

**AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT**

2. AMENDMENT/MODIFICATION NO. NO. 3		3. EFFECTIVE DATE 17 September	4. REQUISITION/PURCHASE REQ. NO. 1987	5. PROJECT NO. (If applicable) SPEC. NO. 05-85-6446
6. ISSUED BY Officer in Charge of Construction Jacksonville, North Carolina Area Building 1005, Marine Corps Base Camp Lejeune, North Carolina 28542		CODE 406	7. ADMINISTERED BY (If other than Item 6) CODE	

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(✓)	9A. AMENDMENT OF SOLICITATION NO. X N62470-85-B-6446
		9B. DATED (SEE ITEM 11) NOT YET ISSUED
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
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 you 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 APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

(✓)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) 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 (such as changes in paying office, appropriation date, etc.) 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 (Specify type of modification and authority)

**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.)**

REPLACE METERS AND CONTROLS, BASEWIDE  
AT THE

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

SECTION 13400, Paragraph 2.1.1, following this paragraph add the following:

"2.1.1a SPARE PARTS TO BE PROVIDED AS FOLLOWS:

- 1 ea. Temperature process controller with analog output
- 1 ea. 42 inch SS RTP with explosion proof head and threaded mountings
- 1 ea. Circular chart recorder with analog input
- 10 ea. Boxes of circular chart paper
- 10 ea. Packages of disposable pens
- 1 ea. Roll chart paper

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

10 ea. Indicator lamps  
1 ea. Complete HOA selector  
1 ea. Complete pilot light  
1 ea. 8-pin octal relay  
1 ea. Metal oxide varistor  
20 ea. Terminal block

05-85-6446

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# AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

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

2. AMENDMENT/MODIFICATION NO. NO. 2	3. EFFECTIVE DATE 1 September 1987	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable) SPEC. NO. 05-85-6446
6. ISSUED BY Officer in Charge of Construction Jacksonville, North Carolina Area Building 1005, Marine Corps Base Camp Lejeune, North Carolina 28542		7. ADMINISTERED BY (If other than Item 6)	CODE _____

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(v)	9A. AMENDMENT OF SOLICITATION NO.
	X	N62470-85-B-6446
		9B. DATED (SEE ITEM 11) NOT YET ISSUED
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)

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REPLACE METERS AND CONTROLS, BASEWIDE  
at the MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

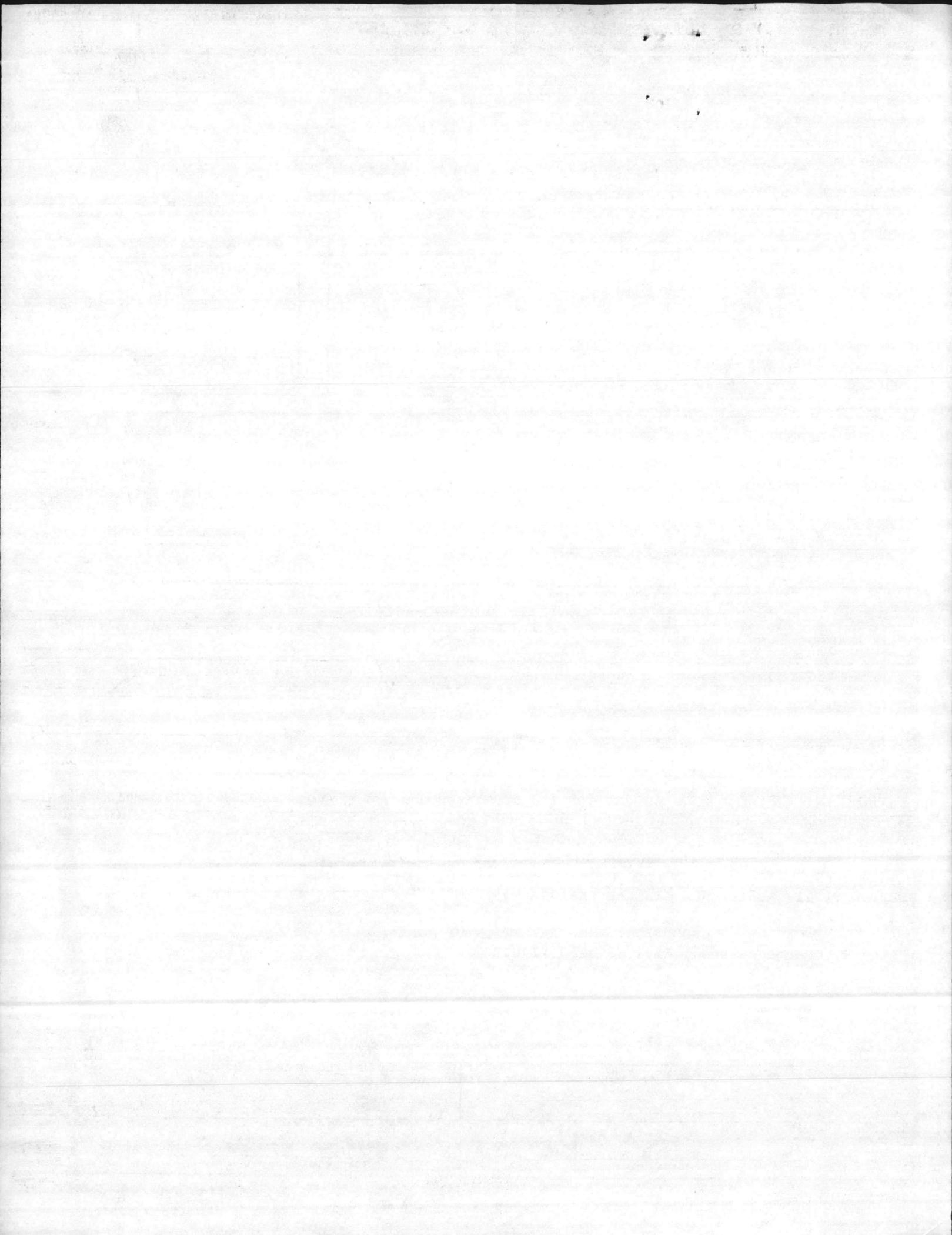
SECTION 01011 ADDITIONAL GENERAL PARAGRAPHS

1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK  
Line 4, change calendar days to read "240."

ML

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



# AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

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

2. AMENDMENT/MODIFICATION NO. <b>NO. 1</b>	3. EFFECTIVE DATE <b>15 May 1987</b>	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable) <b>SPEC. 05-85-6446</b>
6. ISSUED BY <b>Officer in Charge of Construction Jacksonville, North Carolina Area Building 1005, Marine Corps Base Camp Lejeune, North Carolina 28542</b>		7. ADMINISTERED BY (If other than Item 6)	CODE _____

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		9B. DATED (SEE ITEM 11) <b>NOT YET ISSUED</b>
		10A. MODIFICATION OF CONTRACT/ORDER NO.
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**REPLACE METERS AND CONTROLS, BASEWIDE  
at the MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA**

#### CONTRACT CLAUSES (Construction Contract)

Page "Contract Clauses - 5": After the end of Clause 71, add Clause 72, which is included in this Amendment.

