

**AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT**

1. CONTRACT ID CODE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_ PAGES

2. AMENDMENT/MODIFICATION NO. \_\_\_\_\_ 3. EFFECTIVE DATE \_\_\_\_\_ 4. REQUISITION/PURCHASE REQ. NO. \_\_\_\_\_ 5. PROJECT NO. *(If applicable)* \_\_\_\_\_

6. ISSUED BY \_\_\_\_\_ CODE \_\_\_\_\_ 7. ADMINISTERED BY *(If other than Item 6)* \_\_\_\_\_ CODE \_\_\_\_\_

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)* \_\_\_\_\_ (X) 9A. AMENDMENT OF SOLICIATION NO. \_\_\_\_\_  
 9B. DATED *(SEE ITEM 11)* \_\_\_\_\_  
 10A. MODIFICATION OF CONTRACT/ORDER NO. \_\_\_\_\_  
 10B. DATED *(SEE ITEM 11)* \_\_\_\_\_  
 CODE \_\_\_\_\_ FACILITY CODE \_\_\_\_\_

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:  
 (a) By completing items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)* \_\_\_\_\_

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER <i>(Specify type of modification and authority)</i>

**E. IMPORTANT:** Contractor  is not,  is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER <i>(Type or print)</i>	16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i>
15B. CONTRACTOR/OFFEROR	16B. UNITED STATES OF AMERICA
15C. DATE SIGNED	16C. DATE SIGNED
<i>(Signature of person authorized to sign)</i>	<i>(Signature of Contracting Officer)</i>

Item 14. Continued.

**A. CHANGES TO SECTION 00800 SPECIAL CONTRACT REQUIREMENTS.**

Replace pages 00800-1 through 00800-41 with the attached pages 00800-1 through 00800-42, each page bearing the notation "ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-00-R-0019."

**B. CHANGES TO THE SPECIFICATIONS.**

1. New Sections - Add the following accompanying new sections, each bearing the notation "ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-00-R-0019:"

02240 LIME-STABILIZED SUBGRADE  
16415 ELECTRICAL WORK, INTERIOR

2. Replacement Sections - Replace the following section with the accompanying new section of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-00-R-0019:"

01000 CONSTRUCTION SCHEDULE

END OF AMENDMENT

SECTION 00800

SPECIAL CONTRACT REQUIREMENTS (SCR)

Due to the recent conversion from the Standard Army Automated Contracting System (SAACONS) to the new Department of Defense's Standard Procurement System, Procurement Desktop Defense (PD<sup>2</sup>), the following clauses and other specific contract requirements you may have been accustomed to seeing in Section 0800, Special Contract Requirements, have been moved. The following chart represents those changes.

CLAUSES & OTHER REQUIREMENTS PREVIOUSLY LOCATION IN SECTION 00800		NEW LOCATION
<b>FAR Clauses</b>		
Commencement, Prosecution And Completion Of Work (Apr 1984)	52.211-10	Section 00700
Time Extensions (Apr 1984)	52.211-13	Section 00700
Variation In Estimated Quantity (Apr 1984)	52.211-18	Section 00700
Limitations On Subcontracting (Jan 1991)	52.219-14	Section 00700
Availability Of Funds (Apr 1984)	52.232-18	Section 00700
Availability And Use Of Utility Services (Apr 1984)	52.236-14	Section 00700
Quantity Surveys (Apr 1984)	52.236-16, Alternate I	Section 00700
<b>DFARS Clauses</b>		
Payment For Mobilization And Preparatory Work (Dec 1991)	252.236-7003	Section 00700
Payment For Mobilization And Demobilization (Dec 1991)	252.236-7004	Section 00700
Airfield Safety Precautions (Dec 1991)	252.236-7005	Section 00700
<b>EFARS Clauses</b>		
Equipment ownership and operating expense schedule	52.231-5000	Section 00700
Payment for materials delivered off-site	52.232-5000	Section 00700
Basis for Settlement of Proposals	52.249-5000	Section 00700
<b>Other Specific Contract Requirements</b>		
Time Extensions For Unusually Severe Weather (Oct 1989)		Section 01000
Payment For Utility Services (FAR 36.303(C)(6))		Section 01000
Superintendence Of Subcontractors		Section 01000
Coordination Of Construction With Cemetery Representatives		Section 01000
Damage To Work Alternate A/Alternate B		Section 01000

The clauses represented here may not be included in a particular solicitation, depending on the requirements. This list only represents changes made to the overall policy of clause location.

**WARRANTY OF CONSTRUCTION WORK (52.0246-0021 M001)**

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (1) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

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

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

- (1) The contractor's failure to conform to contract requirements; or
- (2) Any defect of equipment, material, or workmanship.

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

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

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

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

- (1) Obtain all warranties that would be given in normal commercial practice;
- (2) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and
- (3) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

(h) In the event the Contractor's warranty under paragraph (b) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

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

(j) This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

(End of Clause)

#### **PHYSICAL DATA (APR 1984) (FAR 52.236-4)**

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

a. The physical conditions indicated on the drawings and in the specifications are the result of site investigations by surveys [and borings].

b. Ground water levels

It has been observed that ground water levels in heavily timbered or grassed areas quite often undergo a significant temporary rise when the area is cleared and/or stripped. This increase in water level can hinder traffic and construction progress in the affected areas. The duration of the ground water rise varies considerably, depending on prevailing weather and/or climatic conditions. Ref: Yearbook of Agriculture, 1957, copy available for inspection in Fort Worth District Office.

d. Point of delivery for Government-furnished property

See Section 01640 GOVERNMENT-FURNISHED PROPERTY.

## **REQUIRED INSURANCE**

Pursuant to FAR 28.307-2, the Contractor shall procure and maintain during the entire period of his performance under this contract the following minimum insurance:

- a. Workers' compensation and employers' liability insurance in compliance with applicable state statutes, with a minimum employers' liability coverage of \$100,000.
- b. Comprehensive general liability insurance for bodily injury in the minimum limits of \$500,000 per occurrence. No property damage liability insurance is required.
- c. Comprehensive automobile liability insurance covering the operation of all automobiles used in connection with the performance of the contract in the minimum limits of \$200,000 per person and \$500,000 per occurrence for bodily injury and \$20,000 per occurrence for property damage. (See Contract Clause entitled Insurance--Work on a Government Installation)

## **REQUIRED INSURANCE (LOUISIANA ARMY AMMUNITION PLANT)**

Pursuant to FAR 28.307-2, the Contractor shall procure and maintain during the entire period of his performance under this contract the following minimum insurance:

- a. Workers' compensation and employers' liability insurance in compliance with applicable state statutes, with a minimum employers' liability coverage of \$100,000.
- b. Comprehensive general liability insurance for bodily injury in the minimum limits of \$500,000 per occurrence. [Property damage liability insurance in the minimum amount of \$100,000 is required.]
- c. Comprehensive automobile liability insurance covering the operation of all automobiles used in connection with the performance of the contract in the minimum limits of \$200,000 per person and \$500,000 per occurrence for bodily injury and \$20,000 per occurrence for property damage. (See Contract Clause entitled Insurance--Work on a Government Installation)

## **HAZARDOUS MATERIALS ABATEMENT INSURANCE**

- a. If hazardous materials (e.g. asbestos, lead-based paint, polychlorinated biphenyl (pcb) compounds) abatement/removal or any other work with hazardous materials is required under this contract and Comprehensive General Liability Insurance is required, the policy of insurance which covers the hazardous materials abatement/removal or other work with asbestos shall be a "per occurrence" policy as that term used in the insurance industry. A policy issued on a "claims made" basis or any other "short tail" basis will not be accepted.
- b. The Comprehensive General Liability per occurrence policy shall be obtained by the prime Contractor if the hazardous materials abatement work is performed by the prime Contractor's own work force, or by an hazardous materials abatement subcontractor(s), if the hazardous materials abatement work is subcontracted. The Contractor shall insert in the subcontract a requirement for the hazardous materials abatement subcontractor(s) to provide and maintain the insurance required by this paragraph. The Contractor shall maintain a copy of the subcontractor's proof of required insurance, and shall make such copy available to the Contracting Officer upon request.

## **CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS**

- a. The Government will provide the Contractor, without charge, one set of contract drawings and one set of specifications in electronic format on a compact disk. It is the Contractor's responsibility to reproduce a set of contract drawings from this compact disk. The Government will not give the contractor any hard copy paper drawings or specifications for any contract resulting from this solicitation.
- b. The Contractor shall--
  1. Check all drawings furnished immediately upon receipt;
  2. Compare all drawings and verify the figures before laying out the work;
  3. Promptly notify the Contracting Officer of any discrepancies; and
  4. Be responsible for any errors that might have been avoided by complying with this paragraph (b).
- c. Large-scale drawings shall, in general, govern small-scale drawings. Figures marked on drawings shall, in general, be followed in preference to scale measurements.
- d. Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work, but shall be performed as if fully and correctly set forth and described in the drawings and specifications.
- e. The work shall conform to the specifications and the contract drawings identified as:  
DACA63-00-R-0019. The list of drawings and maps set out in the index on the drawings is hereby incorporated by reference into these specifications. Schedules included in the drawings are for the purpose of defining requirements other than quantities.

## **SALVAGE MATERIALS AND EQUIPMENT**

The Contractor shall maintain adequate property control records for all materials or equipment specified to be salvaged. These records may be in accordance with the Contractor's system of property control, if approved by the property administrator. The Contractor shall be responsible for the adequate storage and protection of all salvaged materials and equipment and shall replace, at no cost to the Government, all salvage materials and equipment which are broken or damaged during salvage operations as the result of his negligence, or while in his care.

## **SALVAGE MATERIALS AND EQUIPMENT (AIR FORCE)**

- a. The Contractor shall maintain adequate property control records for all materials or equipment specified to be salvaged. These records may be in accordance with the Contractor's system of property control, if approved by the property administrator. The Contractor shall be responsible for the adequate storage and protection of all salvaged materials and equipment and shall replace, at no cost to the Government, all salvage materials and equipment which are broken or damaged during salvage operations as the result of his negligence, or while in his care.
- b. In consideration for credit allowed in the contract price, the title to all scrap and salvage generated as a direct result of this contract is vested in the Contractor unless specifically excepted. The scrap and salvage shall be disposed of off the Base by the Contractor.

## **YEAR 2000 COMPLIANCE**

In accordance with FAR 39.106, the Contractor shall ensure that with respect to any design, construction, goods, or services under this contract as well as any subsequent task/delivery orders issued under this contract (if applicable), all information technology contained therein shall be Year 2000 compliant. Specifically the Contractor shall:

- a. Perform, maintain, and provide an inventory of all major components to include structures, equipment, items, parts, and furnishings under this contract and each task/delivery order that may be affected by the Y2K compliance requirement.
- b. Indicate whether each component is currently Year 2000 compliant or requires an upgrade for compliance prior to government acceptance.

## **REQUIRED INVENTORY OF INFORMATION TECHNOLOGY**

In accordance with SCR-6, "Year 2000 Compliance", the inventory of all information technology, including embedded systems (i.e., microprocessor-based equipment) furnished under this contract which may be affected by the Year 2000 compliance requirement shall contain the following information:

- a. Contract number, project title, name of contractor
- b. Equipment name/label
- c. Indication on whether the information technology is currently Year 2000 compliant or requires an upgrade for compliance prior to government acceptance
- d. Manufacturer's model/serial number and date manufactured
- e. Specific location of equipment, i.e., building/room number
- f. If equipment is a controller only, indicate what other equipment is controlled by this controller
- g. Interoperability: identify any other equipment that is sending/receiving information to monitor or control said equipment
- h. If a PC, including laptop, is required to program, update data, etc., of said equipment, provide PC specifications, operating software name and version number
- i. Method used to determine Y2K compliance, i.e., field test, manufacturer's Statement of Compliance, etc.

See Appendix A at Section 00800 for a list of examples of embedded systems.

## **CORRESPONDENCE IDENTIFICATION**

- a. The Contractor shall use a serial numbering system on all formal correspondence sent to the Contracting Officer or his representative. The Contractor will provide one original and two duplicate copies of all correspondence.
- b. The Contractor may use a Request for Information (RFI) system for drawing/specification clarifications, subject to the following conditions:
  1. The Contractor shall use a sequential numbering system for all RFI's separate and apart from the correspondence numbering system.
  2. The Contractor shall provide one original and two copies of all RFI's.
  3. The Contractor shall designate ONE individual responsible person, subject to approval by the Contracting Officer, for reviewing and issuing RFI's.

4. For projects requiring Network Analysis Systems (NAS), all RFI's shall identify the NAS activities directly or indirectly affected by the RFI on the progress schedule. The Contractor should anticipate a minimum of 10 calendar days for Government review and response.
5. No requests for deviations or variations from the contract by RFI will be allowed. Deviations/variations are to be submitted on ENG Form 4025 as described in Section 01330 Submittal Procedures.
6. The use of RFI's does not relieve the Contractor of the responsibility for reviewing the contract documents and coordinating the work to be performed. If the Contracting Officer determines that the RFI system is being used for other than its intended purpose, the Contracting Officer has the authority to discontinue the use of the RFI's for the remainder of the contract.

#### **EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE**

Whenever a contract or modification of contract price is negotiated, the Contractor's cost proposals for equipment ownership and operating expenses shall be determined in accordance with the requirements of EFARS 52.231-5000, EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE. Interested parties may purchase copies of EP 1110-1-8 (Volumes 1 through 12) by phoning (202) 783-3238, or by writing "Superintendent of Documents U.S. Government Printing Office, Washington, D.C. 20402." Major credit cards are accepted. An electronic copy of this publication may be found the US Army Corps of Engineers Publication web site at <http://www.usace.army.mil/inet/usace-docs/eng-pamphlets/cecw.htm>.

#### **DESIGN BUILD SUBMITTAL OF WORK TO BE PERFORMED BY THE CONTRACTOR**

The Contractor shall furnish the Contracting Officer within 10 days after the award the items of work he will perform with his own forces and the estimated cost of those items. The percentage of work that must be performed by the Contractor is stated in the clause entitled, "Performance of Work by the Contractor."

#### **DESIGN BUILD PROTECTION OF MATERIAL AND WORK**

The Contractor shall at all times protect and preserve all materials, supplies and equipment of every description (including property which may be Government-furnished or owned) and all work performed. All reasonable requests of the Contracting Officer to enclose or specially protect such property shall be complied with. If, as determined by the Contracting Officer, material, equipment, supplies, and work performed are not adequately protected by the contractor, the Government may protect such property and the cost thereof may be charged to the contractor or deducted from any payment due him.

#### **DESIGN BUILD KEY PERSONNEL, SUBCONTRACTORS AND OUTSIDE ASSOCIATES OR CONSULTANTS**

In connection with the services covered by this contract, any in-house personnel, subcontractors, and outside associates or consultants will be limited to the individuals or firms that were specifically identified and agreed to during negotiations. The contractor shall obtain the Contracting Officer's written consent before making any substitution for these designated in-house personnel, subcontractors, associates, or consultants.

#### **DESIGN-BUILD CONTRACT-ORDER OF PRECEDENCE**

- a. The Contract includes the standard contract clauses and schedules current at the time of contract award. It also entails: (1) the solicitation in its entirety, including all drawings, cuts and illustrations, and any amendments, and (2) the successful offeror's accepted proposal, and (3) the Government-accepted Contractor's final (100%) design drawings and specifications. The Contract constitutes and defines the entire agreement between the

Contractor and the Government. No documentation shall be omitted which in any way bears upon the terms of that agreement.

- b. In the event of conflict or inconsistency between any of the provisions of this Contract, precedence shall be given in the following order:
  1. Contractor-identified, Government-accepted deviations, including betterments, to the Solicitation (i.e. "Request for Proposals").
  2. The Solicitation, including all amendments (See also Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION).
  3. All other provisions of the accepted proposal.
  4. Government-accepted final (100%) design drawings and specifications.
  5. Any design products including, but not limited to, drawings, specifications, engineering studies and analyses, shop drawings, equipment installation drawings, etc. Design products shall conform with all provisions of the Contract.
  6. Failure of any of the reviews to identify a proposed level of quality of systems, equipment, or materials that does not meet the minimum criteria of the Request For Proposal documents does not relieve the Contractor of these requirements. If the accepted Final (100%) Design submittal documents specify a level of quality of systems or materials that exceed any that are specified in the Request For Proposal documents (i.e. betterments), then these new levels shall become the new minimum level of quality requirements. The new minimum requirements shall not be lowered or changed without written Government approval.

#### **DESIGN-BUILD PROPOSED BETTERMENTS**

- a. The minimum requirements of the contract are identified in the Request for Proposal. All betterments offered in the proposal or the Government-accepted Contractor's Final (100%) design submittal documents become a requirement of the awarded contract, unless specifically excluded.
- b. "Betterment" is defined as any material, equipment, component, assembly, or system which exceeds the minimum requirements stated in the Request for Proposal. This includes all proposed betterments listed in accordance with the "Proposal Submission Requirements" of the Solicitation, all Government identified betterments, and those included on any of the Government-accepted Contractor's Final (100%) design submittal documents.
- c. "Government identified betterments" include the betterments identified on the "List of Accepted Project Betterments" prepared by the Proposal Evaluation Board and made part of the contract by alteration, and all other betterments identified in the accepted Proposal after award.

#### **GOVERNMENT RIGHTS (UNLIMITED)**

The Government shall have unlimited rights, in all drawings, designs, specifications, notes and other works developed in the performance of this contract, including the right to use same on any other Government design or construction without additional compensation to the Contractor. The Contractor hereby grants to the Government a paid-up license throughout the world to all such works to which he may assert or establish any claim under design patent or copyright laws. The Contractor for a period of three (3) years after completion of the project agrees to furnish the original or copies of all such works on the request of the Contracting Officer.

## **DRAWINGS AND OTHER DATA TO BECOME PROPERTY OF THE GOVERNMENT**

(REF DFARS 227.7107(B))

All designs, drawings, specifications, notes, and other works developed in the performance of this contract shall become the sole property of the Government and may be used on any other design without additional compensation to the Contractor. The Government shall be considered the "person for whom the work was prepared" for the purpose of authorship in a copyrightable work under 17 U.S.C. 201(b). With respect thereto, the Contractor agrees not to assert or authorize others to assert any rights or to establish any claim under the design patent or copyright laws. The Contractor for a period of three (3) years after completion of the project agrees to furnish all retained works on the request of the Contracting Officer. Unless otherwise provided in the contract, the Contractor shall have the right to retain copies of all works beyond such period.

## **RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN**

- a. The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other non-construction services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiency in its designs, drawings, specifications, and other non-construction services.
- b. Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contract shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract, and the Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of these services described in paragraph (a) furnished under this contract.
- c. The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

## **REQUIREMENTS FOR REGISTRATION OF DESIGNERS**

The design of architectural, structural, mechanical, electrical, civil, or other engineering features of the work shall be accomplished or reviewed and approved by architects or engineers registered to practice in the particular professional field involved in a State or possession of the United States, in Puerto Rico, or in the District of Columbia.

## **DESIGN BUILD RECOMMENDED INSURANCE COVERAGE**

The Design-Build Contractor's attention is invited to the Special Contract Requirements clauses entitled "RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN" and "WARRANTY OF CONSTRUCTION WORK". These requirements vest in the Contractor complete responsibility for the professional quality, technical accuracy, and coordination of all design, drawings, specifications and other work or materials furnish by his inhouse or consultant forces, and requires that the Design/Build Contractor correct and revise any errors or deficiencies in the work, notwithstanding any review, approval, acceptance or payment by the Government. The Contractor shall correct and change any work resulting from defective design at no additional cost to the Government. The requirements further stipulate that the Design/Build Contractor shall be liable to the Government for damages to the Government caused by negligent performance of his/her designers. Though not a mandatory requirement, this is to recommend that the Design/Build Contractor investigate and obtain appropriate insurance coverage for such liability protection.

## **CONTRACTOR'S FINAL (100%) DESIGN DOCUMENTS**

- a. The drawings and specifications referred to in the third sentence of Contract Clause 52.236-21 SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, subparagraph (a), are those drawings and specifications furnished with the Solicitation; this reference does not apply to the accepted Contractor's final (100%) design documents.
- b. In addition to Contract Clause 52.236-21 SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, subparagraph (a)'s requirement for keeping the Solicitation's drawings and specifications at the work site, the Contractor shall also keep on the work site a copy of the accepted Contractor's Final (100%) Design Documents (drawings and specifications, including schedules and color boards) and a complete set of the Contract Documents. The Contractor shall at all times give the Contracting Officer access to these documents as well.

## **APPROVAL OF MACHINERY AND EQUIPMENT**

Reference to Contracting Officer's approval of "machinery and mechanical and other equipment to be incorporated into the work" in Contract Clause 52.236-5 MATERIAL AND WORKMANSHIP, paragraph (b), applies only to machinery and equipment specified in the Solicitation documents.

## **LIMITATION OF PAYMENT FOR DESIGN**

If it should be necessary to terminate this contract, for any reason, prior to completion, the Government will pay the Contractor a fair and reasonable price for the design services performed and delivered to the Government. However, such payment will not exceed a sum greater than the amount allowable under 10 USC 4540 regardless of the actual costs the Contractor may be able to substantiate.

## **UTILITY SERVICES (52.0001-4045 FSH)**

Water and electrical services may be available from Government-owned and operated systems and furnished without charge to the Contractor when available at each task order site. Where utilities are required for performance but not available at the job site, contractor will be required to furnish utilities at his own expense. The contractor is responsible for making connections and restorations and for making such arrangements with the Contracting Officer or his designated representative. Utility arrangements shall be included in the contractor's proposal for each task order. **[AM#2] Refer to Section 00800, paragraph 52.9034-4000 for additional utility information.**

## **IDENTIFICATION OF EMPLOYEES (52.0001-4047 FSH)**

[AM #0002]

### **A. Fort Sam Houston and Brooks Air Force Base**

**1. The Contractor shall be responsible for furnishing an identification badge/card to each employee prior to commencement of work on site, and employees shall wear a visible identification badge at all times on the job site. As a minimum, the contractor's name and phone number, employee's photograph, title of contract, and employee name/identification shall be**

displayed on the identification badge/card. All prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon the release of any employee.

2. WORK IN SECURE AREA: In the event that work is required in a secure area, the Contractor shall obtain and submit to the COR finger-prints of all persons employed on the project.

3. Clothing worn by all contractor employees shall comply with applicable health and safety provisions and shall not include any portion of past or present military uniforms. Official contractor logos and uniforms are permissible. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

[AM#2]

B. Lackland Air Force Base

The Contractor shall be responsible for furnishing to each employee, and for requiring each employee engaged on the work to display, identification as approved and directed by the Contracting Officer. Each individual will be required to carry a photo ID on his/her person at all times. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

Furnish the following information for each person proposed to work on the jobsite at least two (2) weeks prior to his or her projected entry:

Name  
Social Security Number  
Date of Birth  
Place of Birth  
Current Address

All Contractor personnel will be subject to background investigation to determine if outstanding warrants exist or if they are members of organizations involved in subversive or terrorist activities.

