall be used. Joints in straight runs shall be formed with splice or tie plates.

3.10.1 Base Screeds

Base screeds shall be installed approximately 3 inches above finished floor elevation unless indicated otherwise.

3.10.2 Corner Beads

Corner beads shall be installed in standard lengths at external plastered corners, and shall be secured to furring members or supports.

3.10.3 Cornerites

Cornerites shall be installed at internal angles formed by abutting surfaces of gypsum lath or metal lath not turned down at horizontal corners or returned around vertical corners. Cornerites shall be secured to lathed surfaces. Cornerites shall be secured to concrete or masonry where plaster is applied directly to concrete or masonry surfaces. Cornerites shall not be installed at unrestrained ceilings.

3.10.4 Casing Beads

Casing beads shall be installed at the joints of dissimilar base materials in the same plane and at exposed edges of plaster including junctions of walls and ceilings except that beads shall not be installed at restrained ceilings abutting plastered surfaces.

3.10.6 Trim

Trim shall be installed where indicated and as required to complete the plaster work.

3.11 PLASTER THICKNESS AND SURFACE EVENNESS

Plaster thickness and surface evenness shall be controlled by grounds or screeds of metal, wood, or plaster. Plaster thickness shall be as shown in the drawings.

3.11.1 Grounds and Screeds

Grounds shall be used for securing trim items, and for finished corners and terminations. Screeds shall be installed for base screeds when wood or metal grounds are not required. Temporary screeds shall be installed when permanent screeds or grounds cannot be used. On completion of approved base coats, temporary screeds shall be removed and voids immediately filled with plaster.

3.12 PLASTER GROUT

Plaster grout shall be scratch-coat material mixed to a non-fluid consistency. Plaster grout shall be used to fill steel door frames and partition bases. Grout shall be placed and grooved prior to gypsum lathing operations. Heads and jambs of frames shall be filled solid with grout, and 1/2 inch deep grooves shall be formed in the grout, while plastic, to receive gypsum lath.

3.13 PROPORTIONS AND MIXING

3.13.3 Prepared-Gypsum Finish

Prepared-gypsum finish shall be mixed with water to the proper consistency in accordance with manufacturer's published instructions. Prepared-gypsum finish shall have a minimum compressive strength of not less than 300 psi when tested in accordance with ASTM C 472. Prepared gypsum finish shall be used only over sanded base coats.

3.14 MACHINE APPLICATION

A plastering machine may be used for the application of scratch and brown coats. Plaster for machine application shall be a special plaster compounded and packaged by the manufacturer for this purpose. Slump cone equipment shall be present on the jobsite when base-coat plastering begins, and until completion. Testing of the mix shall be the responsibility of the Contractor, but equipment shall be available for use by the Government.

Additional water shall not be added to the mix to allow pumping through extended hose lines to the plastering nozzle. The amount of water added to

each batch of plaster shall be that quantity which results in a plaster slump of not more than 3 inches for gypsum and 2-1/2 inches for portland cement using a standard plaster slump cone or 6 inches for gypsum and 5 inches for portland cement using a concrete slump cone. Application of plaster shall conform to the provisions of ASTM C 842.

3.15 QUALITY CONTROL

Fluidity or stiffness of plaster shall be tested with a standard 2 x 4 x 6 inch plaster slump testing cone or by a 4 x 8 x 12 inch concrete slump testing cone. Method of making slump test shall be as follows:

- a. Place cone on center of dry base plate located on a level, firm surface. Hold cone tightly against plate.
- b. Fill the cone with plaster obtained from the hose or nozzle, without air on the nozzle, puddling with tamping rod during the operation to eliminate air bubbles or voids.
- c. Screed plaster level with top of cone.
- d. Lift cone straight up from base plate in a slow and uniform motion, and place it on the base plate next to plaster sample.
- e. Lay a straightedge across top of cone, being careful not to disturb or jostle the plate, and measure the slump in inches from the bottom of the straightedge to the top of the plaster sample.

3.16 APPLICATION OF FINISHES

The finish coat may be omitted back of projecting bases, wainscots, structural-glass wall finish, cabinets, chalkboards, tackboards, bulletin boards, acoustic treatments, fixed equipment, and other locations where indicated. Finish coats shall not be applied above wainscots until wainscots have been installed. Plaster shall have a smooth-trowel finish as shown.

3.16.2 Gypsum Veneer Plaster

Application of gypsum veneer plaster shall be in accordance with ASTM C 843. Plaster shall be system as shown.

3.16.4 Prepared-Gypsum Finish

Prepared-gypsum finish may be used in lieu of lime-putty finish, and shall be applied in accordance with the manufacturer's printed directions.

3.17 PATCHING

Plaster showing over sanding, cracks, blisters, pits, checks, discoloration or other defects is not acceptable. Defective plaster work shall be removed and replaced with new plaster at the expense of Contractor. Patching of defective work will be permitted only when approved by the Contracting Officer. Patching shall match existing work in texture and

color.

3.18 SAMPLES OF COMPLETED WORK

Samples of completed work may be taken by the Contracting Officer at any time for laboratory inspection and tests to determine conformance.

3.19 INSULATION

Insulation thickness shall be as shown on the contract drawings.
Insulation shall be installed between wall framing studs.

-- End of Section --