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 (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) <b>T. L. HUGUELET, CDR, CEC, USN for COMNAVFACENGCOM</b>		
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED <b>15 May 1987</b>

71. ANTI-KICKBACK PROCEDURES (FEB 1987) FAR 52.203-72

(a) Definitions.

"Kickback," as used in this clause, means any money, fee, commission, credit gift, gratuity, thing of value, or compensation of any kind which is provided, directly or indirectly, to any prime Contractor, prime Contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a subcontract relating to a prime contract.

"Person," as used in this clause, means a corporation, partnership, business association of any kind, trust, joint-stock company, or individual.

"Prime contract," as used in this clause, means a contract or contractual action entered into by the United States for the purpose of obtaining supplies, materials, equipment, or services of any kind.

"Prime Contractor employee," as used in this clause, means any officer, partner, employee, or agent of a prime Contractor.

"Subcontract," as used in this clause, means a contract or contractual action entered into by a prime Contractor or subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind under a prime contract.

"Subcontractor," as used in this clause, (1) means any person, other than the prime Contractor, who offers to furnish or furnishes any supplies, materials, equipment, or services of any kind under a prime contract or a subcontract entered into in connection with such prime contract, and (2) includes any person who offers to furnish or furnishes general supplies to the prime Contractor or a higher tier subcontractor.

"Subcontractor employee," as used in this clause, means any officer, partner, employee, or agent of a subcontractor.

(b) The Anti-Kickback Act of 1986 (41 U.S.C. 51-58) (the Act), prohibits any person from--

- (1) Providing or attempting to provide or offering to provide any kickback;
- (2) Soliciting, accepting, or attempting to accept any kickback; or
- (3) Including, directly or indirectly, the amount of any kickback in the contract price charged by a prime Contractor to the United States or in the contract price charged by a subcontractor to a prime Contractor or higher tier subcontractor.

(c)(1) The Contractor shall have in place and follow reasonable procedures designed to prevent and detect possible violations described in paragraph (b) of this clause in its own operations and direct business relationships.

(2) When the Contractor has reasonable grounds to believe that a violation described in paragraph (b) of this clause may have occurred, the Contractor shall promptly report in writing the possible violation. Such reports shall be made to the inspector general of the contracting agency, the head of the contracting agency if the agency does not have an inspector general, or the Department of Justice.

(3) The Contractor shall cooperate fully with any Federal agency investigating a possible violation described in paragraph (b) of this clause.

(4) Regardless of the contract tier at which a kickback was provided, accepted, or charged under the contract in violation of paragraph (b) of this clause, the Contracting Officer may--

(i) Offset the amount of the kickback against any monies owed by the United States under this contract and/or (ii) direct that the Contractor withhold from sums owed the subcontractor, the amount of the kickback. The Contracting Officer may order that monies withheld under subdivision (c)(4)(ii) of this clause be paid over to the Government unless the Government has already offset those monies under subdivision (c)(4)(i) of this clause. In the latter case, the Contractor shall notify the Contracting Officer when the monies are withheld.

(5) The Contractor agrees to incorporate the substance of this clause, including this subparagraph (c)(5), in all subcontracts under this contract.

NOTICE:

Bids to be opened at 2:00 P.M.  
at the  
office of  
Officer in Charge Of Construction  
Jacksonville, North Carolina Area  
Building 1005, Marine Corps Base  
Camp Lejeune, North Carolina 28542

CONTRACT N62470-85-B-6446

NAVFAC SPECIFICATION  
NO. 05-85-6446

REPLACE METERS AND CONTROLS, BASEWIDE

at the

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

DESIGN BY:

Design Branch, Public Works Division  
Marine Corps Base, Camp Lejeune, North Carolina

SPECIFICATION PREPARED BY:

C. H. Baker, P.E.  
J. H. Fitch, P.E.  
A. E. Young, P.E.  
M. L. Phillips

20 March 1987

SPECIFICATION APPROVED BY:

F. E. Cone, P.E., Director  
Design Branch, Public Works Division

T. L. Huguelet, Commander, CEC, U. S. Navy  
for Commander, Naval Facilities Engineering Command

05-85-6446

CONTENTS

This Invitation for Bids, IFB No. N62470-85-B-6446, consists of the following documents:

- (I) Bidding Instructions
  - (1) Solicitation, Offer and Award (Standard Form 1442 (Rev. 4-85))
  - \*(2) Instructions to Bidders (Construction Contract) March 1987
  
- (II) Bid Submittal Documents
  - (1) Solicitation, Offer and Award (Standard Form 1442 (Rev. 4-85))
  - \*(2) Representations and Certifications, September 1986
  - (3) Bid Guaranty (Standard Form 24 (Rev. 4-85))
  
- (III) Contract Documents
  - (1) Solicitation, Offer and Award (Standard Form 1442 (Rev. 4-85))
  - (2) Performance Bond (Standard Form 25 (Rev. 10-83))
  - (3) Payment Bond (Standard Form 25A (Rev. 10-83))
  - \*(4) Contract Clauses (Construction Contract) September 1986
  - (5) Labor Standards Provisions, November 1979 (Rev. 8-83)
  - \*(6) NAVFAC Specification No. 05-85-6446
  - (7) Drawings identified in Section 01011 of the Specification
  - \*\* (8) Wage Determination, Secretary of Labor Decision No. NC87-4, Building Construction

\* These items are bound within the Specification at the front

\*\* The Wage Determination is attached as the last page of the Specification

NOTE: All other items are attached on top of the Specification

NOTE:

INQUIRIES

PLANS AND SPECIFICATIONS: Questions regarding the plans and Specification occurring prior to bid opening shall be presented to the Public Works Design Division, Building 1005, Marine Corps Base, Camp Lejeune, North Carolina 28542, telephone (919) 451-5507. Questions requiring interpretation of drawings and the Specification must be submitted at least ten days before bid opening. Interpretations or modifications to specifications made as a result of questions will be made by amendment only, and unless so done, all bidders should base their bids on the plans and Specification as issued.

BIDDING PROCEDURES: All questions concerning the bidding procedures shall be presented to OICC-ROICC Contract Branch, Room 26, Building 1005, Marine Corps Base, Camp Lejeune, North Carolina, telephone (919) 451-2582.