**PAYMENT FOR MATERIALS DELIVERED OFF-SITE (JUL 1989)**

(EFARS 32.111 (71)) (52.0032-4111 71)

Pursuant to the clause entitled "Payments Under Fixed Priced Construction Contracts" materials delivered to the contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the General Provisions are fulfilled. Payment for items delivered to locations other than the work site will be limited to those materials which have been approved, if required by the technical provisions; those materials which have been fabricated to the point where they are identifiable to an item of work required under this contract. Such payment will be made only after receipt of paid or receipted invoices or invoices with cancelled check showing title to the items in the prime contractor and including the value of material and labor incorporated into the item.

**TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER**

(52.0212-4000 FSH)

(a) This provision specifies the procedures for determination of time extensions for unusually severe weather in accordance with the contract clause, Section 00700, "DEFAULT (FIXED-PRICE CONSTRUCTION)." In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the task order 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.

(2) 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.

(b) 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.

SAN ANTONIO, TX AREA (FORT SAM HOUSTON, KELLY, LACKLAND, BROOKS, AND RANDOLPH AFB'S, RESERVE CENTERS AT SAN ANTONIO, AND BEXAR COUNTY, TX)

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

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4	3	3	2	4	4	1	1	3	2	2	3

(c) Upon acknowledgment of the Task Order and continuing throughout the task order, 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.

(d) 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 (b), 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, Section 00700, "DEFAULT (FIXED-PRICE CONSTRUCTION)."

**LIQUIDATED DAMAGES--CONSTRUCTION (52.0212-4405 FSH)**

(a) If the Contractor fails to complete the work within the time specified in the task order, or any extension thereof, the Contractor shall pay to the Government liquidated damages, for each day of contractor

delay, as negotiated in each individual task order.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

**LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS**

(52.0214-4201 FSH)

See Sections 00900 DESCRIPTION/SPECS/WORK STATEMENT and 00910 CONTRACT DATA REQUIREMENTS LIST & DATA ITEM DESCRIPTIONS for applicable documents, exhibits, and other attachments.

**LANGUAGE** (52.0223-4102 FSH)

For each work group which employs individuals who do not speak English, the contractor shall provide a bilingual foreman who is fluent in the English language and in the language of the workers. The Contractor will implement the requirements of EM 385-1-1, paragraph 01.B01, 01.B02, and 01.C.02 through these foremen.

**LAYOUT OF WORK** (APR 1984)

The Contractor shall lay out its work from Government-established base lines and bench marks indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving 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 its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

(End of clause)  
(R 7-604.3 1965 JAN)

**WRITTEN GUARANTEES AND GUARANTOR'S REPRESENTATIVE**

(52.0236-4200 FSH)

The Government is entitled to all standard commercially-offered warranties/guarantees. The contractor shall obtain all warranties, have them executed in writing and furnish them to the Contracting Officer prior to final inspection. Additionally, the contractor shall furnish, with each guarantee, the name, address, and telephone number of guarantor's representative who, upon the Contracting Officer's request, will honor the

guarantee during the guarantee period and who will provide the services in accordance with the guarantee terms. (Reference Section 01700.)

**ECONOMIC PRICE ADJUSTMENT FACTOR FOR OPTION YEARS**  
(52.0236-4203 IDQ)

Adjustment to the base year unit prices for all option years will be in accordance with the equation:

$$P_1 = P \times f$$

Where  $P_1$  - New Unit Price

$P$  - Unit Price for Base Year of Contract

$f$  - Index factor

The index factor,  $f$ , shall be computed according to the following equation:

$$f = \frac{\text{CCI-C}}{\text{CCI-B}}$$

CCI is the Construction Cost Index as published by ENR Magazine, formerly called Engineering News Record.

In computing  $f$ , the CCI-C may be located on the Market Trends page of the ENR current issue at the time the option is exercised. The CCI-B is the base reference for the month in which the basic contract was awarded. (Currently published annually in last issue in March.)

If ENR changes the index base year(s), the base reference used herein will be adjusted to accommodate new CCI-C(s).

If the CCI-C ceases to be published the parties shall agree on substitute indices.

Example Calculation:

Base Period Contract awarded: May 1996

Option Period exercised in: May 1997

Unit Price for the Base Period was: \$1.50 per unit

Therefore:  $f = \frac{\text{CCI-C (May 1997)}}{\text{CCI-B (May 1996)}} = \frac{5572}{5433} = 1.026$

Adjusted unit price for the option period would be:

$$\$1.50 \times 1.026 = \$1.54 \text{ per unit}$$

**CLASSIFICATION OF WORK PERFORMED BY CONTRACTOR**  
(52.0236-4501 FSH)

Unless he has submitted such description with his offer, the successful offeror must furnish the Contracting Officer's Representative, within 20 days after contract award, a description of the work which he intends to perform with his own organization (e.g., earthwork, paving, brickwork, or roofing).

**BASIS FOR SETTLEMENT OF PROPOSALS** (52.0249-4500 FSH)

Actual costs will be used to determine equipment cost for a settlement proposal submitted on the total cost basis under FAR 49.206-2(b). In evaluating a termination settlement proposal using the total cost basis, the following principles will be applied to determine allowable equipment costs:

(1) Actual costs for each piece of equipment, or groups of similar serial or series equipment, need not be available in the contractor's

accounting records to determine total actual equipment costs.

(2) If equipment costs have been allocated to a contract using predetermined rates, those charges will be adjusted to actual costs.

(3) Recorded job costs adjusted for unallowable and unallocable expenses will be used to determine equipment operating expenses.

(4) Ownership costs (depreciation) will be determined using the contractor's depreciation schedule (subject to the provisions of FAR 31.205-11).

(5) License, taxes, storage and insurance costs are normally recovered as an indirect expense and unless the contractor charges these costs directly to contracts, they will be recovered through the indirect expense rate.

**CONTRADICTION IN QUANTITIES (52.0249-4501 FSH)**

Any contradiction in quantities requested (i.e., 6 copies required by the CONTRACT DATA REQUIREMENTS LIST and 4 copies required by Division I specifications) the greater quantity shall be provided.

**CONTRACT ADMINISTRATION OFFICE (52.9004-4000 FSH)**

The Contract Administration Office for this contract is located at the following address:

U.S. Army Corps of Engineers  
San Antonio Area Office  
ATTN: CESWF-AO-S  
4204 Woodcock, Suite 245  
San Antonio, Texas 78228-1319

**ORDERING OFFICER (52.9005-4000 FSH)**

Ordering Officer(s) will be appointed by a letter from the Contracting Officer after contract award.

**CONTRACTING OFFICER REPRESENTATIVE (COR)**

(52.9005-4001 FSH)

The Contracting Officer Representative(s) will be designated by letter after contract award.

**BILLING PROCEDURES (52.9005-4002 FSH)**

a. The contractor shall submit, at least monthly, billings in accordance with the clause entitled "Allowable Cost and Payment" and "Payments Under Time-and-Materials and Labor-Hours Contracts". All documents submitted for payment shall reference that accounting and appropriation data set forth in the individual task order.

b. Billings for fixed price orders shall be submitted pursuant to the "Payments" clause.

**TECHNICAL LIAISON AND SURVEILLANCE (52.9005-4003 FSH)**

a. Performance by the contractor of the technical aspects of this contract as described in the Scope of Work is under the cognizance of the U.S. Army Corps of Engineers, Fort Worth District **[AM #0002], San Antonio Area Office**. All matters relating solely to the technical aspects of the contractor's performance may be communicated District directly to the technical point of contact named in paragraph c below. This clause is governed by the following:

b. No changes in the scope of work within the task order or within the scope of this contract, which would effect a change in any term or clause of this contract, shall be made, except by a modification executed by the Contracting Officer. The contractor is responsible to ensure that all contractor personnel are knowledgeable and cognizant of this contract clause. Changes to contract efforts accepted and performed by contractor personnel outside of the contract, without authorization of the Contracting Officer, shall be the responsibility of the contractor.

c. The technical point of contact for each task order will be the **[AM# 0002] Contracting Officer's Representative** at the U.S. Army Corps of Engineers (San Antonio Area Office) unless identified otherwise in the task order.

**UNAUTHORIZED INSTRUCTIONS FROM GOVERNMENT PERSONNEL (52.9005-4004 FSH)**

a. The contractor shall not accept any instructions issued by any person employed by U.S. Government or otherwise, other than the Contracting Officer, or the Ordering Officer, or the Contracting Officer's Representatives (the Administrative Contracting Officer (ACO) and the Contracting Officer's Representative (COR)) acting within the limits of their authority). The Ordering Officer, ACO and COR, and the scope of their authority, will be designated in writing and identified to the contractor.

b. Only information contained in an authorized amendment or modification to the contract, or a task order duly issued by the Contracting Officer, may be considered by the contractor as grounds for deviation from any stipulation of this contract, any modification, referenced drawings, and/or specifications. No information received from any person employed by the Government, other than the Contracting Officer, shall be considered as grounds for deviations from the specified stipulations.

**WORK BY THE GOVERNMENT (52.9010-4000 FSH)**

The Government reserves the right to undertake performance by Government forces or other Contractors, the same type or similar work as contracted for herein, as the Government deems necessary or desirable. Such action on the behalf of the Government will not breach or otherwise violate this contract.

**GOVERNMENT-FURNISHED SITE (52.9012-4000 FSH)**

a. If the Contractor wants an on-site office, a parcel of land will be provided on Fort Sam Houston as designated by the Contracting Officer, Ordering Officer or his designated representative. On-site offices at the other bases and sites shall be provided by the Contractor if required by individual task orders and approved by the Contracting Officer, Ordering Officer, or his designated representative.

**[AM #0002]b. If the Contractor intends to have an on-site office, or facility, trailers and storage areas with visual screens to house staff personnel and equipment used in performance of this contract, these facilities are required to meet base standards and connect to existing utility lines.** See Section 01500 TEMPORARY CONSTRUCTION FACILITIES.

#### ORDERING PROCEDURES (52.9013-4000 FSH)

a. As the need exists for performance under the terms of this contract, the Contracting Officer, Ordering Officer or his authorized representative will notify the Contractor, in writing, of an existing requirement.

b. Upon receipt of this notification, the Contractor shall respond to the needs of the Government within 2 working days by visiting the proposed work site in the company of the Contracting Officer or his authorized representative. Per Section 00800, "TASK ORDER LIMITATIONS", if the Contractor does not wish to provide the services identified at the site visit he must submit an explanation of non-intent, in writing, within 48 hours after the site visit. Explanation of non-intent must be acceptable to the Government. The Government may issue a time-and-material individual task order to the Contractor if it deems the reasons for non-intent are unacceptable; the Contractor may, at his discretion, submit a claim to the Contracting Officer for final decision, but will be required to proceed diligently and expeditiously with the requirements of the task order.

c. Upon establishment of the scope of the individual requirement, the Contractor shall then be requested in writing by the Contracting Officer or his authorized representative to prepare his proposal for accomplishment of the task.

(1) The Contractor's proposal must be supported by necessary documentation to indicate that adequate engineering and planning to accomplish the requirement has been done.

(2) Time for submittal of the Contractor's proposal for individual requirements will be as agreed upon by the Government and the Contractor for unusually difficult projects.

d. Contractor's proposals shall be provided as outlined in Section 00910 CONTRACT DATA REQUIREMENTS LIST & DATA ITEM DESCRIPTIONS, FRP008, PRICE PROPOSAL.

e. Upon receipt of the Contractor's proposal, the Government will review the proposal for completeness. The Government will negotiate with the Contractor on all CLINS, performance times, method of construction, materials chosen, and quantities.

f. The Government may determine the appropriate liquidated damages per task order. (See Section 00800, "LIQUIDATED DAMAGES--CONSTRUCTION.")

g. Task orders will then be issued using a DD Form 1155. Each task order will include the following information:

- (1) Date of the task order.
- (2) Contract number, task order number, and performance period in calendar days.
- (3) Item number and description, quantity and unit prices.
- (4) Task order price, delivery or performance data.
- (5) Accounting and appropriation data.
- (6) Any other pertinent data. (Scope of Work, drawings, etc.)

h. It should be realized by the Contractor that unforeseen circumstances may prohibit the Government from issuing an individual task order even after the receipt of the Contractor's task order proposal or after the task order has been negotiated. If such circumstances arise, the Government is not obligated to reimburse the Contractor for any costs incurred in the preparation of the task order proposal.

**COMMENCEMENT OF MOBILIZATION/WORK (52.9014-4000 FSH)**

a. The Contractor shall commence any mobilization and familiarization activities prior to actual work on individual task orders as soon after contract award as practicable. The contractor shall be able to perform site visits, submit cost proposals, and negotiate task orders with the Government ten (10) calendar days after contract award. The Contractor shall be fully operational and capable of immediately starting physical work on any task order within 45 calendar days after contract award.

b. WITHIN 10 CALENDAR DAYS UPON NOTIFICATION OF AWARD THE CONTRACTOR SHALL: Submit Performance and Payment Bonds to the Contracting Officer (See Section 00100, "BONDS").

c. WITHIN 5 WORKING DAYS OF ACCEPTANCE OF BONDS THE CONTRACTOR SHALL:

- (1) Meet with the Contracting Officer's authorized representative to establish the agenda for the pre-construction conference (See Section 00800, "PRE-CONSTRUCTION CONFERENCE").
- (2) Initiate mobilization to the contractor's yard as designated by the Contracting Officer authorized representative.
- (3) Initiate utility hookups at the contractor's yard.

d. WITHIN 45 CALENDAR DAYS OF AWARD THE CONTRACTOR SHALL:

- (1) Have all critical staff members on site.
- (2) Be fully operational and capable of immediately starting physical work on any task orders previously negotiated with the Government and on any required task orders.

**PRE-CONSTRUCTION CONFERENCE (52.9015-4000 FSH)**

a. Initial Conference. When determined appropriate by the Contracting Officer, before the issuance of the first task order under the contract, a conference will be conducted by the Ordering Officer or the Contracting Officer's Representative to acquaint the Contractor with Government policies and procedures that are to be observed during the prosecution of the work and to develop a mutual understanding relative to the

administration of the contract.

b. Individual Task Order Conferences. Conferences will be held on all task orders except those deemed not necessary by the Ordering Officer or the Contracting Officer's Representative.

**DEVIATION FROM PROPOSED LIST OF SUBCONTRACTORS**

(52.9015-4001 FSH)

a. The Contractor shall update the list of his subcontractors monthly and submit the updated list through the COR to the Ordering Officer by the 10th day of each month. This list should contain all subcontractor deviations (increases/decreases) which vary from the original list of contemplated subcontractors provided in the technical proposal.

b. In addition to the above, the contractor shall submit with proposal for each task order a list of subcontractors who will perform work under each task order.

**GOVERNMENT-FURNISHED EQUIPMENT/MATERIALS (52.9016-4000 FSH)**

a. If Government property is furnished as part of a task order, it will be identified on the individual task orders. The Government property will be received, loaded and transported from the storage site by the contractor. The contractor shall be required to establish a hand receipt with the appropriate Property Book Officer to receive the supplies as directed by the Contracting Officer or Ordering Officer

b. The Contractor assumes the risk and responsibility for the loss or damage to Government-furnished property as defined in FAR 52.245-2.

c. The Contractor shall follow the instructions of the Contracting Officer or his designated representative regarding the disposition of all Government furnished property not consumed in performance of a task order.

**RECORD DRAWINGS (52.9017-4001 FSH)**

a. During the execution of each task order, the contractor shall maintain a detailed record (vector graphics) at the job site of all changes and corrections from layouts shown on the provided drawings or, as appropriate, produce drawings of all work completed. This action is required to update record drawings, to complete a DD Form 1354 (Transfer and Acceptance of Military Real Property).

b. The contractor shall be responsible for providing all contract drawings in the format specified by the Government. Each sheet of the corrected set shall be stamped with the marking "RECORD DRAWINGS AS BUILT." The contractor shall also submit the complete DD Form 1354 to the COR with The record drawings.

c. Prior to final payment for each task order, the contractor shall provide a record drawing as designated by the Contracting Officer. Final as-built drawings shall indicate, in addition to all changes and corrections, the actual location of all subsurface utility lines which were

affected or encountered during the work on the task order. The as-built drawings shall show, by offset dimensions to two permanently fixed surface fixtures, the end of each run and the location of each change in direction. Valves, splice boxes, material types and similar appurtenances shall be located by dimensioning along the utility run from a reference point. The average depth below the surface of each run and type of material shall also be recorded. All information available about installed appurtenances shall be recorded and keyed to the installed location of the drawings.

d. At the time of beneficial occupancy of each structure or facility involved under the contract, the contractor shall submit to the Contracting Officer, Ordering Officer or his designated representative as-built prints showing the aforementioned data. Within ten (10) work days **[AM #0002] prior to** the date set for completion of each task order, the contractor shall submit the final as-built and record drawings to the Contracting Officer, Ordering Officer or his designated representative for review and approval if required by the Contracting Officer. DD Form 1354 shall be provided to the Contracting Officer, Ordering Officer or his designated representative for review and approval at this time.

e. Submission of all drawings, tracing, prints, records, and as-built drawings shall be in electronic format if specified by the Contracting Officer or his designated representative.

f. The Contracting Officer will consider that satisfactory progress has not been achieved for specified periods in question where the contractor fails to maintain either the required record drawings or DD Form 1354. Ten percent (10%) (or a minimum of \$500.00) of any progress payment to be made will, therefore, be retained by the Government until such drawings and completed forms are current.

g. See Section 01700 CONTRACT CLOSEOUT, paragraph RECORD DRAWINGS.

#### **SCHEDULING WORK (52.9019-4000 FSH)**

a. Before commencement of work under a task order, the Contractor shall confer with the Contracting Officer and agree on a sequence of procedures; means of access to premises and building; space for storage of materials, fixtures and equipment (excluding computers); delivery of materials and use of approach; use of corridors, stairways, elevators; means of communications; location of partitions, eating spaces, and restrooms for Contractor's employees, etc. A pre-construction conference may be scheduled at the discretion of the Contracting Officer or his designated representative.

b. Most work will be performed in occupied areas. Furniture and portable office equipment in the immediate area shall be moved by the Contractor and replaced to its original position. If the work required by the task order will not allow for replacing furniture and portable office equipment in its original location, the contractor shall replace those items in new locations as assigned by the Contracting Officer or his designated representative. Delivery of materials and equipment shall be made with a minimum of interference to Government operations and personnel.

c. When detours or street closures are required either during regular

duty hours or non-duty hours, the contractor shall notify the Contracting Officer or his designated representative, in writing, at least **[AM #0002] fourteen (14)** calendar days in advance of the occurrence, describing the circumstances and requesting approval. One lane of traffic shall be maintained at all times unless otherwise approved in writing by the Contracting Officer or authorized representative. The contractor shall be responsible for providing all necessary traffic control, such as street blockages, traffic cones, flagmen, etc., as required for each task order at no additional cost to the Government. The final street repair shall be completed within 14 days after the start of any street demolition for utility crossings or other purposes. Any part of the street returned to services prior to final repair shall be maintained smooth with hot-mix cold-lay surface course. Proposed traffic control methods shall comply with the Uniform Traffic Control Device Manual and shall be submitted to the Contracting Officer or his designated representative for final approval.

d. At the end of each working day, the contractor shall notify the Contracting Officer or his representative of the locations of work to be accomplished the following work day via daily inspection logs.

e. Work which requires tapping into existing electrical, sewer, water, storm sewer, air lines, controls, alarms, telephone wires, etc., shall be performed in a manner which causes minimum interference with base operations.

(1) Where possible, and as directed by the Contracting Officer or his designated representative, interruptions to utility services in other than family housing areas, shall occur during a weekend or during other than regular working hours and shall be coordinated with the Contracting Officer or his designated representative.

(2) When interruption of utility services is required, either during regular duty hours or non-duty hours, the contractor shall notify the Contracting Officer or his designated representative, in writing, at least fourteen (14) calendar days in advance of the occurrence, describing the circumstances and requesting approval. **[AM #0002] Water, gas, steam, electrical and sewer outages shall be held to a maximum duration of 4 hours unless otherwise approved in writing.** The contractor shall be required to shut off and restore service unless otherwise directed by the Contracting Officer.

#### **OPERATION AND MAINTENANCE (52.9020-4001 FSH)**

a. Prior to final acceptance and payment of each Task Order, the Contractor shall submit one (1) complete equipment listing (to include name plate data) and three (3) copies of all operation and maintenance manuals to the Contracting Officer's Representative for all mechanical/electrical systems, electrical controls, etc. **[AM #0002] Additional copies may be specified by task order.**

b. Three work days in advance of final acceptance and payment, the contractor shall conduct a training session (one-hour minimum, on site) to brief up to six (6) Government personnel on the operation and maintenance procedures of such systems. The Contractor shall provide three (3) complete tear-down/overhaul/repair manuals and two (2) complete service literature catalogs for the equipment manufacturer's engineered machinery

products for the equipment provided. **[AM #0002] Additional copies may be specified by task order.** See Section 01700 PROJECT CLOSEOUT.

**ENVIRONMENTAL PROTECTION (52.9021-4000 FSH)**

a. The contractor shall be responsible for the proper removal, handling, and disposal of all solid, liquid, and gaseous contaminants including lead and freon in accordance with all Federal, state and local regulations and codes in addition to the provisions specified herein.

(1) Freon in existing refrigeration equipment shall be removed by licensed personnel into cylinders and drums approved for recovery in accordance with ARI-88 and Mil Spec BBF-142B. Freon shall not be discharged into the environment. All recovered freon shall be turned in to the Fort Sam Houston Director of Public Works.

(2) Contractor shall discharge gaseous contaminants so that they will be sufficiently diluted with fresh air to reduce their toxicity to an acceptable level.

(3) Liquid contaminants may, subject to local utility standards, be diluted with water to a level of quality acceptable in the local sewer system, or shall be disposed of in approved vessel at approved sites.

b. All contaminants, scrap and debris resulting from operations under this contract, shall be removed at the end of each working day and hauled off base to a state approved landfill. The Government will not provide a disposal site for contaminants or toxic waste.

c. Burning of Materials and Debris. No materials or debris shall be burned on Government property.

d. Covered Chutes. All chutes for contaminants, refuse, etc., shall be covered or designed so as to fully confine the material to prevent the dissemination of dust.

e. The Contractor shall coordinate all activities which may require environmental documentation or state environmental permits with the Fort Sam Houston Environmental and Natural Resources office, or the appropriate offices at Lackland Air Force Base, Brooks Air Force Base, the City of San Antonio, or Bexar County, depending on the location of the task order site, prior to start of work.

f. See Sections 01410 ENVIRONMENT PROTECTION FOR FORT SAM HOUSTON AND OTHER AREAS EXCEPT LACKLAND AIR FORCE BASE and 01411 ENVIRONMENTAL PROTECTION FOR LACKLAND AFB.