05-85-6446

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CONTENTS

- SECTION 00101. Instructions to Bidders
- Contract Clauses
  - Representations and Certifications
  - Labor Standard Provisions Changes

DIVISION

1. GENERAL REQUIREMENTS

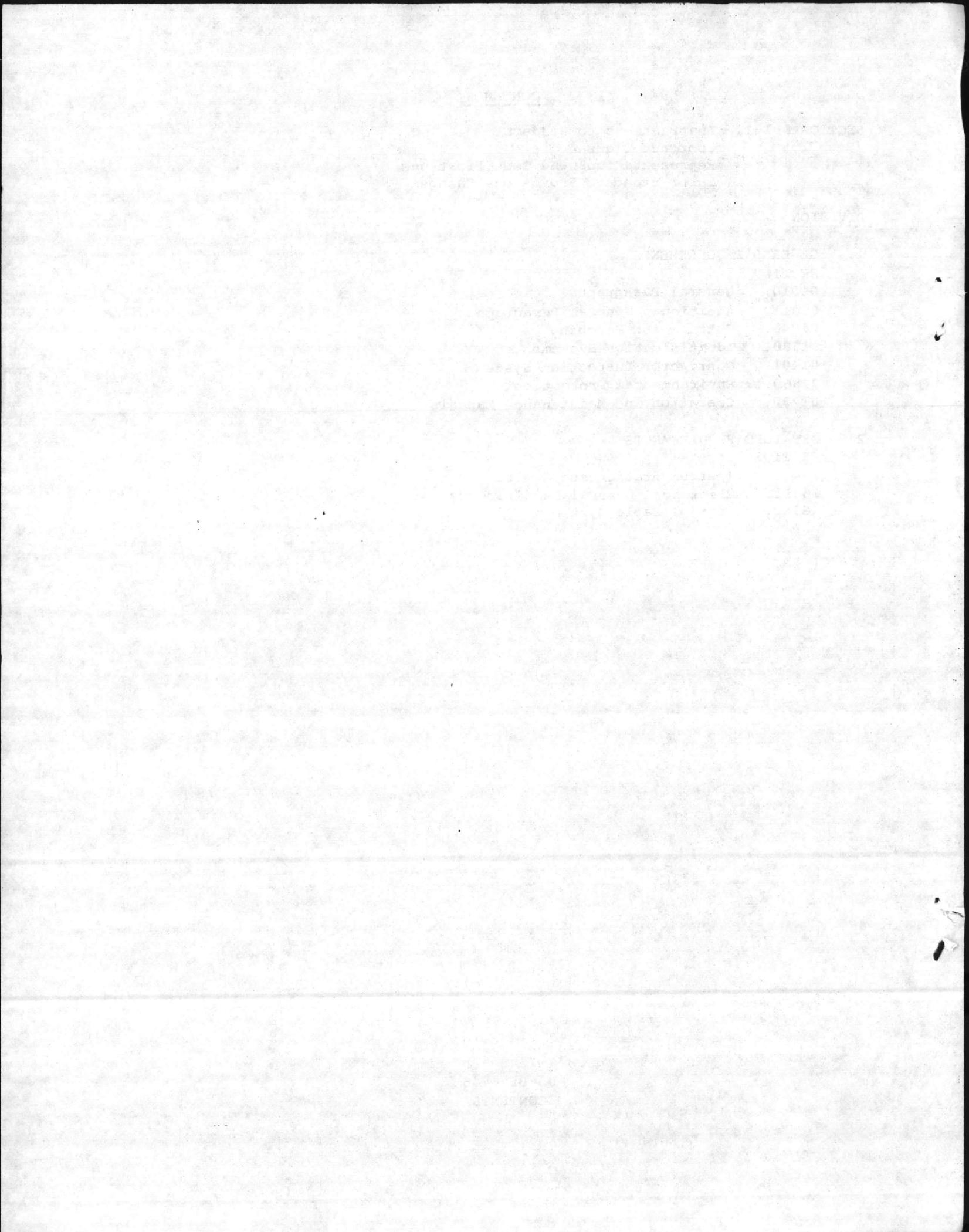
SECTION

- 01010. General Paragraphs
- 01011. Additional General Paragraphs
- 01040. Cutting and Patching
- 01080. Identification Systems
- 01401. Contractor Inspection System
- 01560.1 Environmental Protection
- 01730. Operation and Maintenance Manuals

2. DETAILED REQUIREMENTS

SECTION

- 13400. Instrumentation and Control
- 16011. Electrical General Requirements
- 16740. Control Cable System



SECTION 00101  
Instructions to Bidders  
(Construction Contract)

1. SOLICITATION DEFINITIONS - SEALED BIDDING (APR 1985)

"Offer" means "bid" in sealed bidding.

"Solicitation" means an invitation for bids in sealed bidding.  
(FAR 52.214-1).

2. BIDS:

(a) Instructions to Bidders and Standard Form 1442 (Solicitation, Offer, and Award) shall be observed in the preparation of bids. Bidders shall affix their names and return addresses in the upper left corner of the bid envelope. Envelopes containing bids must be sealed.

(b) Bids shall be submitted in triplicate on Standard Form 1442 (Rev. 4/85) and, for bids of \$25,000 or greater, shall be accompanied by a bid guarantee as stipulated in paragraph titled Bid Guarantee of this Section. Bid security shall be in the sum of 20% of the largest amount for which award can be made under the bid submitted, but in no case to exceed 3 million dollars. The bid guaranty bond shall be accompanied by a verifax or other facsimile copy of the agent's authority to sign bonds for the surety company.

(c) The basis of bid shall be lump sum price for the following items:

Base Bid Price for the entire work, complete in accordance with the drawings and Specification.

NOTE: The lump sum price shall be deemed to include all costs required for the specified work, complete in accordance with the drawings and specifications, including all materials, labor, equipment, tools, supervision, and related items.

(d) All hand delivered bids must be deposited with personnel in the Contract Branch, Room No. 26, Building 1005, Marine Corps Base, Camp Lejeune, North Carolina 28542, prior to the time and date set for bid opening. Any bids submitted by hand after the time set for receipt will not be accepted.

3. PRE-BID SITE VISITATION. To inspect the site of the work prior to bid opening, an appointment must be made with the Officer in Charge of Construction, Jacksonville, North Carolina Area, telephone 919-451-2581.

4. CONDITIONS AFFECTING THE WORK. Bidders should visit the site and take such other steps as may be reasonably necessary to ascertain the nature and location of the work, and the general and local conditions which can affect the work or the cost thereof. Failure to do so will not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Government will assume no responsibility for any understanding or representations concerning conditions made by any of its officers or agents prior to the execution of the contract, unless included in the invitation for bids, the specifications, or related documents.

5. NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE USE (MAY 1986). Any contract awarded as a result of this solicitation will be a \_\_\_\_\_ DX rated order;  X  DO rated order certified for national defense use under the Defense Priorities and Allocations System (DPAS)(15 CFR 350), and the Contractor will be required to follow all of the requirements of this regulation. (FAR 52.212-7)

6. EXPLANATION TO PROSPECTIVE BIDDERS (APR 1984). Any prospective bidder desiring an explanation or interpretation of the solicitation, drawings, specifications, etc., must request it in writing soon enough to allow a reply to reach all prospective bidders before the submission of their bids. Oral explanations or instructions given before the award of a contract will not be binding. Any information given a prospective bidder concerning a solicitation will be furnished promptly to all other prospective bidders as an amendment to the solicitation, if that information is necessary in submitting bids or if the lack of it would be prejudicial to other prospective bidders. (FAR 52.214-6)

7. AVAILABILITY OF SPECIFICATIONS LISTED IN THE DOD INDEX OF SPECIFICATION AND STANDARDS (DODISS) (APR 1984). Single copies of specifications cited in this solicitation may be obtained by submitting a written request to the supply point listed below. The request must contain the title of the specification, its number, date, applicable amendment(s), and the solicitation or contract number. In case of urgency, telephone or telegraphic requests are acceptable. Voluntary standards, which are not available to offerors and contractors from Government sources, may be obtained from the organization responsible for their preparation, maintenance, or publication. (FAR 52.210-2)

Commanding Officer  
U.S. Naval Publication and Forms Center  
5801 Tabor Avenue  
Philadelphia, Pennsylvania 19120  
Telex Number 834295  
Western Union Number 710-670-1685  
Telephone Number (215) 697-3321

AVAILABILITY OF SPECIFICATIONS AND STANDARDS NOT LISTED IN DODISS, DATA ITEM DESCRIPTIONS NOT LISTED IN DOD DIRECTIVE 5000.19-L, VOLUME II, AND PLANS, DRAWINGS, AND OTHER PERTINENT DOCUMENTS (JUN 1977). The specifications, standards, plans, drawings, descriptions and other pertinent documents cited in this solicitation may be obtained by submitting request to:

Public Works Division  
Specifications and Estimates Section  
Building 1005, Marine Corps Base  
Camp Lejeune, North Carolina 28542

NOTE: Due to budgetary restriction, it is unlikely that Public Works Division will be able to furnish more than the name and address which may be used to order these publications.

Requests should give the number of the solicitation and the title and number of the specification, standard, plan, drawing or other pertinent document requested, exactly as cited in this solicitation. (DOD FAR SUPP 52.210-7002)

AVAILABILITY FOR EXAMINATION OF SPECIFICATIONS, STANDARDS, PLANS, DRAWINGS, DATA ITEM DESCRIPTIONS, AND OTHER PERTINENT DOCUMENTS (JUN 1977). The specification, standards, plans, drawings, descriptions, and other pertinent documents cited in this solicitation may be examined at the following locations: (DOD FAR SUPP 52.210-7003)

Public Works Division  
Specifications and Estimates Section  
Building 1005, Marine Corps Base  
Camp Lejeune, North Carolina 28542

8. NOTICE OF TOTAL SMALL BUSINESS SET-ASIDE (APR 1984).

(a) Definition.

"Small business concern," as used in this clause, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the size standards in this solicitation.

(b) General.

(1) Offers are solicited only from small business concerns. Offers received from concerns that are not small business concerns shall be considered nonresponsive and will be rejected.

(2) Any award resulting from this solicitation will be made to a small business concern.

(c) Agreement. A manufacturer or regular dealer submitting an offer in its own name agrees to furnish, in performing the contract, only end items manufactured or produced by small business concerns inside the United States, its territories and possessions, the Commonwealth of Puerto Rico, the Trust Territory of the Pacific Islands, or the District of Columbia. However, this requirement does not apply in connection with construction or service contracts. (FAR 52.219-6)

9. THE SMALL BUSINESS SIZE STANDARD APPLICABLE TO THIS CONTRACT IS AS FOLLOWS:

SIC CODE	INDUSTRY, SUBINDUSTRY OR CLASS OF PRODUCTS	ANNUAL SIZE STANDARD (MAXIMUM IN MILLIONS)
1542	General Contractor	\$17.0

10. BIDDER'S QUALIFICATIONS. Before bid is considered for award, the bidder may be requested by the Government to submit a statement regarding his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the work.

11. BID GUARANTEE (APR 1984)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The offeror (bidder) shall furnish a bid guarantee in the form of a firm commitment, such as a bid bond, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.

(c) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or give a bond(s) as required by the solicitation within the time specified, the Contracting Officer may terminate the contract for default.

(d) Unless otherwise specified in the bid, the bidder will (1) allow 60 days for acceptance of its bid and (2) give bond within 10 days after receipt of the forms by the bidder.

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference. (FAR 52.228-1)

12. PREPARATION OF BIDS - CONSTRUCTION (APR 1984).

(a) Bids must be (1) submitted on the forms furnished by the Government or on copies of those forms, and (2) manually signed. The person signing a bid must initial each erasure or change appearing on any bid form.

(b) The bid form may require bidders to submit bid prices for one or more items on various bases, including-

- (1) Lump sum bidding;
- (2) Alternate prices;
- (3) Units of construction; or
- (4) Any combination of subparagraphs (1) through (3) above.

(c) If the solicitation requires bidding on all items, failure to do so will disqualify the bid. If bidding on all items is not required, bidders should insert the words "no bid" in the space provided for any item on which no price is submitted.

(d) Alternate bid will not be considered unless this solicitation authorizes their submission. (FAR 52.214-18)

13. SUBMISSION OF BIDS (APR 1984).

(a) Bids and bid modifications shall be submitted in sealed envelopes or packages (1) addressed to the office specified in the solicitation and (2) showing the time specified for receipt, the solicitation number, and the name and address of the bidder.

(b) Telegraphic bids will not be considered unless authorized by the solicitation; however, bids may be modified or withdrawn by written or telegraphic notice, if such notice is received by the time specified for receipt of bids. (FAR 52.214-5)

14. ACKNOWLEDGMENT OF AMENDMENTS TO INVITATIONS FOR BIDS (APR 1984). Bidders shall acknowledge receipt of any amendment to this solicitation (a) by signing and returning the amendment, (b) by identifying the amendment number and date in the space provided for this purpose on the form for submitting a bid, or (c) by letter or telegram. The Government must receive the acknowledgment by the time and at the place specified for receipt of bids. (FAR 52.214-3)

15. LATE SUBMISSIONS, MODIFICATIONS, AND WITHDRAWALS OF BIDS (APR 1984)

(a) Any bid received at the office designated in the solicitation after the exact time specified for receipt will not be considered unless it is received before award is made and it-

(1) Was sent by registered or certified mail not later than the fifth calendar day before the date specified for receipt of bids (e.g., a bid submitted in response to a solicitation requiring receipt of bids by the 20th of the month must have been mailed by the 15th); or

(2) Was sent by mail (or was a telegraphic bid if authorized), and it is determined by the Government that the late receipt was due solely to mishandling by the Government after receipt at the Government installation.