**CONSTRUCTION SITE MAINTENANCE (52.9022-4000 FSH)**

a. The Contractor shall store all supplies and equipment at the location designated for the Contractor's Management Office or at a location designated by/coordinated with the Contracting Officer's Representative so as to preclude mechanical and climatic damage. The site shall be maintained in a neat and orderly manner in accordance with base regulations.

Vehicles shall not be parked on grassy areas. See Section 01500 TEMPORARY CONSTRUCTION FACILITIES.

**NOISE CONTROL** (52.9023-4000 FSH)

See Sections 01410 ENVIRONMENT PROTECTION FOR FORT SAM HOUSTON AND OTHER AREAS EXCEPT LACKLAND AIR FORCE BASE and 01411 ENVIRONMENT PROTECTION FOR LACKLAND AFB.

**GOVERNMENT EQUIPMENT ON THE SITE** (52.9024-4000 FSH)

The Contractor shall cover equipment that is to remain in place within the area of contract operations and protect it against damage or loss; move and store equipment that is removed in performance of work where directed or reuse in work as required by drawings and specifications. Equipment temporarily removed shall be protected, cleaned and replaced equal to its condition prior to starting work. Security for equipment or materials that is to be reused and is removed for temporary storage shall be the sole responsibility of the Contractor.

**TRUCKING** (52.9025-4000 FSH)

The Contractor shall load all trucks in a manner which will relieve the site of loose debris in a manner that will prevent dropping of dust, dirt, and other materials on streets. The Contractor shall be responsible for cleaning up any materials that fall from trucks and any damage caused by debris falling out/off of trucks.

**TOILET FACILITIES** (52.9026-4000 FSH)

Contractor's personnel will be permitted to use toilet facilities where available and or allowed by Facility User on the premises subject to regulation and control of the Contracting Officer or his designated representative. Contractor personnel shall ensure facility cleanliness is maintained at all times. On those sites where no toilet facilities are available, the Contractor shall provide adequate facilities, at no additional cost to the Government. These facilities shall be maintained in accordance with base regulations.

(End of Clause)

**ELEVATORS** (52.9027-4000 FSH)

a. Any temporary use of an existing elevator shall be by arrangement with the custodian and subject to his controls. Such use will be of an intermittent nature. The Contractor shall provide and maintain suitable and adequate protection covering for the elevator machinery, the hatchway entrance, and the interior of the elevator during the period of temporary use. Loads in excess of the rated capacity of the elevator will not be permitted.

b. The Government will bear the cost of electrical current for the operation of the elevator. Upon completion of work, the Contractor shall

remove the protection coverings together with any resultant dirt and debris, and leave the equipment in a condition equal to that in which he found it.

**SAFETY AND HEALTH** (52.9028-4000 FSH)

a. This section is applicable to all work covered by this contract.

b. The publications listed in Section 00900 DESCRIPTION/SPECS/WORK STATEMENT are applicable to and form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

c. Definition of Hazardous Materials: Refer to hazardous and toxic materials/substances included in Subparts H and Z of 29 CFR 1910, and to others as additionally defined in Fed. Std. 313. Those most commonly encountered include asbestos, polychlorinated biphenyls (PCBs), explosives, radioactive material, lead, and lead based paint, but may include others.

d. Asbestos

(1) Asbestos containing material (ACM) demolition may be required under this contract.

(2) THE CONTRACTOR IS WARNED THAT EXPOSURE TO AIRBORNE ASBESTOS HAS BEEN ASSOCIATED WITH FOUR DISEASES: LUNG CANCER, CERTAIN GASTROINTESTINAL CANCERS, PLEURAL OR PERITONEAL MESOTHELIOMA AND ASBESTOSIS. Studies indicate there are significantly increased health dangers to persons exposed to asbestos who smoke, and further, to family members and other persons who become indirectly exposed as a result of the exposed worker bringing asbestos-laden work clothing home to be laundered.

(3) The Contractor is advised that friable and/or nonfriable asbestos-containing material may be encountered in area(s) where contract work is to be performed. Friable asbestos-containing material means any material that contains more than one percent asbestos by weight that hand pressure can crumble, pulverize or reduce to powder when dry. Nonfriable asbestos-containing materials are materials in which asbestos fibers are bound by a matrix material, saturant, impregnant or coating. However, excessive fiber concentrations may be produced during uncontrolled abrading, sanding, drilling, cutting, machining, removal, demolition or other similar activities.

(4) Care shall be taken to avoid releasing, or causing to be released, asbestos fibers into the atmosphere where they may be inhaled or ingested. The Occupational Safety and Health Administration (OSHA) has set standards at 29 CFR 1910.1002 and 29 CFR 1926.58 for exposure to airborne concentrations of asbestos fibers, methods of compliance, medical surveillance, housekeeping procedures and other measures that shall be taken when working with or around asbestos-containing materials. The Environmental Protection Agency (EPA) has established standards at 49 CFR 61.140-156 for the control of asbestos emissions to the environment and the handling and disposal of asbestos wastes.

(5) Use of friable asbestos-containing materials are not permitted by current criteria and shall not be used in new construction or modification

projects (ETL 1110-1-118, 27 May 1983). Plans and specifications for all new construction and modification projects will be reviewed to ensure that the use of friable asbestos-containing materials is not specified.

(6) Maintenance, modification, or demolition activities where exposure to asbestos dust may occur from previously installed friable or nonfriable asbestos-containing material shall be identified. All precautions, to include proper work practices, medical surveillance, respiratory protection, industrial hygiene, and environmental protection requirements of OSHA, EPA (40 CFR 61.140-156) and DA Circular 40-83-4, as applicable, shall be strictly adhered to.

e. Lead-Base Paint: The contractor shall report any findings of suspected lead or lead-based paint to the Contracting Officer's Representative before starting work. Lead-based paint removal and disposal may be required under this contract.

**SAFETY ASSURANCE** (52.9029-4000 FSH)

a. Preconstruction Safety Meeting: Representatives of the Contractor shall meet with the Ordering Officer and his representative(s) prior to the start of repair, alteration or construction activities for the purpose of reviewing the Contractor's safety and health programs and discussing implementation of all safety and health provisions pertinent to the work to be performed under the contract.

(1) This meeting may be held in conjunction with the pre-construction conference, if so directed by the Contracting Officer, Ordering Officer or his designated representative. The conduct of this meeting is not contingent upon a general preconstruction meeting. The level of detail for the safety meeting is dependent upon the nature of the work and the potential inherent hazards.

(2) The Contractor's principal on-site representative(s), the general superintendent and his/her safety representative(s) shall attend this meeting. The Contractor shall be prepared to discuss, in detail, the measures he/she intends to take in order to control any unsafe or unhealthy conditions associated with the work to be performed under the contract.

b. Compliance with Regulations: All work, including the handling of hazardous materials or the disturbance or dismantling of structures containing hazardous materials shall comply with Department of Labor, OSHA requirements found in 29 CFR 1910 and 29 CFR 1926, project identified national standards, military manuals, instructions, pamphlets, standards and handbooks, and with USACE Safety Manual EM 385-1-1. All work shall comply with latest revisions of Federal, State and local regulations in force at time of task order award.

c. Work involving the disturbance or dismantling of asbestos, asbestos-containing materials or lead based paint; the demolition of structures containing asbestos or lead based paint; and/or the disposal and removal of asbestos or lead based paint, shall be reported to the Contracting Officer before starting work.

d. Contractor Responsibility:

(1) The Contractor shall assume full responsibility and liability for compliance with all applicable regulations pertaining to the health and safety of personnel during the execution of work, and shall not hold the Government liable for any action on his part or that of his employees or subcontractors, which results in illness, injury or death.

(2) The Contractor shall furnish to the Contracting Officer's Representative a complete accident prevention plan, including a hazard analysis of all operations to be performed by construction trade. The hazard analysis shall be updated/submitted to the Contracting Officer's Representative on an ongoing basis as required prior to start of new work. The accident prevention plan/hazard analysis documentation shall be forwarded to the Contracting Officer's Representative's Installation Occupational Safety and Health Office, for approval prior to start of contractual operations.

(3) All temporary construction electrical systems shall be equipped with ground fault circuit interrupter (GFCI) protection.

(4) Contractor shall have a hearing conservation program in force when the noise level is 85dBA or greater for Contractor/Government personnel.

(5) Contractor shall have a hazardous communication (HAZCOM) program in force and have his personnel trained in the HAZCOM program. Contractor shall maintain up-to-date material safety data sheet (MSDS) files on site in addition to having on site a written copy of the firm's HAZCOM program.

(6) The contractor shall report any accidents and injuries occurring on any of the bases or sites to the Contracting Officer within 24 hours. Emergencies, deaths, and major accidents shall be reported to telephone number 911 and the Contracting Officer immediately.

e. Inspections, Tests, and Reports: The required inspections, tests, and reports made by the Contractor, subcontractors, specially trained technicians, equipment manufacturers, and others as required by a task order, shall be furnished in accordance with the terms of the task order.

f. Materials and Equipment: Special facilities, devices, equipment, clothing, and similar items (such as hard hats, breathing apparatus, traffic barriers, etc.) used by the Contractor in the execution of work shall comply with the applicable regulations. Materials and equipment shall be provided at no additional cost to the Government.

g. All companies who conduct business within the state of Texas must, in accordance with Texas Workman Compensation laws (Texas House Bill 62), have an approved company safety policy and an Accident Prevention Plan. The plan, approved by the Texas Workman Compensation Commission (TWCC), shall be submitted For Information Only (FIO) in accordance with Section 01330, SUBMITTAL PROCEDURES. In addition to meeting the TWCC requirements; the plan must also include the requirements of USACE Safety Manual EM 385-1-1.

h. All holes/pits/trenches/manway openings, etc., that are to be left open shall be surrounded with a 48 inch high mesh fence with highly visible orange plastic coating. The fence shall be so anchored as to prevent

sagging and located a minimum of 3 feet from the opening so as to prevent an individual, should he fall across the fencing, from falling into the opening. Holes shall also be covered, when not being worked in, with three quarter inch plywood or a metal grating that will prevent small children from entering the hole.

i. Confined Space Entry, reference 29 CFR 1910.146 and all OSHA standards apply to this contract. Fort Sam Houston Fire Department shall be contacted for any required permits for Fort Sam Houston and Brooke Army Medical Center task orders and from the appropriate offices at Lackland and Brooks Air Force Bases.

j. Radiation Permits and Authorizations: Contractors contemplating the use of devices containing radioactive materials (i.e., soil moisture/density probes) or non-ionizing radiation producing equipment (radio frequency radiation transmitters or lasers) while performing work **[AM #0002] at Fort Sam Houston or Brooke Army Medical Center shall obtain written authorization/permit from the Fort Sam Houston Radiological Protection Officer (RPO). To obtain the required authorization/permit, contact the RPO at Preventive Medical Division, BAMC, Ft. Sam Houston, TX 78234-6000, (210) 916-6400. Coordinate with the Contracting Officer's Representative for authorization/permit at Lackland or Brooks Air Force Bases or other sites. A 45-day lead time shall be anticipated. Without the proper authorization, contractors will not be allowed to bring these devices on base.**

k. See Section 01560 TEMPORARY SAFETY CONTROLS.

#### **HAZARDOUS MATERIALS (52.9030-4000 FSH)**

The Contractor shall provide the base Environmental Office (i.e. Directorate of Public Works (DPW) Environmental Office for Fort Sam Houston) a list of all hazardous materials, storage, and disposal methods for the wastes generated to the Environmental Office for review and approval prior to use of the materials. The Contractor shall submit spill prevention and contingency plans to the Environmental Office for review and approval prior to start of work. Any costs associated with spill clean up shall be borne by the Contractor.

#### **PRESERVING HISTORICAL AND ARCHEOLOGICAL FINDS**

(52.9031-4000 FSH)

For Fort Sam Houston, the Contractor shall be required to obtain historical and archeological clearance from the Environmental and Natural Resources Office prior to conducting any disturbing action in areas where historical and archeological resources exist. This shall include all areas except improved roads, grounds and similar areas. Any failure to do so, which results in damage to cultural resources, may result in claims for costs of mitigating damage being assessed against the Contractor.

All construction or alteration work performed on or near historical structures at Fort Sam Houston shall comply with the Fort Sam Houston programmatic agreement with Texas State Historic Preservation Office. Contractor shall provide info and prepare draft applications for Environmental and Natural Resources Office submitted to state agencies.

See Sections 01410 ENVIRONMENT PROTECTION FOR FORT SAM HOUSTON AND OTHER AREAS EXCEPT LACKLAND AIR FORCE BASE and 01411 ENVIRONMENT PROTECTION FOR LACKLAND AFB.

**CONTRACTOR STAFF** (52.9033-4000 FSH)

a. The contractor shall be accountable to the Government for conduct of contractor employees and representatives. These individuals shall be subject to the same rules of conduct on the military installation (and at any installation under its cognizance) which apply to Government civilian employees. The Government reserves the right to refuse access to any contractor employee if the Contracting Officer determines such action to be in the best interest of the Government.

b. The contractor shall designate a responsible project management official of the company to represent him in all matters pertaining to work under this contract. That individual shall be available to the Contracting Officer at all times during regular working hours.

c. The contractor shall employ a competent English-speaking superintendent at each base's project office at all times when work is being performed. The superintendent shall devote his/her time exclusively to supervision of work in progress under this contract.

d. The contractor shall select well-qualified employees to perform work under each task order, provide a qualified English-speaking supervisor to direct work at each work site, and keep employees informed of all improvements, changes, and methods of operations.

e. When removal of a contractor employee or representative from a facility of the installation or other Government property, becomes necessary due solely to the individual's misconduct or a security violation, the contractor shall take prompt, appropriate action to remove that individual from his staff.

**GOVERNMENT-FURNISHED UTILITIES** (52.9034-4000 FSH)

a. In accordance with Section 00800 clause 52.1-4045 FSH UTILITY SERVICES and when utilities are available at task order sites, the Government will furnish to the Contractor from existing Government facilities and without cost to the Contractor, water and electrical power supply as set forth below. The Government will not provide gas to the Contractor [AM#0002] at Fort Sam Houston. Contractor shall coordinate with City Public Service in order to obtain access to gas [AM#0002] at Fort Sam Houston. The Contractor shall also coordinate with the Director of Public Works (DPW) for Fort Sam Houston and the Base Civil Engineer at Lackland and Brooks Air Force Bases on all gas related issues. Contractor shall be "energy conscious" in the use of these Government-Furnished Utilities.

b. Water:

(1) The Government shall furnish from existing Government facilities and without cost to the Contractor, an adequate supply of water necessary for performance under this contract. The Government will in no case

furnish or install any required supply connections and piping for the purpose of implementing the availability of the water supply. Contractor shall determine the extent to which existing Government water supply source is adequate for the needs of this contract.

(2) All taps, connections, and accessory equipment required in making the water supply source available shall be accomplished by and at the expense of the Contractor. All work in connection therewith shall be coordinated, scheduled, and performed as directed and approved by the Contracting Officer, Ordering Officer/Contracting Officer's Representative. Said taps, connections, and accessory equipment shall be maintained by the Contractor in workmanlike manner in accordance with rules and regulations of the Government installation. Upon completion of the contract the removal of all taps, connections and accessories shall be accomplished by and at the expense of the Contractor so as to leave the water supply source or facility in its original condition. Such removal shall also be subject to the direction and approval of the Ordering Officer as provided above.

c. Electricity:

(1) The Government shall furnish at existing Government facilities and without cost to the Contractor, all electrical power necessary for performance under this contract; provided, the Government will in no case furnish or install any electrical facility or accessory for the purpose of implementing the availability of electrical power for the purpose of this contract. The Contractor shall determine the extent to which existing Government electrical facilities are adequate for the needs of this contract.

(2) All taps, connections, and accessory equipment required in making the electrical power available shall be accomplished by and at the expense of the Contractor. All work in connection therewith shall be coordinated, scheduled, and performed as directed and approved by the Contracting Officer, Ordering Officer or Contracting Officer's Representative. Said taps, connections, and accessory equipment shall be maintained by the Contractor in workmanlike manner in accordance with rules and regulations of the Government installation. Upon completion of the contract or task order the removal of all taps, connections and accessories shall be accomplished by and at the expense of the Contractor so as to leave the electrical power or facility in its original condition. Such removal shall also be subject to the direction and approval of the Ordering Officer as provided above.

d. Telephone Services: Contractor shall obtain telephone service at no cost to the Government.

e. Interruption of Utilities Service: All temporary outages of any utility services required for the performance of work shall be scheduled with the Contracting Officer's Representative no less than 14 days in advance of such outages; the Contractor may request a waiver from this requirement from the Contracting Officer's Representative when the utility outage will be of a very limited nature (e.g., within a few rooms of a building). If during work performance the Contractor has determined that a utilities-related situation involves the risk to life or substantial risk to property, utilities shall be immediately disrupted to reduce the emergency and alleviate risk. If such a risk exists, or if such a disruption does occur, the Contractor shall notify the Contracting

Officer's Representative at the earliest practical time, and in no case later than two hours following the occurrence.

f. Excavation and Utility Clearance: In accordance with Base (location of task order site) policy and requirements.

**ADP SUPPORT REQUIREMENTS (52.9035-4000 FSH)**

a. The Contractor shall be responsible for obtaining, maintaining, and operating an operational computer system which is compatible with the Government computer systems.

b. The contractor shall be responsible, at his own expense, for obtaining his own automation system consisting of at least two (2) IBM PC compatible computers. Ownership of this system shall remain with the contractor. Each computer shall be fully capable of running MICROSOFT Windows operating system Windows 95 (Y2K-compliant version) or later) and that operating system shall be installed and fully operational upon issuance of notice to proceed for the initial task order issued under this contract.

c. In addition to other software systems as specified by the Contracting Officer, the contractor's systems shall be fully capable of running the following software applications and upgrades, as they are implemented by the Government, to provide complete compatibility with Government systems: Microsoft Office 97 Primavera for Windows, Version 2.0 or higher (version must match that used at the Corps of Engineers San Antonio Area Office) Bentley Systems MicroStation, version 5 or SE, running on Microsoft Windows 95/NT (Fort Sam Houston, Brooke Army Medical Center, Brooks AFB, and other sites) AutoCADD, Version 14 for Lackland Air Force Base

d. Printed communications which can be digitized will primarily be transferred between the Contracting Officer's Authorized Representative (COR) and Directorate of Public Works (DPW), or Base Civil Engineer, technical inspection staff. Digitized as-built drawings and backup information can be transferred via floppy disks (3 1/2" high density) or CD-ROM disks.

e. The contractor shall provide its own printer capability for both letter quality text and graphics with at least 300 dpi resolution or better. Capabilities shall support all required reports, forms, and diagrams specified in the contract or as specified by the Contracting Officer or his representative. See Section 01010 WORK PLAN REQUIREMENTS.

**FIRE PREVENTION AND PROTECTION (52.9040-4000 FSH)**

a. The Contractor shall comply with all fire prevention measures as set forth by the National Fire Protection Association; other recognized fire prevention agencies; and installation regulations (which can be obtained from the base fire departments). Each construction site shall be inspected with a frequency necessary to ensure understanding and compliance on the part of the Contractor with all applicable provisions of the Base Fire Regulation. Combustible trash shall not be destroyed by open fire at the construction site but shall be removed off post. Approved types of portable fire extinguishers shall be furnished and installed at each construction site by the Contractor. Information concerning approved

types is available at the base fire departments [AM#0002]. The Contractor shall obtain permits for any hot work (welding, etc.) from the Fire Department before commencing work.

b. The Contractor shall be liable for any fire loss to Government property attributable to negligence on the part of the Contractor, including failure to comply with fire prevention measures prescribed by the terms of this contract.

**CONTRACT VALUE** (52.9040-4003 FSH)

a. The guaranteed minimum quantity of work which will be required under this contract, and which may be initiated by one or more task orders, will not be less than \$60,000 for the base period and \$30,000 for each of the first three (3) option periods. Guaranteed minimum for Option Period IV is \$29,000. The estimated dollar value of the contract is \$3,000,000 for the initial contract period and \$3,000,000 for each of the first three (3) option periods. Estimated dollar value for Option Period IV is \$2,900,000. No more than \$3,000,000 shall be outstanding at any given time.

b. The anticipated number of task orders per contract period is 26. Estimated number of task orders per dollar range is as follows:

* <\$50,000	= 10
* \$50,000-\$150,000	= 10
* \$150,000-\$250,000	= 5
* \$250,000-\$1,000,000	= 1

c. If the Government's requirements for the services set forth in this RFP do not result in orders in the amount described in paragraphs a through d, above, the event shall not constitute the basis for an equitable price adjustment under this contract.

**CONTRACTOR ACCESS** (52.9041-4000 FSH)

The area wherein work is to be performed under this contract may be occupied by the Government Services throughout the construction period. The Contractor shall have access to that portion of the area within which work is to be performed. The movement of Contractor personnel, equipment, materials, and tools shall be confined to this area.

**TASK ORDER SITE ACCESS**

a. [AM #0002] The Contractor shall use only established roadways when transporting personnel and/or material in the prosecution of work. The Contractor shall adhere strictly to the above, and shall not develop new ingress or egress roads without specific written [AM #0002] approval from the Contracting Officer. The Contractor shall ensure his personnel use designated parking areas only. Vehicles shall not be parked on grassy areas.

b. If the Contractor fails or refuses to comply with the above, the Contracting Officer may issue an order stopping all work. No part of the time lost due to any such order shall be made the subject of claim for extension of time or for excess costs or damage by the Contractor.

c. Compliance with the provisions of this article by subcontractors

shall be the responsibility of the Contractor.

d. All vehicles operated in support of the contract, including Contractor and Contractor employees privately owned vehicles or subcontractor vehicles shall be registered, insured, licensed, and inspected for compliance with applicable Federal, State, and local safety requirements. **[AM #0002] Vehicles will be subject to random security checks throughout the contract.**

e. IDENTIFICATION OF CONTRACTOR VEHICLES: Contractor vehicles shall be marked on each side with company name with either permanent or semi-permanent/magnetic signage.

**DELIVERABLES (52.9045-4003 FSH)**

a. Except as specified or directed otherwise, the contractor shall provide all deliverables, task order work, reports, plans, forms, schedules, etc., to the Contracting Officer promptly within the specified schedules. **[AM #0002] All plans, schedules, etc., must be reviewed and approved in writing by the Contracting Officer except as specified otherwise.**

b. Existing as-built drawings required for each task order shall be provided (if available) to the contractor in hard copy and/or in **[AM #0002] magnetic format.** Upon completion of each task order, the contractor shall return updated as-builts to the Government in the same format before final payment is made by the Government.

c. The contractor shall submit for Government approval a proposal format similar to the CSI format, with other submittals, using automated and hard copy methods. This format will be reviewed by the Government and must be approved by the Contracting Officer prior to its use on a proposal. Proposals for individual task orders shall include all information necessary to completely describe the project. See Section 01010 WORK PLAN REQUIREMENTS.

**SERVICES TO BE PERFORMED (52.9047-4000 FSH)**

The general requirements for the nature and categories of work to be performed under this contract includes but is not necessarily limited to the following:

Site clearing, building renovation, earthwork, site drainage and utilities, roads and walks, cast in place concrete, brick masonry, block and tile masonry, structural metal, metal joists and decking, rough carpentry, finish carpentry, built in cabinetry and furniture, roofing and siding, sheet metal work, doors, windows and glazing, window coverings, entrances and store fronts, lath and plaster, drywall, painting and wall coverings, floor tile and carpeting, pipe and fittings, plumbing devices and fixtures, fire extinguishing systems, fire alarm systems and intrusion detection systems and equipment, heating and air conditioning and ventilating equipment and systems, ducts and controls, boxes and wiring devices, starters, breaker panels, switching devices and transformers, lighting, primary and secondary power systems, asbestos abatement, lead-based paint abatement, and environmental revitalization.

**PERMITS AND APPROVALS (52.9049-4001 FSH)**

a. The contractor shall, at his own expense, obtain all necessary permits, licenses, and approvals as required by Federal, state, local laws, and installation regulations. This includes, but is not limited to, obtaining approvals from the installation fire chief, excavation and utility clearance coordination and digging permits from the DPW or Base Civil Engineer, and permits/clearances from the Environmental and Natural Resource Division.

b. The Government will not be responsible in any way for damage occasioned by fire, theft, accident, or otherwise to the contractor's (or employees') personal belongings, stored supplies, materials, equipment, supplies, or materials.

**COMMUNICATIONS EQUIPMENT (52.9049-4002 FSH)**

a. The contractor shall provide adequate communications equipment for the performance of this contract. [AM #0002] The Project Manager and all Project Engineers shall be accessible to the Contracting Officer through the use of cellular telephones. In addition, the Contractor shall provide one emergency P.O.C. who will be available 24 hours per day. Additional communications equipment frequencies, antenna, locations, equipment locations in or on real property facilities must be approved prior to installation or operation.

b. Base communications equipment required for the execution of project management responsibilities may be installed on Fort Sam Houston after written approval from the Contracting Officer and after concurrence by and frequency assignment has been made by the Directorate of Information Management (DOIM) and the Director of Public Works (DPW) [AM #0002]. The contractor shall be aware that this is a long and involved process. The contractor may use local community base systems without such approvals; however, equipment must comply with federal communications rules and regulations.

**HAZARDOUS MATERIALS ABATEMENT INSURANCE - (AUG 1997) (CESWF-CT-C)**

a. If hazardous materials (e.g. asbestos, lead-based paint, polychlorinated biphenyl (pcb) compounds) abatement/removal or any other work with hazardous materials is required under this contract and Comprehensive General Liability Insurance is required, the policy of insurance which covers the hazardous materials abatement/removal or other work with asbestos shall be a "per occurrence" policy as that term used in the insurance industry. A policy issued on a "claims made" basis or any other "short tail" basis will not be accepted.

b. The Comprehensive General Liability per occurrence policy shall be obtained by the prime Contractor if the hazardous materials abatement work is performed by the prime Contractor's own work force, or by an hazardous materials abatement subcontractor(s), if the hazardous materials abatement work is subcontracted. The Contractor shall insert in the subcontract a requirement for the hazardous materials abatement subcontractor(s) to provide

and maintain the insurance required by this paragraph. The Contractor shall maintain a copy of the subcontractor's proof of required insurance, and shall make such copy available to the Contracting Officer upon request.

**CERTIFICATES OF COMPLIANCE (SUBMITTALS)** (52.9052-4000 FSH)

Any certificates required for demonstrating proof of compliance of materials with specifications requirements shall be executed in six copies. Each certificate shall be signed by an official authorized to certify in behalf of the manufacturing company and shall contain the name and address of the contractor, the project name and location, and the quantity and state 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 the material is found not to meet the specific requirement.

**WORK HOURS** (52.9055-4000 FSH)

a. Normal working days (except national legal holidays) will be Monday through Friday, [AM #0002] 0800-1700 daily. If the contractor desires to work during other periods than the normal working days, additional Government inspection forces may be required. The Contractor shall make his/her request to the Contracting Officer three calendar days in advance of his/her intention to work during other periods to allow assignment of additional inspection forces. If such forces are reasonably available, the Contracting Officer may authorize the Contractor to perform work during other than normal duty hours/days. No overtime work will be authorized without specific approval and clearance by the Contracting Officer. Any overtime work not required by the contract or task orders shall be accomplished by the contractor at no additional cost to the Government.

b. The Government will determine if a problem is an emergency, urgent, or routine. The Contractor shall comply with the following response times after being notified that a problem exists:

Emergency - 2 hours (around the clock)  
Urgent - 1 work day  
Routine - 5 work days

c. The Contractor employees shall not normally be expected to work during Federal holidays. The Government will not pay for services performed on these holidays unless the Contracting Officer's approval has been received in advance of the holiday. The Contractor shall observe the same federal holidays observed by the Government:

New Year's Day  
Martin Luther King Jr.'s Birthday  
President's Day  
Memorial Day  
Independence Day  
Labor Day  
Columbus Day

Veterans' Day  
Thanksgiving Day  
Christmas Day  
other holidays as designated by Executive Order or Public Law

**DEVIATION FROM PROPOSED MANAGEMENT PERSONNEL**

(52.9078-4000 FSH)

The Contractor shall obtain prior written approval from the Contracting Officer before making any changes in his proposed management staff set forth in his technical proposal.

**TASK ORDER LIMITATIONS (52.9079-4000 FSH)**

(a) Minimum order. \$2,500.00

(b) Maximum order.

(1) A series of task orders of \$3,000,000 on this contract outstanding at any given time.

(2) A series of task orders issued within five (5) working days in excess of \$1,500,000.

(c) Notwithstanding paragraph (b) above, the Contractor shall honor any orders exceeding the limitations in paragraph (b), unless those orders are returned to the ordering office within 72 hours after issuance, with written notice stating the Contractor's intent not to accomplish the stated work and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source. The Contractor may, however, accept orders exceeding the maximum amounts specified in subparagraph (b) above.

**WORK COORDINATION FOR FAMILY HOUSING PROJECTS**

(52.9102-4001 FSH)

a. Seven (7) calendar days before starting any work in a housing area, the Contractor shall leave a typewritten flier at each affected quarters describing the work and dates of work performance. The flier will have the approval of the Contracting Officer's Representative before distribution. If the scheduled start of work is delayed for some reason, the Contractor shall provide the affected quarters' occupants a new start date. The Contracting Officer's Representative may waive the flier requirement for time critical or emergency work.

b. The Contractor shall coordinate all work on occupied family housing quarters with the affected occupants. The Contractor shall obtain permission from the occupant before entering any housing unit. The Government will not provide access to occupied housing units; therefore, the Contractor shall anticipate and plan for delays resulting from absent occupants.

c. The Contractor shall coordinate with the Contracting Officer's Representative on obtaining a lock box key to permit access to vacant

family quarters, as required.

d. During all work in family housing areas, the Contractor shall minimize disturbance to family housing occupants.

e. When working on occupied family housing quarters, the Contractor shall maintain a neat work area. The Contractor shall stack and arrange on-site materials, equipment, etc. in an orderly manner just prior to departure of Contractor personnel at the end of each workday.

f. The Contractor shall plan work to avoid leaving any structural opening resulting from contract work exposed to the environment, or shall provide temporary measures to prevent any damages therefrom. Under no circumstances shall occupied family housing quarters be left unsecured overnight due to contract work.

g. Field offices, storage facilities or staging areas are not permitted in the Military Family Housing area. Contractor operated/owned vehicles, equipment, tools, toilet facilities as well as building materials, waste, rubbish or construction debris shall not remain on site overnight in the Military Family Housing area. All Contractor operated/owned vehicles, equipment, tools, etc., shall be stored as prescribed in Section 00800, "CONSTRUCTION SITE MAINTENANCE." Applicable traffic control signage where required by the contract may remain overnight in the Military Family Housing area.

**SALVAGEABLE AND REPAIRABLE MATERIALS (52.9102-4002 FSH)**

a. Material classified by the Contracting Officer or the Contracting Officer's Representative as salvageable, and equipment designated on the drawings or specifications, shall remain the property of the Government and shall be turned in as directed by the Contracting Officer.

b. Material classified by the Contracting Officer or the Contracting Officer's Representative as repairable shall be thoroughly cleaned and delivered as directed by the Contracting Officer.

c. Material and equipment not identified to be removed and turned in to the Contracting Officer will become the property of the contractor. Materials not classified as salvageable or repairable by the Contracting Officer or the Contracting Officer's Representative shall be removed from the site and disposed of off post at no cost to the Government.

d. Prior to commencing work, a joint inventory will be conducted by the Contractor, the Contracting Officer's Representative, and Government Inspector during which salvageable, repairable material will be identified. The Contractor will be given a copy of this inventory, and Contractor shall be accountable for this property as indicated above. This joint inventory shall in no way limit or preclude the Contracting Officer from designating additional items in the above categories during the life of this contract. Identified materials shall be delivered as directed by the Contracting Officer either to the Directorate of Public Works (DPW) or through the DPW to the Defense Reutilization and Marketing Office (DRMO) for Fort Sam Houston. For materials to be delivered to the DRMO the contractor shall obtain a turn-in receipt document from DRMO. **[AM #0002] For the Air Force**

**Bases, deliver identified materials to or through the Base Civil Engineer and the DRMO.**

**CONSTRUCTION SCHEDULES (52.9102-4004 FSH)**

a. For each task order the Contractor shall be required to prepare and submit to the Contracting Officer a practicable schedule as outlined in Section 00700, "SCHEDULES FOR CONSTRUCTION CONTRACTS", Section 01320, "PROJECT SCHEDULE (NETWORK ANALYSIS SYSTEM)" and Section 01321, "PROGRESS SCHEDULE (BAR CHART)". Schedules shall be in bar chart format as described in Section 01321, unless otherwise specified in the task order. Cost for preparing bar charts shall be considered part of the Contractor's labor rates and shall not be separately costed.

b. Critical Path Method (CPM) format schedules, when required shall be provided as described in Section 01320. Costs for preparing and updating CPM shall be included in the task order.

c. The Contractor shall utilize a computer software program to generate his construction schedule. Software program shall include all requirements for "Schedule for Construction Contracts" FAR 52.236-15. Schedule shall be submitted both on disk and in hard copy.

**PROBLEM REPORTING (52.9102-4005 FSH)**

The Contractor shall report to the Contracting Officer Representative (COR) all construction problems or design deficiencies encountered during construction. Report shall include recommended solutions or alternatives. The reporting shall be done on a form provided by the Contractor. **[AM #0002] This shall be called a Corrective Action Request (CAR) or Request for Information (or Instruction) (RFI).**

**INSTALLATION DESIGN GUIDE (52.9102-4006 FSH)**

The Fort Sam Houston Installation Design Guide FSH Pam 210-20-3, the Installation Design Guide for Lackland AFB, and the Brooks AFB Architectural Compatibility Plan, provide guidance which, when applied to the planning, programming, design, and execution of individual projects, will result in improving and maintaining the quality of the visual environment of the bases. They can be obtained from the Fort Sam Houston DPW and the Air Force Bases' Base Civil Engineers offices.

**CONSTRUCTION DRAWINGS (52.9102-4007 FSH)**

The Contractor shall utilize the CADD system specified in Section 01010 WORK PLAN REQUIREMENTS to generate all drawings that are required to be in CADD format. The Government will provide disks of existing Government drawings if available. **[AM #0002] The contractor shall submit all drawings on disk and hard copy, as required in each task order.**

**COMPLETION OF TASK ORDERS (52.9102-4008 FSH)**

a. Performance time will be negotiated for each task order considering

that all task orders issued will be accomplished and performed concurrently. All payrolls must be submitted to finalize task orders. The contractor shall provide a bar chart schedule, unless otherwise specified, with each proposal which will be revised and resubmitted based upon the negotiated completion date. The bar chart shall be updated weekly for each task order after the Contractor receives the notice to proceed for that task order. Some task orders may require phased completion times. Completion times for individual phases of such task orders will be determined by mutual agreement during project proposal negotiations.

b. The following requirements pertain to timely completion of task orders. The performance period for any task order shall begin as indicated [AM #0002] in the task order. A task order is considered complete upon final acceptance of work completed under that order to include [AM #0002] record drawings, DD Form 1354, O&M training, O&M manuals, warranty information and other deliverables as specified in the task order.

c. The Contractor shall plan, perform, and manage all work so as to comply with specified completion dates without resorting to other task orders and without resorting to other actions which result in additional cost to the Government. The following categories shall be used as a basis for estimating completion dates:

- (1) Proper crew sizes and equipment.
- (2) Use of subcontractors.
- (3) Required phasing.
- (4) Concrete curing.
- (5) Government delay of access to work site.
- (6) Testing and evaluation of work site conditions which require extra days.
- (7) Documented unavailability of materials or equipment.
- (8) Full compliance with any applicable law, regulation, or safety requirement which delays time beyond the number of days allowed by other elements.
- (9) Extensive coordination required for use of utilities and digging permits.
- (10) Factors beyond the contractor's control which delays work.
- (11) The need to negotiate a completion time which would appear sooner than normal based on priority and criticality work completion.

**NOTICE OF COMPLETION OF TASK ORDER (52.9102-4009 FSH)**

The contractor shall notify the Ordering Officer upon completion of each individual task order. The contractor shall give a minimum advance notice of two (2) working days of the date the work will be fully completed and ready for final inspection.

**COMPLETION INSPECTION (52.9102-4010 FSH)**

a. Upon completion of all work, or any increment thereof established by a completion time stated elsewhere in the specifications, the contractor's Quality Control (QC) system manager shall conduct a completion inspection of work and develop a "punch list" of items which do not conform to the approved plans and specifications. Such a list shall be included in the contractor's QC documentation, as required by below and shall include the estimated date by which the deficiencies will be corrected.

b. The contractor's QC system manager or his staff shall conduct a second completion inspection with the COR to ascertain that all deficiencies have been corrected. The completion, inspection, and correction of any deficiencies required by this paragraph shall be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates. The completion inspection and second inspection shall be performed before projects are turned over through the Corps of Engineers' Area Engineer to the DPW or Base Civil Engineer as being complete.

c. Documentation:

(1) Records: The contractor shall maintain current records of quality control operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall be entered on the Daily Construction Quality Control Report and include a description of trades working on the project, numbers of personnel working, weather conditions encountered, any delays encountered, and acknowledgement of deficiencies noted along with the corrective actions taken on current and previous deficiencies. The contractor shall provide the report and a copy to the Contracting Officer's Authorized Representative (COR). The contractor shall retain a second copy in the contractor's files. These records shall also include factual evidence that require activities or tests to have been performed. This shall consist of, but not be limited to, the following:

- (a) Type and number of control activities and tests involved.
- (b) Results of control activities or tests.
- (c) Nature of defects, cause for rejections, etc.
- (d) Proposed remedial actions.
- (e) Corrective actions taken.

(2) Contents: Quality control records shall cover both conforming and defective or deficient features and shall include a statement that supplies and material incorporated in the work have been inspected and comply with the contract. Two legible copies of these records shall be furnished to the Contracting Officer daily.

d. Notification of Compliance: The Contracting Officer will notify the contractor of any noncompliance with the foregoing requirements. The contractor shall, after receipt of such notice, take immediate corrective action. Any such notification delivered to the contractor or the contractor's representative at the work site shall be deemed sufficient for the purpose of official notification. If the contractor fails or refuses to comply with the request action promptly, the Contracting Officer may issue an order to stop all or part of the work until satisfactory corrective action has been taken. No portion of work time lost as a result of any stop work order shall be made the subject of a claim for extension of time or excess costs or damages by the contractor.

e. See Section 01452 CONTRACTOR QUALITY CONTROL.

**CONTRACT PROGRESS REPORTS (52.9102-4011 FSH)**

a. The contractor shall submit a weekly progress report to the Contracting Officer or his designated representative for each task order issued but not completed.

b. The report will use ENG Form 2454 unless an alternative progress report format is proposed by the contractor for approval by the Government. Any changes or additions requested by the Government will be included in the format. Each report shall be signed and dated by the contractor.

c. The contractor shall also furnish a weekly updated summary bar chart listing all task orders issued to date. The summary bar chart shall be provided on computer diskette and in hard copy.

**MATERIAL APPROVAL SUBMITTALS (52.9102-4012 FSH)**

a. Material submittal requirements will be determined during negotiations of individual task orders. Submittals accomplished IAW the clause "Materials and Workmanship" shall be submitted in four copies unless otherwise specified. Submittals applicable to the entire contract shall be approved by the Contracting Officer prior to start of work on any task order.

b. Certificates which demonstrate proof of compliance of materials with specification requirements shall be executed in four copies. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the contractor, the project name, location, and the quality and dates of laboratory tests.

c. Where task orders require reports to be submitted with certification, the reports shall contain the name and address of the testing laboratory and the dates of the tests to which the report applies. Certification shall not be construed as relieving the contractor from furnishing satisfactory material that complies with the task order's plans and specifications if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

d. Required tests shall be ordered as required per task order. Where testing samples fail to meet specification requirements, the materials represented by the sample shall be replaced with materials which do meet the specifications. All retesting costs shall be borne by the contractor. Samples shall be clearly identified. The Government reserves the right to sample and test materials for compliance with appropriate specifications. (See Section 01451 CONTRACTOR QUALITY CONTROL)

**DPW AND BASE CIVIL ENGINEER SITE VISITS (52.9040-4001 FSH)**

Personnel from the bases, such as the Directorate of Public Works (DPW) Environmental Natural Resource Office for Fort Sam Houston task orders, may visit work sites to monitor compliance with safety and environmental regulations as appropriate.

**WORK OUTSIDE BEXAR COUNTY**

It is anticipated that approximately 10% of this contract work may be performed at locations

outside Bexar County.

#### **NO PAYMENT FOR PROPOSAL PREPARATION WITHOUT A TASK ORDER**

Contractor will be paid for preparation of a proposal including work plan, price proposal, site visits, scoping meetings, statement of work and shop drawings in accordance with the price(s) set forth in the Bid Schedule. The Government will ensure, during task order negotiations, that this cost is incurred only once. When task orders are competed between the contractors and one task order is issued, the unsuccessful contractor(s) shall accept this cost as "the cost of doing business with the Government". Unsuccessful contractor(s) will not be reimbursed for their proposal preparation costs or any costs related thereto.

#### **TM CONSTRUCTION SPECIFICATIONS**

See Section 01010 WORK PLAN PROCEDURES.

#### **FIRM-FIXED PRICE (FFP) TASK ORDER**

- a. A firm-fixed price (FFP) task order provides for a price that is not subject to any adjustment on the basis of the contractor's cost experience in performing the task order.
- b. The Contractor shall review the scopes of work for completeness/biddability and then provide a proposal for the work. When there exists the need for architect-engineer services associated with the construction, the contractor will develop a work plan as specified by the Government to cover the engineering requirements as well as prepare one proposal to cover the costs of development of the work and the follow-on construction effort. In either case, when preparing the proposal, the contract bid schedule line item disciplines will be used to price labor hours to be performed by the Prime Contractor, with only hours being negotiated. For work that the Prime Contractor intends to subcontract out, competition must be obtained and the most fair and reasonable prices reflected in the Contractor's proposal. The Government shall evaluate the proposal, assures competition is present and sufficient, when required; determines price reasonableness; negotiates with the Contractor, if necessary; and issues the FFP task order.

#### **UNPRICED TASK ORDER (UTO)**

(a) The issuance of UTO's as **unpriced** actions will be the exception, rather than the rule, under this contract. A UTO may be issued by the Contracting Officer when work must commence almost immediately and there is insufficient time to fully definitize the price. In these cases, the Government will have, as a minimum, a Scope of Work and an Independent Government Estimate completed. (Otherwise, the action falls under the definition of an Undefinitized Contract Action (UCA) for which the district has no authority to issue without prior approval by higher headquarters.)

(b) For any UTO, the Government will usually obtain a price proposal from the Contractor prior to issuing the task

order. In this way, the IGE can be compared with the proposal and a most realistic not-to-exceed limit can be established for obligation under the task order. As in the firm-fixed-price task orders, the contract bid schedule line item disciplines will be used to price labor hours for work to be performed by the prime contractor, with only hours being negotiated. For work that the prime intends to subcontract out, competition shall be obtained and the most fair and reasonable prices reflected in the contractor's proposal. The Government will then evaluate the proposal, assure competition is present and sufficient (when required), determine price reasonableness, negotiate with the contractor if necessary, and take action to issue a modification to the task order to definitize the action. Government will ensure that adequate funds exist prior to issuing the definitization mod.

(c) In those cases where the task order must be issued without the contractor's proposal, the following limitations will apply:

(1) Contractor's proposal shall be submitted to the Government within 30 calendar days after the issuance of the task order by the Contracting Officer; if it is not, Contracting Officer will take action to terminate the task order.

(2) Contractor shall not perform work beyond 50% of the not-to-exceed obligation without having submitted a qualifying proposal to the Government.

(3) The Government may increase the 50% performance limitation stated above in paragraph (c)(2) to 75% when the Contractor submits a qualifying proposal; this increase will be accomplished via a modification (signed by the Contracting Officer) to the task order.

(4) All task orders issued as UTO's shall/will be definitized within 90 calendar days after receipt of the contractor's proposal; any extension of this time must be approved by the Contracting Officer in writing prior to the 90th day; the Area Office will submit the justification for the extension to the Contracting Officer for approval.

**FAILURE TO ADHERE TO THESE TIME CONSTRAINTS WILL RESULT IN THE CONTRACTING OFFICER'S TAKING ACTION TO TERMINATE THE TASK ORDER**

#### **TIME-AND-MATERIAL (T&M) TASK ORDER**

a. Time-and-material (T&M) task orders provides for acquiring supplies or services on the basis of: (1) direct labor hours at specified fixed hourly rates that include wages, overhead, general and administrative expenses, and profit and (2) material cost, including, if appropriate, material handling costs as part of material costs. A T&M task order will be used only when it is not possible at the time of placing the contract to estimate accurately the extent or duration of the work or to anticipate costs with any reasonable degree of confidence.

b. The Contractor shall review the scopes of work for completeness/biddability and then provide a proposal for the work. In preparing the proposal, the contract bid schedule line item disciplines will be used to price all labor hours proposed, i.e., labor hours of the prime and any work to be subcontracted out. Material costs will be priced separately and should reflect the Contractor's effort to obtain the most fair and reasonable price. Payment will be made in accordance with the provisions of FAR 52.232-7, PAYMENTS UNDER TIME-AND-MATERIALS AND LABOR-HOUR CONTRACTS (see Section 00700),

**BRAC-RELATED WORK**

Contractor shall give preference to local businesses. Contractor shall subcontract with local businesses for a significant part (over 50%) of the BRAC-related work. "Local businesses" are defined as firms located within Bexar County or within the counties adjacent to Bexar County.