(b) Any modification or withdrawal of a bid is subject to the same conditions as in paragraph (a) above.

NOTE: TELEGRAMS WILL NOT BE DELIVERED TO CAMP LEJEUNE UNLESS PHYSICAL DELIVERY IS SPECIFIED AT TIME OF FILING AND SHOWING THAT DELIVERY CHARGES HAVE BEEN PAID IN ADVANCE.

(c) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent either by registered or certified mail is the U.S. or Canadian Postal Service postmark on the wrapper or on the original receipt from the U.S. or Canadian Postal Service. If neither postmark shows a legible date, the bid, modification, or withdrawal shall be processed as if mailed late. "Postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed by employees of the U.S. or Canadian Postal Service on the date of mailing. Therefore, bidders should request the postal clerks to place a hand cancellation bull's-eye postmark on both the receipt and the envelope or wrapper.

(d) The only acceptable evidence to establish the time of receipt at the Government installation is the time/date stamp of that installation on the bid wrapper or other documentary evidence of receipt maintained by the installation.

(e) Notwithstanding paragraph (a) above, a late modification of an otherwise successful bid that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

(f) A bid may be withdrawn in person by a bidder or its authorized representative if, before the exact time set for receipt of bids, the identity of the person requesting withdrawal is established and that person signs a receipt for the Bid. (FAR 52.214-7)

16. PUBLIC OPENING OF BIDS. Bids will be publicly opened at the time set for opening in the invitation for bids. Their content will be made public for the information of bidders and others interested, who may be present either in person or by representative.

17. CONTRACT AWARD - SEALED BIDDING - CONSTRUCTION (FEB 1986)

(a) The Government will evaluate bids in response to this solicitation without discussions and will award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the Government, considering only price and the price-related factors specified elsewhere in the solicitation.

(b) The Government may reject any or all bids, and waive informalities or minor irregularities in bids received.

(c) The Government may accept any item or combination of items, unless doing so is precluded by a restrictive limitation in the solicitation or the bid. (FAR 52.214-19)

18. CONTRACT AND BONDS

(Applicable only to bids of \$25,000 or more.) Within 10 days after receipt of awards the bidder to whom award is made shall furnish two bonds, each with satisfactory security; namely, a performance bond (Standard Form 25) and a payment bond (Standard Form 25A). The performance bond shall be in a penal sum equal to 100 percent of the contract price. The payment bond shall be equal to 50 percent of the contract price, except that it shall be 40 percent of the contract price if that price is more than \$1,000,000 and not more than \$5,000,000, and in the fixed sum of \$2,500,000 if the contract price is more than \$5,000,000. The bond of any surety company holding a certificate of authority from the Secretary of the Treasury as an acceptable surety on Federal bonds will be accepted. Individual sureties will be accepted in accordance with FAR 28.202-2. Options in lieu of corporate or individual sureties may be provided in accordance with FAR 28.203. The contract time for purposes of fixing the completion date, default, and liquidated damages shall begin to run 15 days from the mailing of acceptance, regardless of when performance and payment bonds are executed.

19. NOTE THE AFFIRMATIVE ACTION REQUIREMENT OF THE EQUAL OPPORTUNITY CLAUSE WHICH MAY APPLY TO THE CONTRACT RESULTING FROM THIS SOLICITATION

20. NOTE THE CERTIFICATION OF NONSEGREGATED FACILITIES IN THIS SOLICITATION

Bidders, offerors and applicants are cautioned to note the "Certification of Nonsegregated Facilities" in the solicitation. Failure of a bidder or offeror to agree to the certification will render his bid or offer nonresponsive to the terms of solicitations involving awards of contracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause (1978 SEP).

21. COST LIMITATION

A bid which does not contain separate bid prices for the items identified as subject to a cost limitation may be considered nonresponsive. A bidder by signing his bid certifies that each price bid on items subject to a cost limitation include an appropriate apportionment of all applicable estimated costs, direct and indirect, as well as overhead and profit. Bids may be rejected which (i) have been materially unbalanced for the purpose of bringing affected items within cost limitations or (ii) exceed the cost limitations unless such limitations have been waived by the Assistant Secretary of Defense (Installations and Logistics) prior to award. (1974 APR) (DOD FAR SUPP 52.236-7081)

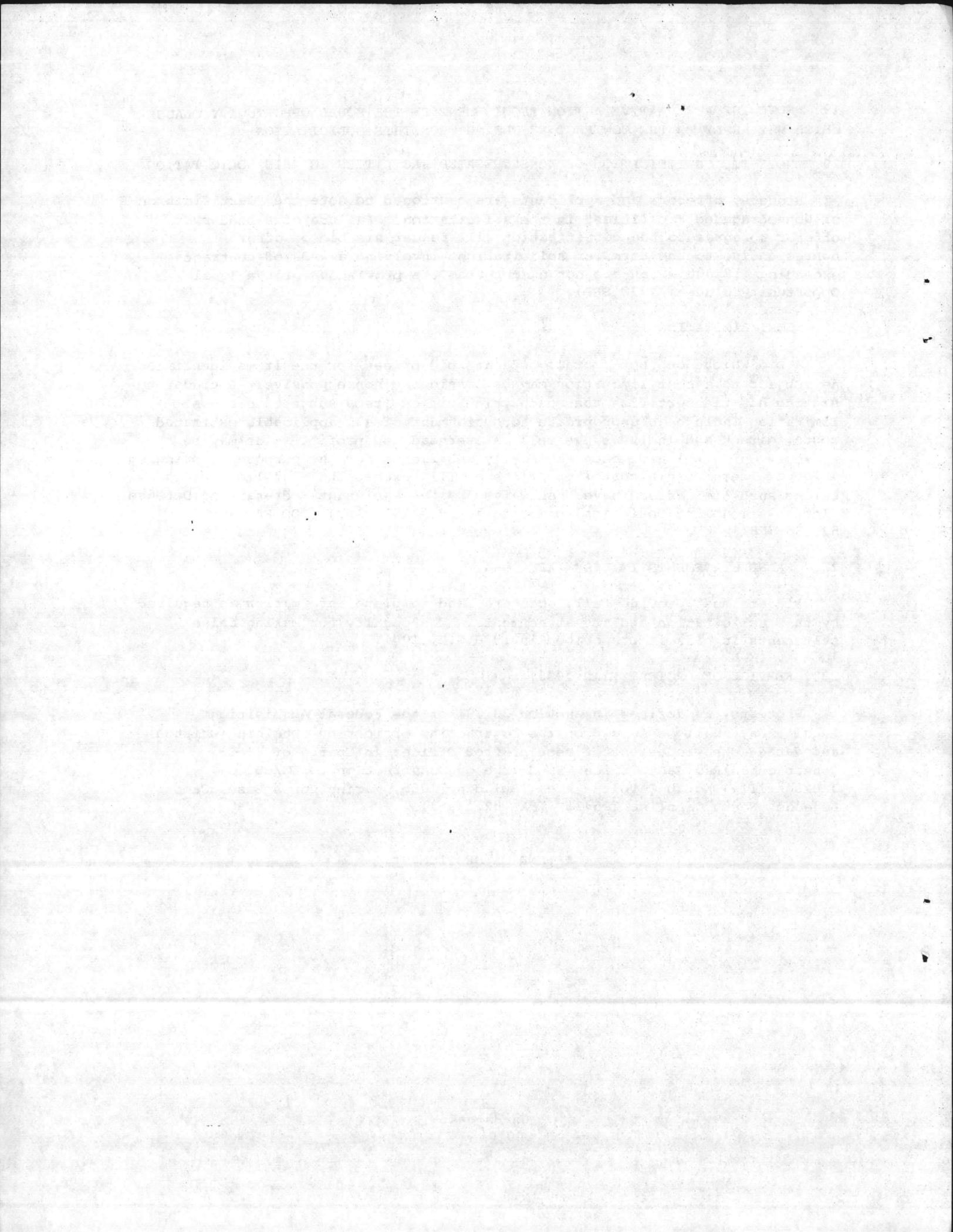
22. FALSE STATEMENTS IN BIDS (APR 1984)