END OF SECTION 00800

## SECTION 01000

CONSTRUCTION SCHEDULE  
AMENDMENT NO. 0002

## PART 1 GENERAL

## 1.1 SCHEDULE

Commence, prosecute, and complete the work under this contract in accordance with **(AM#2)** Sections 00700 CONTRACT CLAUSES and 00800 SPECIAL CONTRACT REQUIREMENTS.

## 1.1.1 Testing of Heating and Air-Conditioning Systems

The times stated for completion of applicable task orders includes all required testing specified in appropriate specification sections of heating, air conditioning and ventilation systems including HVAC Commissioning. Exception: boiler combustion efficiency test, boiler full load tests, cooling tower performance tests, and refrigeration equipment full load tests, when specified in the applicable specifications, shall be preformed in the appropriate heating/cooling season as determined by the Contracting Officer. See Section 01770 CONTRACT CLOSEOUT, paragraph HVAC Testing.

1.2 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (OCT 1989)  
(ER 415-1-15)(52.0001-4038 1/96)

a. This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with 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:

(1) 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.

(2) 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.

b. The following schedule of monthly anticipated adverse weather delays due to precipitation and temperature 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. Wind is not considered in the Monthly Anticipated Adverse Weather Calendar Day Schedule.

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

SAN ANTONIO, TX AREA (FORT SAM HOUSTON, KELLY, LACKLAND, BROOKS, AND RANDOLPH AFB'S AND RESERVE CTRS AT SAN ANTONIO)

J	F	M	A	M	J	J	A	S	O	N	D
4	3	3	2	4	4	1	1	3	2	2	3

ABILENE, TX AREA (DYESS AFB AND RESERVE CTRS. WITHIN 80 MILE RADIUS, EXCEPT WITHIN 40 MILES OF SAN ANGELO, TX.)

J	F	M	A	M	J	J	A	S	O	N	D
2	2	2	2	4	3	3	2	3	3	1	2

AUSTIN, TX AREA (BERGSTROM AFB, GEORGETOWN, GRANGER, and SOMERVILLE LAKES, AND BRYAN-COLLEGE STATION, PLUS RESERVE CTRS WITHIN 40 MILE RADIUS)

J	F	M	A	M	J	J	A	S	O	N	D
3	3	3	3	4	4	2	2	3	3	2	4

BEAUMONT/PORT ARTHUR, TX AREA (SAM RAYBURN RES. AND STEINHAGEN LAKE AND RESERVE CTRS WITHIN 40 MILES WEST AND 80 MILE RADIUS EAST AND NORTH)

J	F	M	A	M	J	J	A	S	O	N	D
6	4	4	4	4	6	5	5	5	3	4	4

BATON ROUGE, LA AREA (RESERVE CTRS AT BATON ROUGE, HAMMOND, LAFAYETTE, BOGALUSA, AND NEW IBERIA)

J	F	M	A	M	J	J	A	S	O	N	D
4	5	4	4	6	4	7	5	4	5	5	5

CORPUS CHRISTI, TX AREA (RESERVE CTRS. WITHIN 80 MILE RADIUS WEST AND 40 MILES OTHERWISE)

J	F	M	A	M	J	J	A	S	O	N	D
3	2	1	2	4	4	2	3	4	2	2	2

DALLAS/ FT WORTH, TX AREAS-NORTH AREA-NORTH OF I-20 AND EAST OF I-35E; ALSO WEST OF I-35 & WITHIN 80-MILE RADIUS (LEWISVILLE, RAY ROBERTS, AND LAVON RESV.) (CARSWELL AFB, BENBROOK & GRAPEVINE LAKES & RESERVE CTRS) (DFW)

J	F	M	A	M	J	J	A	S	O	N	D
3	4	4	3	4	4	3	2	4	3	4	4

DALLAS, TX AREA-SOUTH AREA-SOUTH OF I-20 AND EAST OF HIGHWAY 360 (BARDWELL LAKE, EAST FORK OF TRINITY RIVER, AND RESERVE CTRS. AT SEAGOVILLE, MESQUITE, AND GRAND PRAIRIE) (DAL-HENS)

J	F	M	A	M	J	J	A	S	O	N	D
4	4	4	4	5	4	3	2	3	3	3	4

DEL RIO, TX AREA (LAUGHLIN AFB AND RESERVE CTRS. WITHIN 80-MILE RADIUS)

J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	2	4	3	2	1	3	2	1	2

EL PASO, TX AREA (FORT BLISS AND TEXAS AREA 80 MILES TO EAST)

J	F	M	A	M	J	J	A	S	O	N	D

1 1 1 1 2 1 3 3 2 1 1 2

FORT WINGATE, NEW MEXICO AREA

J	F	M	A	M	J	J	A	S	O	N	D
6	4	4	1	1	1	3	4	2	2	3	6

HARLINGEN/BROWNSVILLE, TX AREA (RESERVE CTRS AT BROWNSVILLE, HARLINGEN, McALLEN AND RIO GRANDE CITY)

J	F	M	A	M	J	J	A	S	O	N	D
2	1	1	1	2	4	2	3	4	3	2	2

HOUSTON, TX AREA (ELLINGTON AFB(RESERVE) AND RESERVE CTRS IN 40 MILES EAST AND 80-MILE RADIUS OTHERWISE)

J	F	M	A	M	J	J	A	S	O	N	D
5	4	4	4	4	5	4	4	4	3	3	4

KILLEEN, TX AREA (FORT HOOD, BELTON AND STILLHOUSE LAKES AND RESERVE CTRS. ALONG HWY 36 FROM HWY 79 TO HWY US67)

J	F	M	A	M	J	J	A	S	O	N	D
4	4	4	4	6	4	3	3	4	4	3	4

LAKE CHARLES, LA AREA (RESERVE CTR AT LAKE CHARLES)

J	F	M	A	M	J	J	A	S	O	N	D
6	4	3	4	5	6	6	5	4	3	4	4

LAREDO, TX AREA (RESERVE CTRS. 80 MILES NORTHWEST AND SOUTHWEST AND 40 MILES NORTHEAST)

J	F	M	A	M	J	J	A	S	O	N	D
1	2	1	1	3	3	1	3	4	2	1	1

LEESVILLE/FT. POLK, LA AREA (FORT POLK AND RESERVE CTRS AT NORTH FORT POLK AND ALEXANDRIA)

J	F	M	A	M	J	J	A	S	O	N	D
5	5	4	4	5	6	5	4	4	4	4	5

MARSHALL/LONGVIEW, TX AREA (LONGHORN AAP, AND RESERVE CTR AT TYLER)

J	F	M	A	M	J	J	A	S	O	N	D
4	5	4	3	4	6	4	3	4	5	5	6

MINDEN/SHERVEPORT, LA AREA (LA AAP AND RESERVE CTRS. AT SHREVEPORT, BOSSIER CITY AND MONROE)

J	F	M	A	M	J	J	A	S	O	N	D
5	4	4	4	6	4	4	3	3	4	4	5

MIDLAND, TX AREA (RESERVE CTR AT MIDLAND)

J	F	M	A	M	J	J	A	S	O	N	D
3	1	1	1	3	2	2	3	3	1	1	3

NEW ORLEANS, LA AREA (RESERVE CTRS AT NEW ORLEANS, SLIDELL, HOUMA, AND KENNER)

J	F	M	A	M	J	J	A	S	O	N	D
5	4	4	4	5	6	6	6	4	2	4	4

PARIS, TX AREA (COOPER LAKE AND RESERVE CTR AT PARIS)

J	F	M	A	M	J	J	A	S	O	N	D
4	3	5	4	4	4	4	3	4	3	4	4

SAN ANGELO, TX AREA (GOODFELLOW AFB AND O.C. FISHER LAKE)

J	F	M	A	M	J	J	A	S	O	N	D
2	3	1	1	4	3	1	2	3	2	1	2

TEXARKANA, TX AREA (LONE STAR AAP, RED RIVER A D, WRIGHT PATMAN LAKE AND RESERVE CTR AT TEXARKANA)

J	F	M	A	M	J	J	A	S	O	N	D
4	3	5	4	4	4	4	3	4	3	4	4

WACO, TX AREA (WACO AND NAVARRO MILLS LAKES AND RESERVE CTR AT WACO)

J	F	M	A	M	J	J	A	S	O	N	D
4	3	3	3	4	4	2	2	3	3	3	4

c. Weather Conditions for White Sands Missile Range, New Mexico

(1) Climate is typical of the southwest desert with a wide temperature range between day and night, often as high as 50 degrees F change in 24 hours. The annual range temperature is from a maximum of 108 degrees F in summer to an extreme low of 0 degrees F in winter. The recorded low was -10 degrees F.

(2) Average annual rainfall varies from about 9.5 inches in the southern part of the reservation to over 10 inches in the northern part. During most years, about 60 percent precipitation occurs in July, August, and September.

(3) The prevailing winds are out of the west. A salient feature of these winds is their gusty nature. Wind velocities have reached a maximum of 107 knots. The higher velocities are experienced adjacent to the mountains, and the lower velocities in the valley regions. These winds, chiefly from the west and southwest, vary from small whirlwinds know as "devil-dusters," to high winds of more than 24-hour duration. The devilduster type of whirlwinds throw sand and gravel with sufficient velocity to cause visible pitting of automobile windows and impingement. The high winds with their gusts have removed windows and roofs from houses and buildings in the Post Area. The sand and dust (most prevalent in the spring), cause rapid deterioration of unprotected equipment and instruments. Damaging high winds have also been recorded in November, December, and March.

(4) The following schedule of monthly anticipated adverse weather delays due to precipitation and temperature 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. Wind is not considered in the Monthly Anticipated Adverse Weather Calendar Day Schedule.

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

WHITE SANDS, NM AREA (WSMR AND RESERVEVE CTR AT LAS CRUCES)

J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	2	1	4	4	2	1	1	3

c. 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 "b", 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)."

1.3 CONSTRUCTION PHASING

Construction phasing shall be in accordance with each task order.

1.4 WORK RESTRICTIONS

Work restrictions, including those concerning joint occupancy, noise, and height, shall be determined per each task order.

1.4.1 Working Hours

See Section 00800 SPECIAL CONTRACT REQUIREMENTS clause WORK HOURS.

1.4.2 Security

General Access

1.4.3 Access

Access to Brooks, Lackland, and other Air Force Bases will be arranged by the Contractor based on requirements of each task order.

1.5 UTILITIES

1.5.1 Payment for Utility Services

See Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraphs UTILITY

SERVICES (52.0001-4045 FSH) and GOVERNMENT-FURNISHED UTILITIES (52.9034-4000 FSH).

#### 1.5.2 Outages

The Contractor shall coordinate all requests for utility outages with the Contracting Officer in writing 14 days prior to date of requested outage:

- a. Water, gas, steam, and sewer outages shall be held to a maximum duration of 4 hours unless otherwise approved in writing.
- b. Electrical outages shall have a maximum duration of 4 hours.
- c. For specific task orders, utility outages may be limited to Saturdays, Sundays, or holidays unless specific approval is otherwise received.
- d. See Section 00800 clause 52.9034-4000 FS GOVERNMENT-FURNISHED UTILITIES for additional requirements.

#### 1.6 STREET CLOSINGS

See Section 00800 SPECIAL CONTRACT REQUIREMENTS clause SCHEDULING WORK. In addition:

- a. Flagmen will meet the requirements of Item 7.7 of the Texas State Department of Highways and Public Transportation Standard Specifications for Construction of Highways, Streets, and Bridges, 1982 Ed.
- b. Open cuts across paved roads and streets for utility crossings will not be allowed. Utility crossings will be accomplished by boring or jacking procedures only.

#### 1.7 **(AM#2)** SEQUENCE OF DESIGN/CONSTRUCTION

(a) After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements as covered under Division 01 General Requirements, and obtain Government review of each submission. No construction may be started, with the exception of clearing, etc, until the Government reviews the Final Design submission and determines it satisfactory for purposes of beginning construction. The Acting Contracting Officer (ACO) or Contracting Officer Representative (COR) will notify the Contractor when the design is cleared for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the ACO or COR, the initial submission failed to meet the minimum quality requirements as set forth in the Contract.

(b) If the Government allows the Contractor to proceed with limited construction based on pending minor revisions to the reviewed Final Design submission, no payment will be made for any in-place construction related to the pending revisions until they are completed, resubmitted and are satisfactory to the Government.

(c) No payment will be made for any in-place construction until all required submittals have been made, reviewed and are satisfactory to the Government.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-00-R-0019

SECTION 02240 - LIME-STABILIZED SUBGRADE

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 C 25	(1992) Chemical Analysis of Limestone, Quicklime, and Hydrated Lime
ASTM C 50	(1986; R 1991) Sampling, Inspection, Packing, and Marking of Lime and Limestone Products
ASTM C 136	(1992) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	(1987; R 1992) Sampling Aggregates
ASTM D 422	(1963; R 1990) Particle-Size Analysis of Soils
ASTM D 559	(1989) Wetting and Drying Compacted Soil-Cement Mixtures
ASTM D 560	(1989) Freezing and Thawing Compacted Soil-Cement Mixtures
ASTM D 977	(1991) Emulsified Asphalt
ASTM D 1250	(1980; R 1990) Petroleum Measurement Tables
ASTM D 1556	(1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 1632	(1987) Making and Curing Soil-Cement Compression and Flexure Test Specimens in the Laboratory
ASTM D 1633	(1984; R 1990) Compressive Strength of Molded Soil-Cement Cylinders

**ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-00-R-0019**

ASTM D 2027	(1976; R 1992) Cutback Asphalt (Medium-Curing Type)
ASTM D 2028	(1976; R 1992) Cutback Asphalt (Rapid-Curing Type)
ASTM D 2167	(1984; R 1990) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2922	(1991) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1988) Water Content of Soil and Rock in Place By Nuclear Methods (Shallow Depth)
ASTM D 4318	(1984) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM E 11	(1987) Wire-Cloth Sieves for Testing Purposes

1.5 DEFINITIONS

1.5.1 Lime-Stabilized Subgrade

Lime-stabilized course, as used herein, is a mixture of lime and in-place or select borrow material uniformly blended, wetted, and thoroughly compacted to produce a pavement course which meets all criteria as set forth in the plans and this specification.

1.5.2 Degree of Compaction

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated hereinafter as percent laboratory maximum density.

1.6 GENERAL

The work specified herein consists of the construction of a lime-stabilized subgrade course. The work shall be performed in accordance with this specification and shall conform to the lines, grades, notes, and typical sections shown in the plans. Sources of all materials shall be selected well in advance of the time when materials will be required in the work.

1.7 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section [AM#5] 01330  
SUBMITTAL PROCEDURES:

SD-01 Data

**ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-00-R-0019**

Plant, Equipment, Machines, and Tools; FIO.

Mix Design; FIO.

List of proposed equipment to be used in performance of construction work including descriptive data. Mix design at least 30 days before it is to be used.

SD-09 Reports

Sampling and Testing; FIO.

Field Density; FIO.

Calibration curves and related test results prior to using the device or equipment being calibrated. Copies of field test results within 24 hours after the tests are performed. Certified copies of test results of materials and sources not less than 30 days before material is required for the work.

**1.9 PLANT, EQUIPMENT, MACHINES, AND TOOLS**

**1.9.1 General Requirements**

Plant, equipment, machines, and tools used in the work shall be subject to approval and shall be maintained in satisfactory working condition at all times. Other compacting equipment may be used in lieu of that specified, where it can be demonstrated that the results are equivalent. The equipment shall be adequate and have the capability of producing the results specified in Protective equipment, apparel, and barriers shall be provided to protect the eyes, respiratory system, and the skin of workers exposed to contact with lime slurry.

**1.9.2 Steel-Wheeled Rollers**

Steel-wheeled rollers shall be the self-propelled type weighing not less than 9 metric tons, with a minimum weight of 135 kilograms per millimeter width of rear wheel. Wheels of the rollers shall be equipped with adjustable scrapers. The use of vibratory rollers is optional.

**1.9.3 Pneumatic-Tired Rollers**

Pneumatic-tired rollers shall have four or more tires, each loaded to a minimum of 13.6 metric tons and inflated to a minimum pressure of 1.035 MPa. The loading shall be equally distributed to all wheels, and the tires shall be uniformly inflated. Towing equipment shall also be pneumatic-tired.

**1.9.4 Mechanical Spreader**

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Mechanical spreader shall be self-propelled or attached to a propelling unit capable of moving the spreader and material truck. The device shall be steerable and shall have variable speeds forward and reverse. The spreader and propelling unit shall be carried on tracks, rubber tires, or drum-type steel rollers that will not disturb the underlying material. The spreader shall contain a hopper, an adjustable screed, and outboard bumper rolls and be designed to have a uniform, steady flow of material from the hopper. The spreader shall be capable of laying material without segregation across the full width of the lane to a uniform thickness and to a uniform loose density so that when compacted, the layer or layers shall conform to thickness and grade requirements indicated. The Contracting Officer may require a demonstration of the spreader prior to approving use in performance of the work.

**1.9.5 Sprinkling Equipment**

Sprinkling equipment shall consist of tank trucks, pressure distributors, or other approved equipment designed to apply controlled quantities of water uniformly over variable widths of surface.

**1.9.6 Tampers**

Tampers shall be of an approved mechanical type, operated by either pneumatic pressure or internal combustion, and shall have sufficient weight and striking power to produce the compaction required.

**1.9.7 Straightedge**

The Contractor shall furnish and maintain at the site, in good condition, one 3.05 meters (10 foot) straightedge for each bituminous paver, for use in the testing of the finished surface. Straightedge shall be made available for Government use. Straightedges shall be constructed of aluminum or other lightweight metal and shall have blades of box or box-girder cross section with flat bottom reinforced to insure rigidity and accuracy. Straightedges shall have handles to facilitate movement on pavement.

**1.10 WEATHER LIMITATIONS**

Lime stabilization shall not be performed during freezing temperatures. When the temperature is below 5 degrees C, the lime treated areas shall be protected against freezing by a sufficient covering of straw, or by other approved methods, until the course has dried out. Any areas of completed course that are damaged by freezing, rainfall, or other weather conditions shall be brought to a satisfactory condition in conformance with this specification without additional cost to the Government. Lime shall not be applied when the atmospheric temperature is less than 5 degrees C. No lime shall be applied to soils that are frozen or contain frost, or when the underlying material is frozen. If the temperature falls below 2 degrees C, completed lime-treated areas shall be protected against any detrimental effects of freezing.

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PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Lime

Lime shall be a standard brand of hydrated lime conforming to the following physical and chemical requirements:

- a. Lime shall be of such gradation that 99-1/2 percent passes a 0.850 mm sieve and a minimum of 85 percent passes a 0.150 mm sieve.
- b. Combined calcium oxide and magnesium oxide shall be not less than 70 percent.

2.1.2 Bituminous Material

Material shall conform to one of the following:

2.1.2.1 Cutback Asphalt

ASTM D 2027.

2.1.2.2 Emulsified Asphalt

ASTM D 977, Type SS-1 or MS-1.

2.1.3 Material to be Stabilized

Material to be stabilized shall consist of approved select material, or a combination of in-place material and approved select material. Select material shall be free of deleterious substances such as sticks, debris, organic matter, and stones greater than 75 mm in any dimension. At least 10 percent of the material shall pass the 0.425 mm sieve. Plasticity index shall be greater than 12.

2.1.4 Water

Water shall be clean, fresh, and free from injurious amounts of oil, acid, salt, alkali, organic matter, and other substances deleterious to the lime or soil-lime mixture, and shall be subject to approval.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

3.1.1 Mix Design

The material to be stabilized shall be thoroughly pulverized. The rate of application of lime for the soil-lime mixture shall be at least 6 percent by dry weight of the soil and the optimum moisture content shall be determined from soil samples. Field moisture content shall be controlled

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within plus or minus 2 percent of optimum. When the stabilized course is constructed in more than one layer, the previously constructed layer shall be cleaned of loose and foreign matter by sweeping with power sweeper or power brooms except that hand brooms may be used in areas where power cleaning is not practicable. Adequate drainage shall be provided during the entire construction period to prevent water from collecting or standing on the area to be stabilized or on pulverized, mixed, or partially mixed material. Line and grade stakes shall be provided as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for a string lining.

3.2 [AM#2] NOT USED

3.3 PREPARATION OF AREA TO BE STABILIZED

The area shall be cleaned of debris. The area will be inspected for adequate compaction and shall be capable of withstanding without displacement the compaction specified for the soil-lime mixture. Debris and removed unsatisfactory in-place material shall be disposed of as specified.

3.3.1 In-Place Material to be Stabilized

The entire area shall be graded to conform to the lines, grades, and cross sections shown in the plans prior to being processed. Soft or yielding subgrade areas shall be made stable before construction is begun.

3.3.2 In-Place Material to Receive Stabilized Course

Soft, yielding areas and ruts or other irregularities in the surface shall be corrected. The material in the affected areas shall be loosened and unsatisfactory material removed. Approved select material shall be added where directed. The area shall then be shaped to line, grade, and cross section, and shall be compacted to the specified density. Subgrade shall conform to Section 02225 EARTHWORK.

3.3.3 Select Material

Sufficient select material shall be utilized to provide the required thickness of the soil-lime layer after compaction. Where in-place mixing is to be accomplished, the soil shall be graded and shaped to the approximate section and grade shown before lime stabilization is undertaken. Select Material shall be obtained from grading and excavation operations and from approved private sources.

3.3.4 Grade Control

Underlying material shall be excavated to sufficient depth for the required stabilized-course thickness so that the finished stabilized course with the subsequent surface course will meet the fixed grade. Finished and

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completed stabilized area shall conform to the lines, grades, cross section, and dimensions indicated.

3.4 INSTALLATION

3.4.1 Mixed In-Place Method

3.4.1.1 Scarifying and Pulverizing of Soil

Prior to application of lime, the soil shall be scarified and pulverized to the depth shown. Scarification shall be carefully controlled so that the layer beneath the layer to be treated is not disturbed. Depth of pulverizing shall not exceed the depth of scarification.

3.4.1.2 Application of Lime

Pulverized material shall be shaped to approximately the cross section indicated. Lime shall be applied so that when uniformly mixed with the soil, the specified lime content is obtained, and a sufficient quantity of lime-treated soil is produced to construct a compacted lime-treated course conforming to the lines, grades, and cross section indicated. Lime shall be applied in a slurry. Distributors shall be used in applying slurry. No equipment except that used in spreading and mixing shall pass over the freshly applied lime slurry.

3.4.1.3 Initial Mixing

Immediately after the lime has been distributed, the lime and soil shall be mixed. Initial mixing shall be sufficient to alleviate any dusting or wetting of the lime that might occur in the event of wind or rainstorms. This may be accomplished several days in advance of the final application and mixing.

3.4.1.4 Water Application and Moist Mixing

Moisture content of the mixture will be determined in preparation for final mixing. Moisture in the mixture following final mixing shall not be less than the water content determined to be optimum based on dry weight of soil and shall not exceed the optimum water content by more than 2 percentage points. Water may be added in increments as large as the equipment will permit; however, such increment of water shall be partially incorporated in the mix to avoid concentration of water near the surface. After the last increment of water has been added, mixing shall be continued until the water is uniformly distributed throughout the full depth of the mixture. Particular care shall be taken to ensure satisfactory moisture distribution along the edges of the section.

3.4.2 Edges of Stabilized Course

Approved material shall be placed along the edges of the stabilized course in such quantity as will compact to the thickness of the course being

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constructed, or to the thickness of each layer in a multiple-layer course, allowing at least a 300 mm width of the shoulder to be rolled and compacted simultaneously with the rolling and compacting of each layer of the stabilized course.

**3.4.5 Layer Thickness**

Compacted thickness of the stabilized course shall be as indicated. No layer shall be more than 200 mm or less than 75 mm in compacted thickness.

**3.4.6 Compaction**

Before compaction operations are started and as a continuation of the mixing operation, the mixture shall be thoroughly loosened and pulverized to the full depth so that 60 percent of the soil, by dry weight, exclusive of the plus No. 4 gravel or stone, will pass a No. 4 sieve. Compaction shall be started immediately after mixing is completed. During final compaction, the surface shall be moistened, if necessary, and shaped to the required lines, grades, and cross section. Density of compacted mixture shall be at least 90 percent of laboratory maximum density. Rolling shall begin at the outside edge of the surface and proceed to the center, overlapping on successive trips at least one-half the width of the roller. Alternate trips of the roller shall be slightly different lengths. The speed of the roller at all times shall be such that displacement of the mixture does not occur. Areas inaccessible to the rollers shall be compacted with mechanical tampers, and shall be shaped and finished by hand methods.

**3.4.7 Finishing**

The surface of the top layer shall be finished to the grade and cross section shown. The surface shall be of uniform texture. Light blading during rolling may be necessary for the finished surface to conform to the lines, grades, and cross sections. Should the surface for any reason become rough, corrugated, uneven in texture, or traffic-marked prior to completion, such unsatisfactory portions shall be scarified, reworked, relaid, or replaced as directed. Should any portion of the course, when laid, become watersoaked for any reason, that portion shall be removed immediately, and the mix placed in a windrow and aerated until a moisture content within the limits specified is obtained, and then spread, shaped, and rolled as specified above.

**3.4.8 Construction Joints**

At the end of each phase of construction, a straight transverse construction joint shall be formed by cutting back into the completed work to form a true vertical face free of loose or shattered material. Material along construction joints not properly compacted shall be removed and replaced with soil-lime mixture that is mixed, moistened, and compacted as specified.

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3.4.9 Curing and Protection

Immediately after the soil-lime area has been finished as specified above, the surface shall be protected against rapid drying for 7 days [by one of the methods specified below].

3.4.9.1 Moist Curing

The area shall be moistened by sprinkling and shall be kept moist for the 7-day curing period.

3.4.9.2 Bituminous Material

Bituminous material shall be uniformly applied by means of a bituminous distributor within a temperature range of 60 degrees C to 120 degrees C. Bituminous material shall be applied in quantities of not less than 0.45 liters per square meter nor more than 1.13 liters per square meter. Areas inaccessible to or missed by the distributor shall be properly treated using the manually operated hose attachment. Bituminous material shall be applied only to the top layer. At the time the bituminous material is applied, the surface of the area shall be free of loose or foreign matter and shall contain sufficient moisture to prevent excessive penetration of the bituminous material. When necessary, the area shall be sprinkled immediately before the bituminous material is applied. Treated surface shall be sanded or dusted to prevent the bituminous material from being picked up by traffic.

3.5 SAMPLING AND TESTING

3.5.1 General Requirements

Sampling and testing shall be performed by an approved commercial testing laboratory or by facilities furnished by the Contractor. No work requiring testing will be permitted until the facilities have been inspected and approved. The first inspection shall be at the expense of the Government. Cost incurred for any subsequent inspection required because of failure of the facilities to pass the first inspection will be charged to the Contractor. Tests shall be performed in sufficient numbers and at the locations and times directed to insure that materials and compaction meet specified requirements. Certified copies of the test results shall be furnished to the Contracting Officer.

3.5.2 Results

Results shall verify that the material complies with the specification. When the source of materials is changed or deficiencies are found, the initial analysis shall be repeated and the material already placed shall be retested to determine the extent of unacceptable material. All in-place unacceptable material shall be replaced.

3.5.3 Sampling

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All aggregate samples for laboratory testing shall be taken in accordance with ASTM D 75. Samples of lime shall be taken in accordance with ASTM C 50.

**3.5.4 Sieve Analysis**

Before starting work, one sample of material to be stabilized shall be tested in accordance with ASTM C 136 and ASTM D 422 on sieves conforming to ASTM E 11. After the initial test, a minimum of one analysis shall be performed for each 900 metric tons of material placed, with a minimum of three analyses for each day's run until the course is completed.

3.5.4.1 Gradation test of loosened and pulverized soil-lime mixture before compaction: Not less than three tests per eight-hour shift.

**3.5.5 Liquid Limit and Plasticity Index**

One liquid limit and plasticity index shall be performed for each sieve analysis. Liquid limit and plasticity index shall be in accordance with ASTM D 4318.

**3.5.6 Chemical Analysis**

Lime shall be tested for the specified chemical requirements in accordance with ASTM C 25. Three tests shall be conducted for each delivery of lime.

**3.5.7 Testing**

**3.5.7.1 Laboratory Maximum Density**

Tests shall establish the dry weight of non-treated soil at optimum moisture content and shall also provide a moisture-density relationship for the lime-soil mixture. Tests shall be conducted in accordance with the test procedure specified in Paragraph: Degree of Compaction. At least one test shall be required on each type of soil prior to construction, and at least one test on each type of soil after field-mixing of lime.

**3.6 FIELD QUALITY CONTROL**

**3.6.1 General**

Tests shall provide a moisture-density relationship for the lime-soil mixture. Results of field quality control testing shall verify that materials comply with this specification. When a material source is changed, the new material shall be tested for compliance. When deficiencies are found, the initial analysis shall be repeated and the material already placed shall be retested to determine the extent of unacceptable material. All in-place unacceptable material shall be replaced or repaired, as directed by the Contracting Officer, at no additional cost to the Government.

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**3.6.2 Thickness Control**

Completed thicknesses of the stabilized course shall be within 12.7 mm (1/2 inch) of the thickness indicated. Where the measured thickness of the stabilized course is more than 12.7 mm (1/2 inch) deficient, such areas shall be corrected by scarifying, adding mixture of proper gradation, reblading, and recompacting as directed. Where the measured thickness of the stabilized course is more than 12.7 mm (1/2 inch) thicker than indicated, it shall be considered as conforming to the specified thickness requirement. Average job thickness shall be the average of all thickness measurements taken for the job, but shall be within 6.9 mm (1/4 inch) of the thickness indicated. Thickness of the stabilized course shall be measured at intervals in such a manner as to ensure one measurement for each 400 square meters of stabilized course. Measurements shall be made in 76.2 mm (3 inch) diameter test holes penetrating the stabilized course.

**3.6.3 Field Density**

Field in-place density shall be determined in accordance with ASTM D 1556, ASTM D 2167, or ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked, and adjusted if necessary, using the sand cone method as described in paragraph Calibration of the ASTM publication. ASTM D 2922 results in a wet unit weight of soil and when using this method, ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall be checked along with density calibration checks as described in ASTM D 3017. If ASTM D 2922 is used, in-place densities shall be checked by ASTM D 1556 at least once per lift for each 836 square meter of stabilized material. Calibration curves and calibration tests results shall be furnished to the Contracting Officer within 24 hours of conclusion of the tests. At least one field density test shall be performed for each 200 square meters of each layer of base material.

**3.7 TRAFFIC**

Completed portions of the lime-treated soil area may be opened immediately to light traffic provided the curing is not impaired. After the curing period has elapsed, completed areas may be opened to all traffic, provided the stabilized course has hardened sufficiently to prevent marring or distorting of the surface by equipment or traffic. Heavy equipment shall not be permitted on the area during the curing period. Lime and water may be hauled over the completed area with pneumatic-tired equipment if approved. Finished portions of lime-stabilized soil that are traveled on by equipment used in constructing an adjoining section shall be protected in a manner to prevent equipment from marring or damaging completed work.

**3.8 MAINTENANCE**

Stabilized area shall be maintained in a satisfactory condition until the completed work is accepted. Maintenance shall include immediate repairs of

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any defects and shall be repeated as often as necessary to keep the area intact. Defects shall be corrected as specified herein.

3.9 DISPOSAL OF UNSATISFACTORY MATERIALS

Removed in-place materials that are unsuitable for stabilization, material that is removed for the required correction of defective areas, waste material, and debris shall be disposed of [as directed] [in waste disposal areas indicated].

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SECTION 16415 - ELECTRICAL WORK, INTERIOR

**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 C12.1	(1988) Code for Electricity Metering
ANSI C12.4	(1984; R 1990) Mechanical Demand Registers
ANSI C12.10	(1987) Electromechanical Watthour Meters
ANSI C12.11	(1987) Instrument Transformers for Revenue Metering, 10 kV BIL through 350 kV (0.6 kV NSV through 69 kV NSV)
ANSI C37.16	(1988) Switchgear - Low-Voltage Power Circuit Breakers and AC Power Circuit Protectors - Preferred Ratings, Related Requirements, and Application Recommendations
ANSI C39.1	(1981) Electrical Analog Indicating Instruments
ANSI C57.12.10	(1988) Transformers - 230 kV and Below 833/958 through 8333/10 417 kVA, Single-Phase, and 750/862 through 60 000/80 000/100 000 kVA, Three-Phase without Load Tap Changing; and 3750/4687 through 60 000/80 000/100 000 kVA with Load Tap Changing - Safety Requirements
ANSI C57.12.13	(1982) Conformance Requirements for Liquid-Filled Transformers Used in Unit Installations, Including Unit Substations
ANSI C57.12.27	(1982) Conformance Requirements for Liquid-Filled Distribution Transformers Used in Pad-Mounted Installations, Including Unit Substations
ANSI C57.12.50	(1981; R 1989) Ventilated Dry-Type Distribution Transformers, 1 to 500 kVA, Single-Phase, and 15 to 500 kVA,

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- ANSI C57.12.51 Three-Phase, with High-Voltage 601 to 34 500 Volts, Low-Voltage 120 to 600 Volts (1981; R 1989) Ventilated Dry-Type Power Transformers, 501 kVA and Larger, Three-Phase, with High-Voltage 601 to 34 500 Volts, Low-Voltage 208Y/120 to 4160 Volts
- ANSI C57.12.52 (1981; R 1989) Sealed Dry-Type Power Transformers, 501 kVA and Larger, Three-Phase, with High-Voltage 601 to 34 500 Volts, Low-Voltage 208Y/120 to 4160 Volts
- ANSI C57.12.70 (1978; R 1987) Terminal Markings and Connections for Distribution and Power Transformers
- ANSI C78.376 (1969; R 1985) Chromaticity of Fluorescent Lamps
- ANSI C80.5 (1990) Rigid Aluminum Conduit
- ANSI C82.1 (1985; C82.1a; C82.1b; C82.1c) Ballasts for Fluorescent Lamps
- ANSI C82.4 (1985; C82.4a) Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps (Multiple-Supply Type)
- ANSI C135.30 (1988) Zinc-Coated Ferrous Ground Rods for Overhead or Underground Line Construction

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM D 150 (1992) Standard Test Methods for A-C Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials
- ASTM D 256 (REV B-90) Standard Test Methods for Impact Resistance of Plastic and Electrical Insulating Materials
- ASTM D 647 (REV A-88) Standard Practice for Design of Molds for Test Specimens of Plastic Molding Materials
- ASTM D 1784 (1990) Standard Specification for Rigid Poly (Vinyl Chloride) (PVC Compounds and Chlorinated Poly (Vinyl Chloride (PVC) Compounds

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ASTM D 1897 (1988) Standard Practice for Injection Molding Test Specimens of Thermoplastic Molding and Extrusion Materials

ASTM D 2564 (REV A-91) Standard Specification for Solvent Cements for Poly (Vinyl Chloride)(PVC) Plastic Pipe and Fittings"

CODE OF FEDERAL REGULATIONS (CFR)

47 CFR 18 Rules and Regulations: Industrial, Scientific, and Medical Equipment

47 CFR 68 Connection of Terminal Equipment to the Telephone Network

FEDERAL SPECIFICATIONS (FS)

FS L-C-530 (Rev C) Coating, Pipe, Thermoplastic Resin

FS L-P-387 (Rev A; Am 1, Int Am 2) Plastic Sheet, Laminated, Thermosetting (for Designation Plates)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C37.13 (1990) Low-Voltage AC Power Circuit Breakers Used in Enclosures

IEEE C37.20.1 (1987) Metal-Enclosed Low-Voltage Power Circuit-Breaker Switchgear

IEEE C57.12.00 (1993) Liquid-Immersed Distribution, Power, and Regulating Transformers

IEEE C57.12.01 (1989) Dry-Type Distribution and Power Transformers Including Those With Solid Cast and/or Resin - Encapsulated Windings

IEEE C57.12.80 (1978; R 1992) Terminology for Power and Distribution Transformers

IEEE C57.12.90 (1993) Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers and Guide for Short-Circuit Testing of Distribution and Power Transformers

IEEE C57.12.91 (1979) Test Code for Dry Type Distribution and Power Transformers

IEEE C57.13 (1993) Instrument Transformers

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IEEE C57.94	(1982; R 1987) Installation, Application, Operation and Maintenance of Dry-Type General Purpose Distribution and Power Transformers
IEEE C57.98	(1986) Guide for Transformer Impulse Tests - Appendix to C57.12.90
IEEE C57.100	(1986) Test Procedure for Thermal Evaluation of Oil-Immersed Distribution Transformers
IEEE C57.105	(1978; R 1987) Transformers Connections in Three Phase Distribution Systems
IEEE C62.41	(1991) Surge Voltages in Low-Voltage AC Power Circuits
IEEE Std 81	(1983) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-80-576	(1988) Communications Wire and Cable for Wiring of Premises
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NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250	(1991) Enclosures for Electrical Equipment (1000 Volts Maximum)
NEMA AB 1	(1986; Rev 1) Molded Case Circuit Breakers and Molded Case Switches
NEMA BU 1	(1988; BU 1.1-1986) Busways
NEMA CP 1	(1988) Shunt Capacitors
NEMA FU 1	(1986) Low Voltage Cartridge Fuses
NEMA KS 1	(1990) Enclosed Switches
NEMA ICS 1	(1988; Rev 1, 2 & 3) Industrial Controls and Systems
NEMA ICS 2	(1988; Rev 1) Industrial Control Devices, Controllers and Assemblies
NEMA ICS 3	(1988; Rev 1) Industrial Systems

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NEMA ICS 6	(1988; Rev 1) Enclosures for Industrial Control and Systems
NEMA LE 4	(1987) Recessed Luminaires, Ceiling Compatibility
NEMA MG 1	(1993) Motors and Generators
NEMA MG 10	(1983; R 1988) Energy Management Guide for Selection and Use of Polyphase Motors
NEMA OS 1	(1989) Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
NEMA OS 2	(1986; Errata 1986; R 1991) Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports
NEMA PB 1	(1990) Panelboards
NEMA PB 2	(1989) Deadfront Distribution Switchboards
NEMA PE 5	(1985; R 1991) Utility Type Battery Chargers
NEMA PE 7	(1985; R 1991) Communication Type Battery Chargers
NEMA RN 1	(1989) Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
NEMA ST 20	(1992) Dry-Type Transformers for General Applications
NEMA TC 2	(1990) Electrical Polyvinyl Chloride (PVC) Tubing (EPT) and Conduit (EPC-40 and EPC-80)
NEMA TC 13	(1986) Electrical Nonmetallic Tubing (ENT)
NEMA WD 1	(1983; R 1989) General Requirements for Wiring Devices
NEMA WD 6	(1988) Wiring Devices - Dimensional Requirements

**NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)**

NFPA 70	(1993) National Electrical Code
NFPA 101	(1994) Safety to Life from Fire in Buildings and Structures

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RURAL ELECTRIFICATION ADMINISTRATION (REA)

REA TE&CM 823 (1980) Electrical Protection by Use of Gas  
Tube Arresters

UNDERWRITERS LABORATORIES (UL)

UL-03 (1993; Supple) Electrical Construction  
Materials Directory

UL 1 (1985; Rev thru Aug 1993) Flexible Metal  
Conduit

UL 5 (1985; Rev thru Sep 1990) Surface Metal  
Raceways and Fittings

UL 6 (1993) Rigid Metal Conduit

UL 20 (1986; Rev thru Jul 1993) General-Use Snap  
Switches

UL 44 (1991; Rev thru Feb 1994) Rubber-Insulated  
Wires and Cables

UL 50 (1992; Rev thru Feb 1994) Enclosures for  
Electrical Equipment

UL 67 (1988; Rev thru Feb 1993) Panelboards

UL 83 (1991; Rev thru Jul 1993)  
Thermoplastic-Insulated Wires and Cables

UL 94 (1991; Rev May 1993) Tests for Flammability  
of Plastic Materials for Parts in Devices  
and Appliances

UL 98 (1987; Rev thru Apr 1990) Enclosed and  
Dead-Front Switches

UL 198B (1988; Rev Jan 1988) Class H Fuses

UL 198C (1986; Rev thru Jun 1993)  
High-Interrupting-Capacity Fuses,  
Current-Limiting Types

UL 198D (1988; Rev Jul 1988) Class K Fuses

UL 198E (1988; Rev Jul 1988) Class R Fuses

UL 198F (1988) Plug Fuses

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UL 198G	(1988; Rev May 1988) Fuses for Supplementary Overcurrent Protection
UL 198H	(1988; Rev thru Nov 1993) Class T Fuses
UL 198L	(1988; Rev Mar 1988) D-C Fuses for Industrial Use
UL 360	(1986; Rev thru Jan 1993) Liquid-Tight Flexible Steel Conduit
UL 467	(1984; Rev thru Nov 1986) Grounding and Bonding Equipment
UL 486A	(1991; Rev Oct 1991) Wire Connectors and Soldering Lugs for Use with Copper Conductors
UL 486B	(1991; Rev thru Apr 1992) Wire Connectors for Use with Aluminum Conductors
UL 486C	(1991; Rev thru Sep 1992) Splicing Wire Connectors
UL 489	(1991; Rev thru Aug 1993) Molded-Case Circuit Breakers and Circuit-Breaker Enclosures
UL 496	(1987, 10th Ed.; Rev thru May 27, 1987) Edison-Base Lampholders
UL 497	(1991; Rev Sep 1992) Protectors for Paired Conductor Communication Circuits
UL 498	(1991; Rev thru Dec 1993) Attachment Plugs and Receptacles
UL 499	(1987; Rev thru Dec. 21, 1987; Bulletins Feb. 1, 1989 thru Apr. 24, 1989) Electric Heating Appliances
UL 506	(1989; Rev Sep 1993) Specialty Transformers
UL 508	(1993) Industrial Control Equipment
UL 510	(1986; Rev Oct 1986) Insulating Tape
UL 512	(1993) Fuseholders
UL 514A	(1991) Metallic Outlet Boxes

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UL 514B	(1992; Rev thru Mar 1993) Fittings for Conduit and Outlet Boxes
UL 514C	(1988; Rev Jun 1989) Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL 542	(1985; Rev thru Oct 1993) Lampholders, Starters, and Starter Holders for Fluorescent Lamps
UL 651	(1989; Rev thru Dec 1989) Schedule 40 and 80 Rigid PVC Conduit
UL 651A	(1989; Rev thru Dec 1989) Type EB and A Rigid PVC Conduit and HDPE Conduit
UL 674	(1989) Electric Motors and Generators for Use in Hazardous (Classified) Locations
UL 698	(1991; Rev thru May 1993) Industrial Control Equipment for Use in Hazardous (Classified) Locations
UL 719	(1985; Rev thru Apr 1993) Nonmetallic-Sheathed Cables
UL 797	(1993) Electrical Metallic Tubing
UL 817	(1986; Rev thru Jul 1993) Cord Sets and Power-Supply Cords
UL 844	(1990; Rev thru Dec 1993) Electric Lighting Fixtures for Use in Hazardous (Classified) Locations
UL 845	(1988; Rev thru Jul 1993) Motor Control Centers
UL 857	(1990; Errata Apr 1990; Rev thru Jan 1994) Busways and Associated Fittings
UL 869A	(1993) Reference Standard for Service Equipment
UL 877	(1993) Circuit Breakers and Circuit-Breaker Enclosures for Use in Hazardous (Classified) Locations
UL 886	(1994; Rev thru Feb 1994) Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations

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UL 891	(1994) Dead-Front Switchboards
UL 924	(1990; Rev thru Nov 1993) Emergency Lighting and Power Equipment
UL 935	(1993; Rev Feb 1993) Fluorescent-Lamp Ballasts
UL 943	(1993) Ground-Fault Circuit Interrupters
UL 1004	(1989; Rev thru Mar 1993) Electric Motors
UL 1010	(1991; Rev thru Feb 1994) Receptical-Plug Combinations for Use in Hazardous (Classified) Locations
UL 1022	(1979; Rev thru Jun 1984, Errata Nov 1985) Line Isolation Monitors
UL 1029	(1986; Rev thru Jul 1993) High-Intensity-Discharge Lamp Ballasts
UL 1047	(1990; Errata May 1991) Isolated Power Systems Equipment
UL 1236	(1992; Rev thru Mar 1994) Battery Chargers for Charging Engine-Starter Batteries
UL 1242	(1983; Rev thru Jul 1993) Intermediate Metal Conduit
UL 1561	(1986; Rev thru Jul 1992) Dry-Type General Purpose and Power Transformers
UL 1564	(1993) Industrial Battery Chargers
UL 1570	(1988; Rev thru Mar 1994) Fluorescent Lighting Fixtures
UL 1571	(1991; Rev thru Mar 1994) Incandescent Lighting Fixtures
UL 1572	(1991; Rev thru Mar 1994) High Intensity Discharge Lighting Fixtures
UL 1660	(1987) Liquid-Tight Flexible Nonmetallic Conduit

## 1.2 GENERAL

### 1.2.1 Rules

The installation shall conform to the requirements of NFPA 70 and NFPA 101, unless more stringent requirements are indicated herein or shown.