Bidders must provide full, accurate, and complete information as required by this solicitation and its attachments. The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

23. SERVICE OF PROTEST (JAN 1985)

Protests, as defined in section 33.101 of the Federal Acquisition Regulation, shall be served on the Contracting Officer by obtaining written and dated acknowledgement of receipt from Officer in Charge of Construction/Resident Officer in Charge of Construction (OICC/ROICC), Jacksonville, North Carolina Area, Building 1005, Marine Corps Base, Camp Lejeune, North Carolina 28542. (FAR 52.233-2)

\*\*\*END OF SECTION\*\*\*



September 1986

CONTRACT CLAUSES  
(Construction Contract)

CLAUSES INCORPORATED BY REFERENCE (APR 1984). This contract incorporates the following clauses by reference, with the same force and effect as if they were given full text. Upon request, the Contracting Officer will make their full text available. (FAR 52.252-2)

- I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES
  1. FAR 52.202-1, Definitions - Alternate I (APR 1984)
  2. FAR 52.203-1, Officials Not To Benefit (APR 1984)
  3. FAR 52.203-3, Gratuities (APR 1984)
  4. FAR 52.203-5, Covenant Against Contingent Fees (APR 1984)
  5. FAR 52.212-6, Time Extensions (APR 1984)
  6. FAR 52.212-8, Defense Priority and Allocation Requirements (MAY 1986)
  7. FAR 52.212-11, Variation in Estimated Quantity (APR 1984)
  8. FAR 52.212-12, Suspension of Work (APR 1984)
  9. FAR 52.214-26, Audit-Sealed Bidding (APR 1985)
  10. FAR 52.214-27, Price Reduction for Defective Cost or Pricing Data-  
Modifications-Sealed Bidding (APR 1985)
  11. FAR 52.214-28, Subcontractor Cost or Pricing Data-Modifications-  
Sealed Bidding (APR 1985)
  12. FAR 52.215-1, Examination of Records by Comptroller General (APR 1984)
  13. FAR 52.219-8, Utilization of Small Business Concerns and Small  
Disadvantaged Business Concerns (JUN 1985)
  14. FAR 52.219-9, Small Business and Small Disadvantaged Business  
Subcontracting Plan - Alternate I (APR 1984)
  15. FAR 52.219-13, Utilization of Women-Owned Business Concerns (APR 1984)
  16. FAR 52.220-1, Preference for Labor Surplus Area Concerns (APR 1984)
  17. FAR 52.222-3, Convict Labor (APR 1984)
  18. FAR 52.222-26, Equal Opportunity (APR 1984)
  19. FAR 52.222-27, Affirmative Action Compliance Requirements for  
Construction (APR 1984)

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20. FAR 52.222-35, Affirmative Action for Special Disabled and Vietnam Era Veterans (APR 1984)
21. FAR 52.222-36, Affirmative Action for Handicapped Workers (APR 1984)
22. FAR 52.223-2, Clean Air and Water (APR 1984)
23. FAR 52.225-5, Buy American Act - Construction Materials (APR 1984)
24. FAR 52.227-1, Authorization and Consent (APR 1984)
25. FAR 52.227-4, Patent Indemnity - Construction Contract (APR 1984)
26. FAR 52.228-2, Additional Bond Security (APR 1984)
27. FAR 52.228-5, Insurance-Work on a Government Installation (APR 1984)
28. FAR 52.229-3, Federal, State, and Local Taxes (APR 1984)
29. FAR 52.230-4, Administration of Cost Accounting Standards (APR 1984)
30. FAR 52.232-17, Interest (APR 1984)
31. FAR 52.232-23, Assignment of Claims (JAN 1986)
32. FAR 52.233-1, Disputes (APR 1984)
33. FAR 52.233-3, Protest after Award (JUN 1985)
34. FAR 52.236-1, Performance of Work by the Contractor (APR 1984)
35. FAR 52.236-2, Differing Site Conditions (APR 1984)
36. FAR 52.236-3, Site Investigation and Conditions Affecting the Work (APR 1984)
37. FAR 52.236-5, Material and Workmanship (APR 1984)
38. FAR 52.236-6, Superintendence by the Contractor (APR 1984)
39. FAR 52.236-7, Permits and Responsibilities (APR 1984)
40. FAR 52.236-8, Other Contracts (APR 1984)
41. FAR 52.236-9, Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements (APR 1984)
42. FAR 52.236-10, Operations and Storage Areas (APR 1984)
43. FAR 52.236-11, Use and Possession Prior to Completion (APR 1984)

44. FAR 52.236-12, Cleaning Up (APR 1984)
45. FAR 52.236-13, Accident Prevention (APR 1984)
46. FAR 52.236-14, Availability and Use of Utility Services (APR 1984)
47. FAR 52.236-15, Schedules for Construction Contracts (APR 1984)
48. FAR 52.236-17, Layout of Work (APR 1984)
49. FAR 52.236-21, Specifications and Drawings for Construction (APR 1984)
50. FAR 52.243-4, Changes (APR 1984)
51. FAR 52.245-1, Property Records (APR 1984)
52. FAR 52.245-2, Government Property (Fixed Price Contract) (APR 1984)
53. FAR 52.245-4, Government-Furnished Property (Short Form) (APR 1984)
54. FAR 52.246-12, Inspection of Construction (JUL 1986)
55. FAR 52.246-21, Warranty of Construction (APR 1984)
56. FAR 52.248-3, Value Engineering-Construction (APR 1984)
57. FAR 52.249-2, Termination for Convenience of the Government (Fixed-Price) - Alternate I (APR 1984)
58. FAR 52.249-10, Default (Fixed-Price Construction) (APR 1984)
59. FAR SUPP 52.217-7122, Notice and Assistance Regarding Patent and Copyright Infringement (APR 1984)
60. FAR SUPP 52.219-7000, Small Business and Small Disadvantaged Business (APR 1984)
61. FAR SUPP 52.232-7005, Payments Under Fixed-Price Construction Contracts (APR 1986)
62. FAR SUPP 52.233-7000, Certification of Requests for Adjustment or Relief Exceeding \$100,000 (FEB 1980)
63. FAR SUPP 52.236-7000, Composition of Contractor (JAN 1965)
64. FAR SUPP 52.236-7001, Modification of Proposals - Price Breakdown (APR 1968)
65. FAR SUPP 52.236-7005, Salvage Materials and Equipment (JAN 1965)
66. FAR SUPP 52.236-7006, Misplaced Material (JAN 1965)
67. FAR SUPP 52.236-7007, Identification of Employees (JAN 1965)