### 1.2.2 Coordination

The drawings indicate the extent and the general location and arrangement of equipment, conduit, and wiring. The Contractor shall become familiar with all details of the work and verify all dimensions in the field so that the outlets and equipment shall be properly located and readily accessible. Lighting fixtures, outlets, and other equipment and materials shall be located to avoid interference with mechanical or structural features; otherwise, lighting fixtures shall be symmetrically located according to the room arrangement when uniform illumination is required, or asymmetrically located to suit conditions fixed by design and shown. Raceways, junction and outlet boxes, and lighting fixtures shall not be supported from sheet metal roof decks. If any conflicts occur necessitating departures from the drawings, details of and reasons for departures shall be submitted and approved prior to implementing any change. The Electrical Contractor shall coordinate the electrical work with HVAC and electrical drawings and provide all power related wiring even if they are not shown on electrical drawings.

### 1.2.3 Standard Products

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

### 1.2.4 Identification Nameplates

Major items of electrical equipment and major components shall be permanently marked with an identification name to identify the equipment by type or function and specific unit number as indicated. Designation of motors shall coincide with their designation in the motor control center or panel. Unless otherwise specified, all identification nameplates shall be made of laminated plastic in accordance with FS L-P-387 with black outer layers and a white core. Edges shall be chamfered. Plates shall be fastened with black-finished round-head drive screws, except motors, or approved nonadhesive metal fasteners. When the nameplate is to be installed on an irregular-shaped object, the Contractor shall devise an approved support suitable for the application and ensure the proper installation of the supports and nameplates. In all instances, the nameplate shall be installed in a conspicuous location. At the option of the Contractor, the equipment manufacturer's standard embossed nameplate material with black paint-filled letters may be furnished in lieu of laminated plastic. The front of each panelboard, motor control center,

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switchgear, and switchboard shall have a nameplate to indicate the phase letter, corresponding color and arrangement of the phase conductors. The following equipment, as a minimum, shall be provided with identification nameplates:

Minimum 6.4 mm  
High Letters

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Minimum 3.2 mm  
High Letters

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Panelboards  
Starters  
Safety Switches  
Transformers  
Equipment Enclosures  
Motors

Control Power Transformers  
Control Devices  
Instrument Transformers

Each panel, section, or unit in motor control centers, switchgear or similar assemblies shall be provided with a nameplate in addition to nameplates listed above, which shall be provided for individual compartments in the respective assembly, including nameplates which identify "future," "spare," and "dedicated" or "equipped spaces."

**1.2.5 As Built Drawings**

Following the project completion or turnover, within 30 days the Contractor shall furnish two sets of as built drawings to the Contracting Officer.

**1.3 SUBMITTALS**

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Drawings

Electrical Work; GA.

Detail drawings for all materials and equipment specified. Detail drawings shall consist of a complete list of equipment and materials, including manufacturer's descriptive and technical data; catalog cuts; and any special installation instructions that may be required. Drawings shall show applicable schematic diagrams; and equipment layout and anchorage. Telephone system drawings showing actual layout, including locations, type any gauge of cables, and terminal assignment of wiring, after installation.

SD-09 Reports

Materials and Equipment; GA.

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The label or listing of the Underwriters Laboratories, Inc., shall be accepted as evidence that the materials or equipment conform to the applicable standards of that agency. In lieu of this label or listing, a statement from a nationally recognized, adequately equipped testing agency indicating that the items have been tested in accordance with required procedures and that the materials and equipment comply with all contract requirements will be accepted. However, materials and equipment installed in hazardous locations must bear the UL label unless the data submitted from other testing agency is specifically approved in writing by the Contracting Officer. Materials and equipment shall be approved based on the manufacturer's published data.

For other than equipment and materials specified to conform to UL publications, a manufacturer's statement indicating complete compliance with the applicable Federal Specification, or standard of the American Society for Testing and Materials, National Electrical Manufacturers Association, or other commercial standard, is acceptable.

**SD-13 Certificates**

Telephone Installer; GA.

Qualifications of the telephone installer.

**1.4 WORKMANSHIP**

Materials and equipment shall be installed in accordance with recommendations of the manufacturer and as shown.

**PART 2 - PRODUCTS**

**2.1 MATERIALS AND EQUIPMENT**

Materials and equipment shall conform to the respective publications and other requirements specified below. Materials and equipment not listed below shall be as specified elsewhere in this section.

**2.1.1 Cables and Wires**

Conductors in cables shall be annealed copper. Cables shall be single-conductor type, unless otherwise indicated. Cables and wires shall conform to UL 44 for rubber-insulated type; UL 83 for the thermoplastic-insulated type; and UL 719 for the nonmetallic-sheathed cables.

**2.1.1.1 Grounding Cables**

Grounding cables shall be bare or shall have green low-voltage insulation.

**2.1.1.2 Telephone Cables**

ICEA S-80-576

**2.1.2 Cabinets for Communications**

UL 50. Cabinets shall have boxes constructed of zinc-coated sheet steel. Cabinets shall be constructed with interior dimensions not less than those indicated. Trim shall be fitted with hinged door and flush catch. Doors shall provide maximum-size openings to the box interiors. Boxes shall be provided with a 15 mm plywood back board having a two-coat insulating varnish finish.

**2.1.3 Connector Blocks**

Connector blocks shall be type 66 equipped with punch down clips.

**2.1.4 Circuit Breakers**

Circuit breakers shall have voltage, current and interrupting ratings as indicated.

**2.1.4.1 Molded-Case Circuit Breakers**

NEMA AB 1 and UL 489 for circuit breakers.

a. Molded-Case Circuit Breakers: Single-pole breakers shall be full module size; two poles shall not be installed in a single module. Multipole breakers shall be of the common-trip type having a single operating handle, but for sizes of 100 amperes or less may consist of single-pole breakers permanently factory assembled into a multipole unit having an internal, mechanical, nontamperable common-trip mechanism and external handle ties. Breakers coordinated with current-limiting fuses shall have a combined interrupting capacity of 100,000 symmetrical amperes. All poles of associated breakers shall open if any fuse blows.

**2.1.5 Conduit and Tubing**

**2.1.5.1 Electrical, Zinc-Coated Steel Metallic Tubing (EMT)**

UL 797.

**2.1.5.2 Flexible Conduit, Steel and Plastic**

General-purpose type, UL 1; liquid tight, UL 360, and UL 1660.

**2.1.5.3 Intermediate Metal Conduit**

UL 1242.

**2.1.5.4 Rigid Metal Conduit**

UL 6.

**2.1.6 Conduit and Device Boxes and Fittings**

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**2.1.6.1 Boxes, Metallic Outlet**

NEMA OS 1 and UL 514A.

**2.1.6.2 Boxes, Switch (Enclosed), Surface-Mounted**

UL 98.

**2.1.6.3 Fittings for Conduit and Outlet Boxes**

UL 514B.

**2.1.7 Connectors, Wire Pressure**

**2.1.7.1 Copper Conductors**

UL 486A.

**2.1.8 Electrical Grounding and Bonding Equipment**

UL 467.

**2.1.8.1 Ground Rods**

Ground rods shall be of copper-clad steel conforming to UL 467 not less than 19.1 mm (3/4 inch) in diameter by 3.1 meter (10 feet) in length of the sectional type driven full length into the earth.

**2.1.9 Enclosures**

NEMA ICS 6 or NEMA 250 unless otherwise specified.

**2.1.9.1 Cabinets and Boxes**

UL 50.

**2.1.9.2 Circuit Breaker**

UL 489.

**2.1.10 Fixtures, Lighting and Fixture Accessories/Components**

Standard Drawing 40-06-04 sheets referenced hereinafter and enclosed as an integral part of these specifications, additional fixtures shown on contract drawings, if any and UL 844 for fixtures to be installed in hazardous (classified) locations. Fixtures, accessories and components, including ballasts, lampholders, lamps, starters and starter holders, shall conform to industry standards specified below.

**2.1.10.1 Fixture, Auxiliary or Emergency**

UL 924.

**2.1.10.2 Incandescent Fixture**

NEMA LE 4 for ceiling compatibility of recessed fixtures and UL 1571.

**2.1.10.3 Fluorescent**

a. Fixture: NEMA LE 4 for ceiling compatibility of recessed fixtures and UL 1570. Fixtures shall be plainly marked for proper lamp and ballast type to identify lamp diameter, wattage, color and start type. Marking shall be readily visible to service personnel, but not visible from normal viewing angles.

b. Ballasts:

(1) Electronic Ballast. Electronic ballasts shall consist of a rectifier, high frequency inverter, and power control and regulation circuitry. The ballasts shall be UL listed, Class P, with a Class A sound rating and shall contain no PCBs. Ballasts shall meet 47 CFR 18 for electromagnetic interference and shall not interfere with the operation of other electrical equipment. Design shall withstand line transients per IEEE C62.41, Category A. Unless otherwise indicated, the minimum number of ballasts shall be used to serve each individual fixture, using one, two, three or four lamp ballasts. A single ballast may be used to serve multiple fixtures if they are continuous mounted, factory manufactured for that installation with an integral wireway and are identically controlled.

(a) Light output regulation shall be 10%.

(b) Voltage input regulation shall be 10%.

(c) Lamp current crest factor shall be no more than 1.7.

(d) Ballast factor shall be not less than 85% nor more than 100%, unless otherwise indicated.

(e) A 60 Hz filter shall be provided. Flicker shall be no more than 15% with any lamp suitable for the ballast.

(f) Ballast case temperature shall not exceed 25 degree celsius rise above 40 degree celsius ambient, when tested in accordance with UL 935.

(g) Input current third harmonic shall not exceed 32 percent total harmonic distortion or 27.5 percent of the third triplens.

(h) Power factor shall not be less than 0.9.

(i) Ballasts shall operate at a frequency of 20 KHz or more.

(j) Operating filament voltage shall be 2.5 to 4.5 volts.

(k) Warranty. Three year full warranty including a \$10 labor allowance.

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(1) Ballast Efficacy Factor (BEF) shall be in accordance with the following table. Ballasts and lamps shall be matching rapid start or instant start as indicated on the following table. If 32W-F32-T8 lamps and ballasts are used, they must be either all rapid start or all instant start.

**ELECTRONIC FLUORESCENT BALLAST EFFICACY FACTOR**

LAMP TYPE	TYPE OF STARTER & LAMP	NOMINAL OPERATIONAL INPUT VOLTAGE	NUMBER OF LAMPS	MIN. BALLAST EFFICACY FACTOR
40W F40 T12	rapid start	120 or 277 V	1	2.3
			2	1.2
			3	0.8
			4	0.6
34W F40 T12	rapid start	120 or 277 V	1	2.6
			2	1.3
			3	1.0
			4	0.7
40W F40 T10	rapid start	120 or 277 V	1	2.2
			2	1.1
			3	0.8
32W F32 T8	rapid or instant start	120 or 277 V	1	2.4
			2	1.4
			3	1.0
			4	0.8

\*For ballasts not specifically designed for use with dimming controls

The BEF is calculated using the formula:

$$\text{BEF} = \text{Ballast Factor (in percent)} / \text{Power Input}$$

Where Power Input = Total Wattage of Combined Lamps and Ballasts.

c. Lampholders, Starters, and Starter Holders: UL 542.

**2.1.10.4 High-Intensity-Discharge**

a. Fixture: NEMA LE 4 for ceiling compatibility of recessed fixtures and UL 1572.

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b. Ballasts: ANSI C82.4 for multiple supply types and UL 1029.

**2.1.11 Instruments, Electrical Indicating**

ANSI C39.1.

**2.1.12 Motors, ac, Fractional and Integral Kilowatt**

Motors, ac, fractional and integral kilowatt, 373.0 kW (500 hp) and smaller shall conform to NEMA MG 1 and UL 1004 for motors; NEMA MG 10 for energy management selection of polyphase motors; and UL 674 for use of motors in hazardous (classified) locations.

**2.1.12.1 Kilowatt (horsepower) Rating**

The kilowatt (horsepower) rating of motors should be limited to no more than 125 percent of the maximum load being served unless a NEMA standard size does not fall within this range. In this case, the next larger NEMA standard motor size should be used.

**2.1.12.2 Motor Efficiencies**

All permanently wired polyphase motors of 746 W (1 hp) or more shall meet the minimum full-load efficiencies as indicated in the following table, and as specified in this specification. Motors of 746 W (1 hp) or more with open, dripproof or totally enclosed fan cooled enclosures shall be high efficiency type, unless otherwise indicated. Motors provided as an integral part of motor driven equipment are excluded from this requirement if a minimum seasonal or overall efficiency requirement is indicated for that equipment by the provisions of another section.

Minimum Motor Efficiency

<u>kW</u>	<u>Std. Efficiency</u>	<u>High Efficiency</u>
0.746 (1 hp)	77.0	85.5
1.12 (1.5 hp)	78.5	85.5
1.49 (2 hp)	78.5	85.5
2.24 (3 hp)	78.5	88.5
3.73 (5 hp)	82.5	88.5
5.60 (7.5 hp)	84.0	90.0
7.46 (10 hp)	85.5	90.0
11.2 (15 hp)	85.5	91.0
14.9 (20 hp)	87.5	92.0
18.7 (25 hp)	88.5	92.0
22.4 (30 hp)	88.5	92.0
29.8 (40 hp)	88.5	92.0
37.3 (50 hp)	89.0	92.5
44.8 (60 hp)	89.0	92.5
56.9 (75 hp)	89.0	95.5
74.6 (100 hp)	90.0	93.5
93.3 (125 hp)	91.0	94.5

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112 (150 hp)	91.0	94.5
149 (200 hp)	91.0	94.5
187 (250 hp)	91.0	94.5
224 (300 hp)	91.0	94.5
261 (350 hp)	91.0	94.5
298 (400 hp)	91.0	94.5
373 (500 hp)	91.0	94.5

**2.1.13 Motor Controls and Motor Control Centers**

NEMA ICS 1, NEMA ICS 2, NEMA ICS 3 and NEMA ICS 6, and UL 508 and UL 845.

**2.1.14 Panelboards**

Dead-front construction, NEMA PB 1 and UL 67.

**2.1.15 Receptacles**

**2.1.15.1 Standard Grade**

UL 498.

**2.1.15.2 Ground Fault Interrupters**

UL 943, Class A or B.

**2.1.16 Service Equipment**

UL 869A.

**2.1.17 Splice, Conductor**

UL 486C.

**2.1.18 Snap Switches**

UL 20.

**2.1.19 Tapes**

**2.1.19.1 Plastic Tape**

UL 510.

**2.1.19.2 Rubber Tape**

UL 510.

**2.1.20 Wiring Devices**

NEMA WD 1 for general-purpose wiring devices, and NEMA WD 6 for dimensional requirements of wiring devices.

**2.1.21 Telephone Jacks**

47 CFR 68, plastic shall be class VO in accordance with UL 94.

**PART 3 - EXECUTION**

**3.1 GROUNDING**

Grounding shall be in conformance with NFPA 70, the contract drawings, and the following specifications.

**3.1.1 Ground Rods**

The resistance to ground shall be measured using the fall-of-potential method described in IEEE Std 81. The maximum resistance of a driven ground shall not exceed 25 ohms under normally dry conditions. If this resistance cannot be obtained with a single rod, 2 additional rods not less than 1.8 meters on centers, or if sectional type rods are used, 2 additional sections may be coupled and driven with the first rod. In high-ground-resistance, UL listed chemically charged ground rods may be used. If the resultant resistance exceeds 25 ohms measured not less than 48 hours after rainfall, the Contracting Officer shall be notified immediately. Connections below grade shall be fusion welded. Connections above grade shall be fusion welded or shall use UL 467 approved connectors.

**3.1.2 Grounding Conductors**

A green ground wire shall be furnished regardless of the type of conduit. All equipment grounding conductors, including metallic raceway systems used as such, shall be bonded or joined together in each wiring box or equipment enclosure. Metallic raceways and grounding conductors shall be checked to assure that they are wired or bonded into a common junction. Metallic boxes and enclosures, if used, shall also be bonded to these grounding conductors by an approved means per NFPA 70. When boxes for receptacles, switches, or other utilization devices are installed, any designated grounding terminal on these devices shall also be bonded to the equipment grounding conductor junction with a short jumper.

**3.2 WIRING METHODS**

**3.2.1 General Requirements**

A green insulated wire shall be provided for the grounding conductor. Unless otherwise indicated, wiring shall consist of insulated conductors

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installed in rigid zinc-coated steel conduit, electrical metallic tubing, or intermediate metal conduit.

**3.2.2 Conduit and Tubing Systems**

Conduit and tubing systems shall be installed as indicated. Conduit sizes shown are based on use of copper conductors with insulation types as described in paragraph WIRING METHODS. Minimum size of raceways shall be 15 mm (1/2 inch). Only metal conduits will be permitted when conduits are required for shielding or other special purposes indicated, or when required by conformance to NFPA 70. Nonmetallic conduit and tubing may be used in damp, wet or corrosive locations when permitted by NFPA 70 and the conduit or tubing system is provided with appropriate boxes, covers, clamps, screws or other appropriate type of fittings. Electrical metallic tubing may be installed only within buildings. Electrical metallic tubing may be installed in concrete and grout in dry locations. Electrical metallic tubing installed in concrete or grout shall be provided with concrete tight fittings. EMT shall not be installed in damp or wet locations, or the air space of exterior masonry cavity walls. Bushings, manufactured fittings or boxes providing equivalent means of protection shall be installed on the ends of all conduits and shall be of the insulating type, where required by NFPA 70. Only UL listed adapters shall be used to connect EMT to rigid metal conduit, cast boxes, and conduit bodies. Except as otherwise specified, IMC may be used as an option for rigid steel conduit in areas as permitted by NFPA 70. Raceways shall not be installed under the firepits of boilers and furnaces and shall be kept 150 mm away from parallel runs of flues, steam pipes and hot-water pipes. Raceways shall be concealed within finished walls, ceilings, and floors unless otherwise shown. Raceways crossing structural expansion joints shall be provided with suitable expansion fittings or other suitable means to compensate for the building expansion and contraction and to provide for continuity of grounding.

**3.2.2.1 Below Slab-on-Grade or in the Ground**

Electrical wiring below slab-on-grade shall be protected by a conduit system. Conduit passing vertically through slabs-on-grade shall be rigid steel or IMC. Rigid steel or IMC conduits installed below slab-on-grade or in the earth shall be field wrapped with 0.254 mm (0.010 inch) thick pipe-wrapping plastic tape applied with a 50 percent overlay, or shall have a factory-applied polyvinyl chloride, plastic resin, or epoxy coating system.

**3.2.2.2 Installing in Slabs Including Slabs on Grade**

Conduits shall be installed as close to the middle of concrete slabs as practicable without disturbing the reinforcement. Outside diameter shall not exceed 1/3 of the slab thickness and conduits shall be spaced not closer than 3 diameters on centers except at cabinet locations where the slab thickness shall be increased as approved by the Contracting Officer.

### 3.2.2.3 Changes in Direction of Runs

Changes in direction of runs shall be made with symmetrical bends or cast-metal fittings. Field-made bends and offsets shall be made with an approved hickey or conduit-bending machine. Crushed or deformed raceways shall not be installed. Trapped raceways in damp and wet locations shall be avoided where possible. Care shall be taken to prevent the lodgment of plaster, dirt, or trash in raceways, boxes, fittings and equipment during the course of construction. Clogged raceways shall be entirely freed of obstructions or shall be replaced.

### 3.2.2.4 Supports

Metallic conduits and tubing shall be securely and rigidly fastened in place at intervals of not more than 3 meters and within 900 mm of boxes, cabinets, and fittings, with approved pipe straps, wall brackets, conduit clamps, conduit hangers, threaded C-clamps, or ceiling trapeze. C-clamps or beam clamps shall have strap or rod-type retainers. Loads and supports shall be coordinated with supporting structure to prevent damage or deformation to the structures, but no load shall be applied to joist bridging. Fastenings shall be by wood screws or screw-type nails to wood; by toggle bolts on hollow masonry units; by expansion bolts on concrete or brick; by machine screws, welded threaded studs, heat-treated or spring-steel-tension clamps on steel work. Nail-type nylon anchors or threaded studs driven in by a powder charge and provided with lock washers and nuts may be used in lieu of expansion bolts or machine screws. Raceways or pipe straps shall not be welded to steel structures. Holes cut to a depth of more than 40 mm in reinforced concrete beams or to a depth of more than 20 mm in concrete joists shall avoid cutting the main reinforcing bars. Holes not used shall be filled. In partitions of light steel construction, sheet-metal screws may be used. Conduit shall not be supported using wire or nylon ties. Raceways shall be installed as a complete system and be independently supported from the structure. Upper raceways shall not be the support of lower raceways. Supporting means will not be shared between electrical raceways and mechanical piping or ducts and shall not be fastened to hung ceiling supports. Conduits shall be fastened to all sheet-metal boxes and cabinets with two locknuts where required by the NFPA 70, where insulating bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, a single locknut and bushing may be used. Threadless fittings for electrical metallic tubing shall be of a type approved for the conditions encountered. A pull wire shall be inserted in each empty raceway in which wiring is to be installed by others if the raceway is more than 15 meters in length and contains more than the equivalent of two 90-degree bends, or where the raceway is more than 45 meters in length. The pull wire shall be of No. 14 AWG zinc-coated steel, or of plastic having not less than 1.4 MPa (200 psi) tensile strength. Not less than 254 mm (10 inches) of slack shall be left at each end of the pull wire. Additional support for horizontal runs is not required when EMT rests on steel stud cutouts.

### **3.2.2.5 Communications Raceways**

Communications raceways indicated shall be installed in accordance with the previous requirements for conduit and tubing and with the additional requirements that no length of run shall exceed 15 meters for 15 mm (1/2 inch) and 20 mm (3/4 inch) sizes, and 30 meters for 25 mm (1 inch) or larger sizes, and shall not contain more than two 90-degree bends or the equivalent. Additional pull or junction boxes shall be installed to comply with these limitations whether or not indicated. Inside radii of bends in conduits of 25 mm (1 inch) size or larger shall be not less than ten times the nominal diameter.

### **3.2.3 Conductors**

All conductors shall be copper.

#### **3.2.3.1 Sizes**

All sizes are based on copper conductors, unless otherwise indicated. Sizes shall be not less than indicated. Branch-circuit conductors shall be not smaller than No. 12 AWG. Conductors for branch circuits of 120 volts more than 15 meters long and of 277 volts more than 35 meters long, from panel to load center, shall be no smaller than No. 10 AWG. Class 1 remote control and signal circuit conductors shall be not less than No. 14 AWG. Class 2 remote control and signal circuit conductors shall be not less than No. 16 AWG.

Higher temperature rated conductors will be permitted to be used, if the UL tested temperature ratings for which the equipment in the circuit is marked are not exceeded.

Conductor sizes for nonlinear loads shall be based on the use of minimum 75 degrees C insulated conductors for branch circuits and feeders.

#### **3.2.3.2 Power Conductor Identification**

Phase conductors shall be identified by color coding. The color of the insulation on phases A, B, and C respectively (for three phase) or phases A and B respectively (for single phase) of different voltage systems shall be as follows:

120/208 volt, 3-phase: Black, red, and blue.

Conductor phase and voltage identification shall be made by color-coded insulation for all conductors smaller than No. 6 AWG. For conductors No. 6 AWG and larger, identification shall be made by color-coded insulation, or conductors with black insulation may be furnished and identified by the use of half-lapped bands of colored electrical tape wrapped around the insulation for a minimum of 75 mm of length near the end, or other method as submitted by the Contractor and approved by the Contracting Officer. Conductor identification shall be provided within each enclosure where a tap, splice, or termination is made. Phase identification by a particular

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color shall be maintained continuously for the length of a circuit, including junctions.

**3.2.3.3 Control Conductor Identification**

Control circuit conductor identification shall be made by color-coded insulated conductors, plastic-coated self-sticking printed markers, permanently attached stamped metal foil markers, or equivalent means as approved. Control circuit terminals of equipment shall be properly identified. Terminal and conductor identification shall match that shown on approved detail drawings. Hand lettering or marking is not acceptable.

**3.2.3.4**

Conductor insulation shall be suitable for the application and shall have a temperature rating of not less than 75 degrees C. except sizes smaller than No. 6 may be 60 degrees C.

**3.3 BOXES AND SUPPORTS**

Boxes shall be provided in the wiring or raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways, 101.6 by 101.6 mm (4 in. by 4 in.) nominal size and smaller, shall be of the cast-metal hub type when located in normally wet locations, when flush and surface mounted on outside of exterior surfaces, or when located in hazardous areas. Large size boxes shall be as shown. Boxes in other locations shall be sheet steel. In partitions of light steel construction bar hangers with 25 mm long studs, mounted between metal wall studs or metal stud "C" brackets snapped on and tab-locked to metal wall studs, shall be used to secure boxes to the building structure. When "C" brackets are used, additional box support shall be provided on the side of the box opposite the brackets. The edges of boxes for electrical devices shall be flush with the finished surfaces in gypsum and plasterboard installations. Boxes for mounting lighting fixtures shall be not less than 101.6 mm square except smaller boxes may be installed as required by fixture configuration, as approved. Boxes installed for concealed wiring shall be provided with suitable extension rings or plaster covers, as required. The bottom of boxes installed in masonry-block walls for concealed wiring shall be flush with the top of a block to minimize cutting of blocks, and boxes shall be located horizontally to avoid cutting webs of block. Indicated elevations are approximate, except where minimum mounting heights for hazardous areas are required by NFPA 70. Unless otherwise indicated, boxes for wall switches shall be mounted 1.2 meters above finished floors. Switch and outlet boxes on opposite sides of fire rated walls shall be separated by a minimum horizontal distance of 600 mm. Cast-metal boxes installed in wet locations and boxes installed flush with the outside of exterior surfaces shall be gasketed. Separate boxes shall be provided for flush or recessed fixtures when required by the fixture terminal operating temperature, and fixtures shall be readily removable for access to the boxes unless ceiling access panels are provided. Boxes and supports shall be fastened to wood with wood screws or screw-type nails of equal holding strength, with bolts

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and metal expansion shields on concrete or brick, with toggle bolts on hollow masonry units, and with machine screws or welded studs on steel work. Threaded studs driven in by powder charge and provided with lockwashers and nuts, or nail-type nylon anchors may be used in lieu of expansion shields, or machine screws. In open overhead spaces, cast-metal boxes threaded to raceways need not be separately supported except where used for fixture support; cast-metal boxes having threadless connectors and sheet metal boxes shall be supported directly from the building structure or by bar hangers. Hangers shall not be fastened to or supported from joist bridging. Cast-metal boxes with 2.4 mm (3/32 in.) wall thickness are acceptable. Where bar hangers are used, the bar shall be attached to raceways on opposite sides of the box and the raceway shall be supported with an approved type fastener not more than 600 mm from the box. Penetration of more than 38.1 mm (1-1/2 in.) into reinforced-concrete beams or more than 19.1 mm (3/4 in.) into reinforced-concrete joists shall avoid cutting any main reinforcing steel.

**3.3.1 Boxes for Use with Raceway Systems**

Boxes for use with raceway systems shall be not less than 38.1 mm (1-1/2 in.) deep except where shallower boxes required by structural conditions are approved. Sheetmetal boxes for other than lighting fixtures shall be not less than 101.6 mm (4 in.) square except that 101.6 by 50.8 mm (4 by 2 inch) boxes may be used where only one raceway enters the outlet. Contractor shall size the telephone outlet boxes as required by the number, size and type of outlets specified and as required by the outlets furnished by the Contractor.

**3.3.2 Pull Boxes**

Pull boxes of not less than the minimum size required by NFPA 70 shall be constructed of aluminum or galvanized sheet steel, except where cast-metal boxes are required in locations specified above. Boxes shall be furnished with screw-fastened covers. Where several feeders pass through a common pull box, the feeders shall be tagged to indicate clearly the electrical characteristics, circuit number, and panel designation.

**3.3.3 Conduit Stub-Ups**

Conduits stubbed up through concrete floors for connections to freestanding equipment shall be provided with a short elbow and an adjustable top or coupling threaded inside for plugs, set flush with the finished floor. Wiring shall be extended in rigid threaded conduit to equipment, except that where required, flexible conduit may be used 150 mm (6 in.) above the floor. Screwdriver-operated threaded flush plugs shall be installed in conduits from which no equipment connections are made to suit the devices installed.

**3.4 DEVICE PLATES**

One-piece type device plates shall be provided for all outlets and fittings. Plates on unfinished walls and on fittings shall be of

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zinc-coated sheet steel, cast-metal, or impact resistant plastic having rounded or beveled edges. Plates on finished walls shall be of satin finish corrosion resistant steel or satin finish chromium plated brass. Screws shall be of metal with countersunk heads, in a color to match the finish of the plate. Plates shall be installed with all four edges in continuous contact with finished wall surfaces without the use of mats or similar devices. Plaster fillings will not be permitted. Plates shall be installed with an alignment tolerance of 1.6 mm (1/16 inch). The use of sectional-type device plates will not be permitted. Plates installed in wet locations shall be gasketed and provided with a hinged, gasketed cover, unless otherwise specified.

**3.5 RECEPTACLES**

**3.5.1 Single and Duplex**

Single and duplex receptacles shall be rated 20 amperes, 125 volts, two-pole, three-wire, grounding type with polarized parallel slots. Bodies shall be of ivory to match color of switch handles in the same room or to harmonize with the color of the respective wall, and supported by mounting strap having plaster ears. Contact arrangement shall be such that contact is made on two sides of an inserted blade. Receptacle shall be side- or back-wired with two screws per terminal. The third grounding pole shall be connected to the metal mounting yoke. Switched receptacles shall be the same as other receptacles specified except that the ungrounded pole of each suitable receptacle shall be provided with a separate terminal. Only the top receptacle of a duplex receptacle shall be wired for switching application. Receptacles with ground fault circuit interrupters shall have the current rating as indicated, and shall be UL Class A type unless otherwise shown. Ground fault circuit protection shall be provided as required by NFPA 70 and as indicated on the drawings. The green-insulated grounding wire shall be connected to the grounding terminal.

**3.5.2 Weatherproof**

Weatherproof receptacles shown shall be mounted in a box with a gasketed, weatherproof, cast-metal cover plate and gasketed cap over each receptacle opening. The cap shall be provided with a spring-hinged flap.

**3.5.3 Special-Purpose or Heavy-Duty Receptacles**

Special-purpose or heavy-duty receptacles shall be of the type and of ratings and number of poles indicated or required for the anticipated purpose. Contact surfaces may be either round or rectangular. One appropriate straight or angle-type plug shall be furnished with each receptacle. Locking of receptacles, indicated to be the locking type, shall be accomplished by the rotation of the plug.

### 3.6 WALL SWITCHES

Wall switches shall be of the totally enclosed tumbler type. The wall switch handle and switch plate color shall harmonize with the color of the respective wall. Wiring terminals shall be of the screw type or of the solderless pressure type having suitable conductor-release arrangement. Not more than one switch shall be installed in a single-gang position. Switches shall be rated 20-ampere 120-volt for use on alternating current only. Dimming switches shall be solid-state flush mounted, sized for the loads.

### 3.7 SERVICE EQUIPMENT

Service-disconnecting means shall be of the type as indicated with external handle for manual operation. When service disconnecting means is a part of an assembly, the assembly shall be listed as suitable for service entrance equipment. Enclosures shall be sheet metal with hinged cover for surface mounting unless otherwise indicated.

### 3.8 PANELBOARDS

Circuit breakers and switches used as a motor disconnecting means, and not in sight of the motor and the driven machinery location, shall be capable of being locked in the open position. Door locks shall be keyed alike. Nameplates shall be as approved. Directories shall be typed to indicate loads served by each circuit and mounted in a holder behind a clear protective covering. Busses shall be copper or aluminum.

#### 3.8.1 Panelboards

Panelboards shall be circuit breaker or fusible switch equipped as indicated on the drawings. Panelboards shall be so mounted that height of the top operating handle will not exceed 6 feet 6 inches from the floor.

### 3.9 MOTORS

Motors shall be as specified in paragraph Motors, ac, Fractional and Integral Kilowatt, whether or not motors are separately provided or included in equipment assemblies specified in other sections of these specifications. Each motor shall conform to the kW (hp) and voltage ratings indicated, and shall have a service factor and other characteristics that are essential to the proper application and performance of the motors under conditions shown or specified. Three-phase motors for use on 3-phase 208-volt systems shall have a nameplate rating of 200 volts. Unless otherwise specified, all motors shall have open frames, and continuous-duty classification based on a 40 degree C ambient temperature reference. Polyphase motors shall be squirrel-cage type, having normal-starting-torque and low-starting-current characteristics, unless other characteristics are specified in other sections of these specifications or shown on contract drawings. The Contractor shall be responsible for selecting the actual kilowatt (horsepower) ratings and other motor requirements necessary for the

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applications indicated. When electrically driven equipment furnished under other sections of these specifications materially differs from the design, the Contractor shall make the necessary adjustments to the wiring, disconnect devices and branch-circuit protection to accommodate the equipment actually installed.

### 3.10 MOTOR CONTROL

Each motor or group of motors requiring a single control shall be provided under other sections of these specifications with a suitable controller and devices that will perform the functions as specified for the respective motors. Each motor of 93 W (1/8 hp) or larger shall be provided with thermal-overload protection. Polyphase motors shall have overload protection in each ungrounded conductor. The overload-protection device shall be provided either integral with the motor or controller, or shall be mounted in a separate enclosure. Unless otherwise specified, the protective device shall be of the manually reset type. Single or double pole tumbler switches specifically designed for alternating-current operation only may be used as manual controllers for single-phase motors having a current rating not in excess of 80 percent of the switch rating. Automatic control devices such as thermostats, float or pressure switches may control the starting and stopping of motors directly, provided the devices used are designed for that purpose and have an adequate kilowatt (horsepower) rating. When the automatic-control device does not have such a rating, a magnetic starter shall be used, with the automatic-control device actuating the pilot-control circuit. When combination manual and automatic control is specified and the automatic-control device operates the motor directly, a double-throw, three-position tumbler or rotary switch shall be provided for the manual control; when the automatic-control device actuates the pilot control circuit of a magnetic starter, the latter shall be provided with a three-position selector switch marked MANUAL-OFF-AUTOMATIC. Connections to the selector switch shall be such that only the normal automatic regulatory control devices will be bypassed when the switch is in the Manual position; all safety control devices, such as low- or high-pressure cutouts, high-temperature cutouts, and motor-overload protective devices, shall be connected in the motor-control circuit in both the Manual and the Automatic positions of the selector switch. Control circuit connections to any MANUAL-OFF-AUTOMATIC switch or to more than one automatic regulatory control device shall be made in accordance with wiring diagram approved by the Contracting Officer unless such diagram is included on the drawings. All controls shall be 120 volts or less unless otherwise indicated.

#### 3.10.1 Contacts

Contacts in miscellaneous control devices such as float switches, pressure switches, and auxiliary relays shall have current and voltage ratings in accordance with NEMA ICS 2 for rating designation B300.

**3.11 MOTOR-DISCONNECT MEANS**

Each motor shall be provided with a disconnecting means when required by NFPA 70 even though not indicated. For single-phase motors, a single or double pole toggle switch, rated only for alternating current, will be acceptable for capacities less than 30 amperes, provided the ampere rating of the switch is at least 125 percent of the motor rating. Switches shall disconnect all ungrounded conductors.

**3.12 LAMPS AND LIGHTING FIXTURES**

Ballasted fixtures shall have ballasts which are compatible with the specific type and rating of lamps indicated and shall comply with the applicable provisions of the publications referenced.

**3.12.1 Lamps**

Lamps of the type, wattage, and voltage rating indicated shall be delivered to the project in the original cartons and installed in the fixtures just prior to the completion of the project.

**3.12.1.1 Incandescent**

Incandescent lamps shall be for 125-volt operation unless otherwise indicated.

**3.12.1.2 Fluorescent**

Fluorescent lamps for magnetic ballasts shall have standard cool-white color characteristics and shall be of a type that will not require starter switches. Lamps shall be of the rapid-start type unless otherwise shown or approved. Fluorescent lamps for electronic ballasts shall be as indicated.

**3.12.1.3 High-Intensity-Discharge**

High-intensity-discharge lamps shall be the high-pressure sodium type unless otherwise indicated, shown, or approved.

**3.12.2 Fixtures**

Fixtures shall be as shown and shall conform to the following specifications and shall be as detailed on Standard Drawing No. 40-06-04, Sheet Nos. 6 and 32, which accompany and form a part of this specification for the types indicated. Illustrations shown on these sheets are indicative of the general type desired and are not intended to restrict selection to fixtures of any particular manufacturer. Fixtures of similar designs and equivalent energy efficiency, light distribution and brightness characteristics, and of equal finish and quality will be acceptable if approved. In suspended acoustical ceilings with fluorescent fixtures, the fluorescent emergency light fixtures shall be furnished with self-contained battery packs.

**3.12.2.1 Accessories**

Accessories such as straps, mounting plates, nipples, or brackets shall be provided for proper installation. Open type fluorescent fixtures with exposed lamps shall have a wire-basket type guard.

**3.12.2.2 Ceiling Fixtures**

Ceiling fixtures shall be coordinated with and suitable for installation in, on, or from the suspended ceiling provided under other sections of these specifications. Installation and support of fixtures shall be in accordance with the NFPA 70 and manufacturer's recommendations. Where seismic requirements are specified herein, fixtures shall be supported as shown or specified. Recessed fixtures shall have adjustable fittings to permit alignment with ceiling panels. Recessed fixtures installed in fire-resistive type of suspended ceiling construction shall have the same fire rating as the ceiling or shall be provided with fireproofing boxes having materials of the same fire rating as the ceiling panels, in conformance with UL-03. Surface-mounted fixtures shall be suitable for fastening to the structural support for ceiling panels.

**3.12.2.3 Sockets**

Sockets of industrial, strip, and other open type fluorescent fixtures shall be of the type requiring a forced movement along the longitudinal axis of the lamp for insertion and removal of the lamp.

**3.12.3 Emergency Light Sets**

Emergency light sets shall conform to UL 924 with the number of heads as indicated. Sets shall be permanently connected to the wiring system by conductors installed in short lengths of flexible conduit.

**3.13 EQUIPMENT CONNECTIONS**

All wiring not furnished and installed under other sections of the specifications for the connection of electrical equipment as indicated on the drawings shall be furnished and installed under this section of the specifications. Connections shall comply with the applicable requirements of paragraph WIRING METHODS. Flexible conduits 6 feet or less in length shall be provided to all electrical equipment subject to periodic removal, vibration, or movement and for all motors. All motors shall be provided with separate grounding conductors. Liquid-tight conduits shall be used in damp or wet locations.

**3.13.1 Motors and Motor Control**

Control equipment furnished under this section of the specifications, and shown on the drawings, shall be connected under this section of the specifications unless shown or specified otherwise. Except as otherwise specifically noted, automatic-control wiring, signaling, and protective

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devices are not included in this section of the specifications, but shall be furnished and installed under other sections of the specifications. Control wiring not shown on the drawings shall be furnished under the other sections of the specifications.

**3.14 TELEPHONE WIRING SYSTEM**

The telephone wiring system shall be complete and functional.

**3.14.1 Telephone Cables**

Each telephone outlet will be serviced with 24-gauge solid copper station-type color coded cable, vinyl insulated with an overall vinyl jacket. Cable shall be continuous from each telephone outlet to backboard indicated on the drawings. Splicing of individual cables shall not be permitted. At each outlet, four-pair cable shall be terminated on the modular jack assembly, using color code provided by the Contracting Officer. At the backboard, terminate the cable on cross-connect terminal blocks and mark with the appropriate outlet number.

**3.14.2 Auxiliary Devices**

All auxiliary devices such as tie bars, cable rings, etc. which are not shown but are required for a high grade installation shall be provided.

**3.14.3 Qualifications of Installer**

The system shall be installed by an experienced installer regularly engaged in the installation of telephone systems. The Contracting Officer may reject any proposed installer who can not show evidence of such qualifications.

**3.15 PAINTING AND FINISHING**

Field-applied paint on exposed surfaces shall be provided under Section 09900 PAINTING, GENERAL.

**3.16 REPAIR OF EXISTING WORK**

The work shall be carefully laid out in advance, and where cutting, channeling, chasing, or drilling of floors, walls, partitions, ceiling, or other surfaces is necessary for the proper installation, support, or anchorage of the conduit, raceways, or other electrical work, this work shall be carefully done, and any damage to building, piping, or equipment shall be repaired by skilled mechanics of the trades involved, at no additional cost to the Government.

**3.17 TESTS**

After the interior-wiring-system installation is completed, and at such time as the Contracting Officer may direct, the Contractor shall conduct an operating test for approval. The equipment shall be demonstrated to

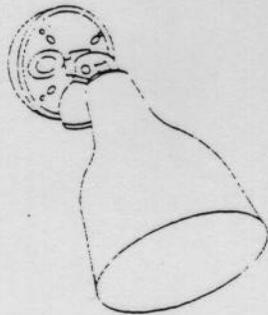
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operate in accordance with the requirements of this specification. Continuity test shall be conducted on the telephone wiring system. The test shall be performed in the presence of the Contracting Officer. The Contractor shall furnish all instruments and personnel required for the tests. Utilities for testing shall be provided as specified in the SPECIAL CLAUSES. No part of the electrical distribution system shall be energized prior to the resistance testing of that system's ground rods and submission of test results to the Contracting Officer. Test reports shall indicate the location of the rod and the resistance and the soil conditions at the time the test was performed.

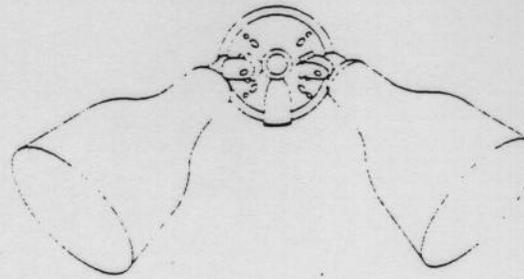
**3.18 CAPACITORS**

Capacitors shall be provided for motor circuits for motors 5 horsepower and larger to increase power factor to 0.95 or more. The KVAR rating shall not exceed the value required to raise the no-load power factor of the motor to unity. Capacitors shall be connected on the load side of the motor overload protection device. Motor overload protection shall be based on the current value corresponding with the improved power factor. Where motor overload protection is provided integral with the motor, capacitors may be connected on the line side of the motor overload protection and disconnecting means and overcurrent protection provided for the capacitor bank.

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TYPE 112  
Single



TYPE 113  
Double

Exterior Incandescent Floodlight for  
Soffitt or Wall Outlet Box Mounting

Suffix

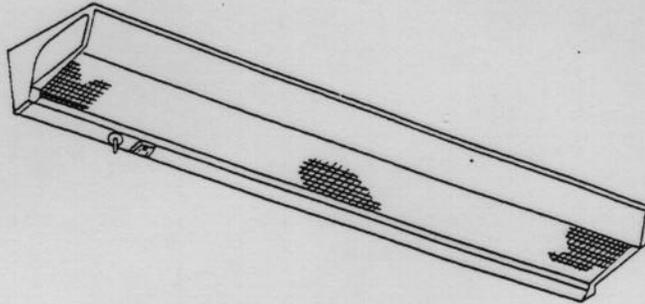
A  
B

Description

Satin aluminum finish  
Textured black finish

Fixture shall conform to UL 1571. Fixture shall be suitable for use in wet locations. The fixture shall consist of the indicated number of lampholder housing units with adjustable attachment arm and box canopy. The housing, attachment arm, and canopy shall be cast aluminum and shall be finished as specified. Satin aluminum finish shall have clear acrylic lacquer protective coating. The housing arm shall attach to the box canopy with 1/2-inch connection. A locknut shall be provided to secure the arm in the desired position. The housing arm shall be provided with a calibrated swivel with serrated locking teeth and compression screw to hold the fixture housing in the desired position. Housing shall be large enough to provide ample finger room for ease of lamp replacement. Fixture shall be rated for PAR-38 standard lamps of 52 to 165 watts. Lampholder shall be medium base glazed porcelain. Fixture shall be furnished with weatherproof gasket. Fixture shall be prewired.

Fixture types indicated on this sheet shall also conform to requirements specified and indicated in the contract documents.



TYPE 223  
Two Lamps

Enclosed, Wall Mounted, Direct And/Or Indirect  
Fluorescent Fixture

Fixture shall be constructed of cold-rolled steel and shall conform to UL 1570. Ferrous metal surfaces shall be treated with 5-stage coating of zinc phosphate and finished in baked white enamel. Seams shall be sealed or gasketed to prevent light leakage. The lens shall be 0.125 inch nominal thickness (minimum 0.115 inch) of 100 percent virgin clear acrylic plastic, with a regular array of prismatic elements on one surface and smooth on the other. Receptacle shall be 2-pole, 3-wire, rated at 15 amperes and 125 volts, and shall be of the grounding type. On/off pull chain switch shall be provided for downlight. Upward light shall be controlled from a wall switch. Fixture shall have knockouts in the back for wiring through an outlet box and a grounding terminal. Standard ballast shall be the Class P, high power factor type which has been approved for the application by the Certified Ballast Manufacturers. Fixture shall be prewired.

Fixture type indicated on this sheet shall also conform to requirements specified and indicated in the contract documents.