- 68. DAR 7-602.37, Subcontractors (MAR 1979)
- 69. FAR SUPP 52.227-7033, Rights in Shop Drawings (APR 1966)
- 70. FAR SUPP 52.243-7001, Pricing of Adjustments (APR 1984)
- 71. FAR 52.247-64, Preference For Privately Owned U.S. Flag Commercial Vessels (APR 1984)

(a) When ocean transportation is required to bring supplies, materials, or equipment to the construction site from the United States either for use in performance of, or for incorporation in, the work called for by this contract, the Contractor shall use privately owned U.S.-flag commercial vessels to the extent that such vessels are available at rates that are fair and reasonable for privately owned U.S.-flag commercial vessels.

(b) The Contractor shall not make any shipment exceeding 10 measurement tons (400 cubic feet) by vessels other than privately owned U.S.-flag commercial vessels without (1) notifying the Contracting Officer that U.S.-flag commercial vessels are not available at rates that are fair and reasonable for such vessels and (2) obtaining permission to ship in other vessels. If permission is granted, the contract price shall be equitably adjusted to reflect the difference in cost.

(c) (1) The Contractor shall submit one legible copy of a rated on-board ocean bill of lading for each shipment to both (i) the Contracting Officer and (ii) the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590. Subcontractor bills of lading shall be submitted through the Prime Contractor.

(2) The Contractor shall furnish these bill of lading copies (i) within 20 working days of the date of loading for shipments originating in the United States or (ii) within 30 working days for shipments originating outside the United States. Each bill of lading copy shall contain the following information:

- (A) Sponsoring U.S. Government agency.
- (B) Name of vessel.
- (C) Vessel flag of registry.
- (D) Date of loading.
- (E) Port of loading.
- (F) Port of final discharge.
- (G) Description of commodity.
- (H) Gross weight in pounds and cubic feet if available.
- (I) Total ocean freight revenue in U.S. dollars.

(d) Except for small purchases as described in 48 CFR 13, the Contractor shall insert the substance of this clause, including this paragraph (d), in all subcontracts or purchase orders under this contract.

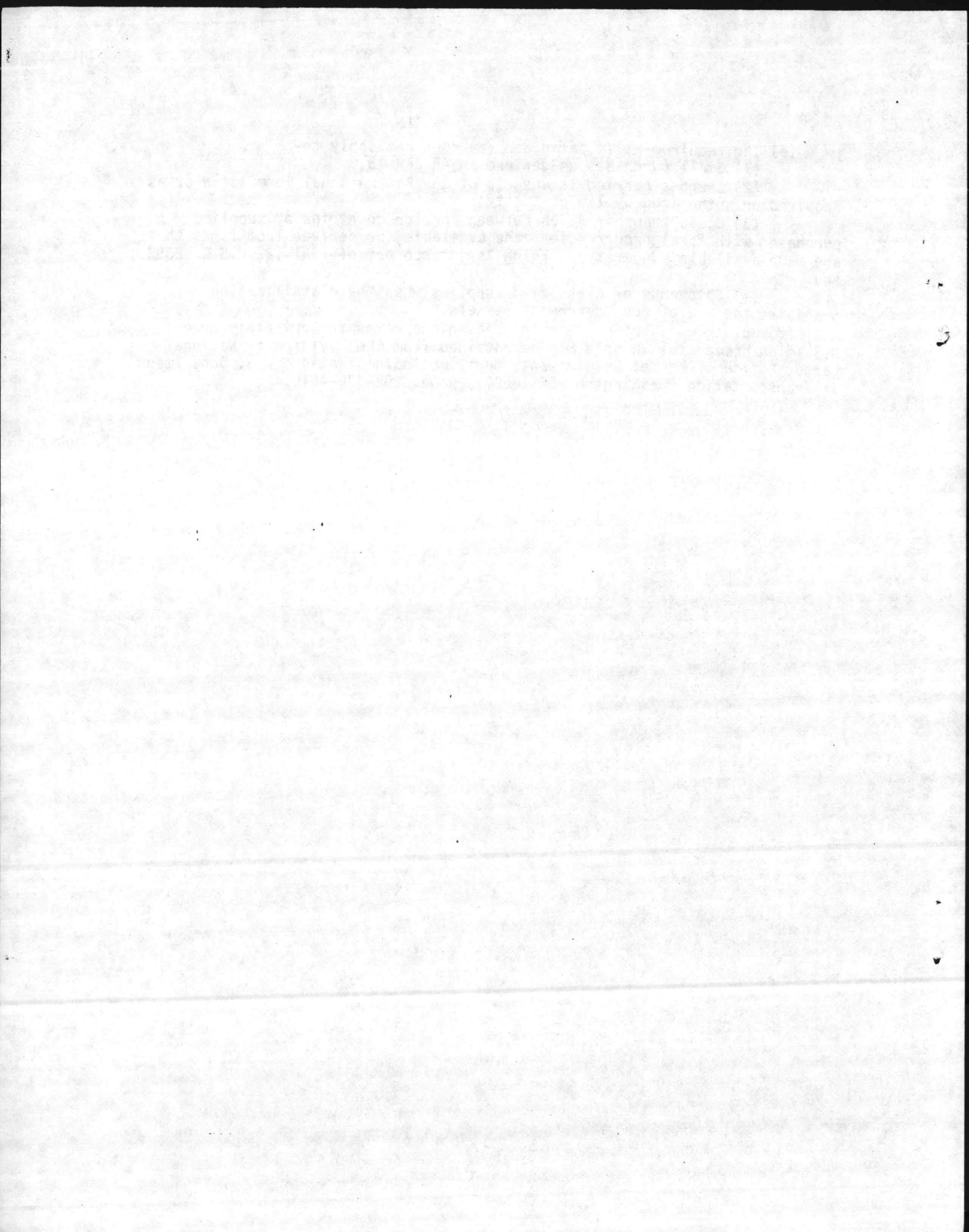
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(e) The requirement in paragraph (a) does not apply to-

- (1) Small purchases as defined in 48 CFR 13;
- (2) Cargoes carried in vessels of the Panama Canal Commission or as required or authorized by law or treaty;
- (3) Ocean transportation between foreign countries of supplies purchased with foreign currencies made available, or derived from funds that are made available, under the Foreign Assistance Act of 1961 (22 U.S.C. 2353); and
- (4) Shipments of classified supplies when the classification prohibits the use of non-Government vessels.

(f) Guidance regarding fair and reasonable rates for privately owned U.S.-flag commercial vessels may be obtained from the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590, Phone: 202-426-4610.

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September 1986

REPRESENTATIONS AND CERTIFICATIONS  
(Construction Contract)

Invitation Reference No:

Name and Address of Bidder:

DUNS Number:

Date of Bid:

The bidder makes the following representations and certifications, by placing a check in the appropriate spaces or otherwise as appropriate, as part of the bid identified above. (In negotiated procurements, "bid" and "bidder" shall mean "offer" and "offeror.") A completed REPRESENTATIONS AND CERTIFICATIONS is to be returned with the bid.

1. SMALL BUSINESS CONCERN REPRESENTATION (MAY 1986).

The offeror represents and certifies as part of its offer that it  is,  is not a small business concern and that  all,  not all end items to be furnished will be manufactured or produced by a small business concern in the United States, its territories or possessions, Puerto Rico, or the trust Territory of the Pacific Islands. "Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the size standards in this solicitation. (FAR 52.219-1)

2. CONTINGENT FEE REPRESENTATION AND AGREEMENT (APR 1984).

(a) Representation. The offeror represents that, except for full-time bona fide employees working solely for the offeror, the offeror-  
[Note: The offeror must check the appropriate boxes. For interpretation of the representation, including the term "bona fide employee," see Subpart 3.4 of the Federal Acquisition Regulation.]

(1)  has,  has not employed or retained any person or company to solicit or obtain this contract; and

(2)  has,  has not paid or agreed to pay to any person or company employed or retained to solicit or obtain this contract any commission, percentage, brokerage, or other fee contingent upon or resulting from the award of this contract.

(b) Agreement. The offeror agrees to provide information relating to the above Representation as requested by the Contracting Officer and, when subparagraph (a)(1) or (a)(2) is answered affirmatively, to promptly submit to the Contracting Officer-

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- (1) A completed Standard Form 119, Statement of Contingent or Other Fees, (SF 119); or
- (2) A signed statement indicating that the SF 119 was previously submitted to the same contracting office, including the date and applicable solicitation of contract number, and representing that the prior SF 119 applies to this offer or quotation. (FAR 52.203-4)

3. TYPE OF BUSINESS ORGANIZATION - SEALED BIDDING (APR 1985).

The bidder, by checking the applicable box, represents that it operates as \_\_\_\_\_ a corporation incorporated under the laws of the State of \_\_\_\_\_, \_\_\_\_\_ an individual, \_\_\_\_\_ a partnership, \_\_\_\_\_ a nonprofit organization, or \_\_\_\_\_ a joint venture. (FAR 52.214-2)

4. CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (APR 1985).

(a) The offeror certifies that-

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to (i) those prices, (ii) the intention to submit an offer, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory-

(1) Is the person in the offeror's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above

[insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the offeror deletes or modifies subparagraph (a)(2) above, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure. (FAR 52.203-2)

5. PARENT COMPANY AND IDENTIFYING DATA (APR 1984)

(a) A "parent" company, for the purpose of this provision, is one that owns or controls the activities and basic business policies of the bidder. To own the bidding company means that the parent company must own more than 50 percent of the voting rights in that company. A company may control a bidder as a parent even though not meeting the requirement for such ownership if the parent company is able to formulate, determine, or veto basic policy decisions of the offeror through the use of dominant minority voting rights, use of proxy voting, or otherwise.

(b) The bidder [ ] is, [ ] is not [check applicable box] owned or controlled by a parent company.

(c) If the bidder checked "is" in paragraph (b) above, it shall provide the following information:

Name and Main Office Address  
of Parent Company (Include  
Zip Code)

Parent Company's Employer's  
Identification Number

.....

(d) If the bidder checked "is not" in paragraph (b) above, it shall insert its own Employer's Identification Number on the following line \_\_\_\_\_.  
(FAR 52.214-8)

6. CERTIFICATION OF NONSEGREGATED FACILITIES (APR 1984)

(Applies when the amount of the contract is in excess of \$10,000.)

(a) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color religion, or national origin because of habit, local custom, or otherwise.

(b) By the submission of this offer, the offeror certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The offeror agrees that a breach of this certification is a violation of the Equal Opportunity clause in the contract.

(c) The offeror further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will-

- (1) Obtain identical certifications from proposed subcontractors before the award of subcontracts under which the subcontractor will be subject to the Equal Opportunity clause;
- (2) Retain the certifications in the files; and

(3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

**NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES.**

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract under which the subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001. (FAR 52.222-21)

**7. CLEAN AIR AND WATER CERTIFICATION (APR 1984)**

The Offeror certifies that-

(a) Any facility to be used in the performance of this proposed contract is [ ], is not [ ] listed on the Environmental Protection Agency List of Violating Facilities;

(b) The Offeror will immediately notify the Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the Offeror proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and

(c) The Offeror will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract. (FAR 52.223-1)

**8. SMALL DISADVANTAGED-BUSINESS CONCERN REPRESENTATION (APR 1984)**

(a) Representation. The offeror represents that it [ ] is, [ ] is not a small disadvantaged business concern.

(b) Definitions.

"Asian-Indian American," as used in this provision, means a United States citizen whose origins are in India, Pakistan, or Bangladesh.

"Asian-Pacific American," as used in this provision, means a United States citizen whose origins are in Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the U.S. Trust Territory of the Pacific Islands, the Northern Mariana Islands, Cambodia, or Taiwan.

"Native American," as used in this provision, means American Indians, Eskimos, Aleuts, and native Hawaiians.

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

"Small disadvantaged business concern," as used in this provision, means a small business concern that (1) is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged, or a publicly owned business having at least 51 percent of its stock owned by one or more socially and economically disadvantaged individuals and (2) has its management and daily business controlled by one or more such individuals.

(c) Qualified groups. The offeror shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans, and other individuals found to be qualified by the SBA under 13 CFR 124.1. (FAR 52.219-2)

9. WOMEN-OWNED SMALL BUSINESS REPRESENTATION (APR 1984)

(a) Representation. The offeror represents that it  is,  is not a women-owned small business concern.

(b) Definitions.

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

"Women-owned," as used in this provision, means a small business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business. (FAR 52.219-3)

10. DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER REPORTING (DEC 1980)

In the block with its name and address, the offeror should supply the Data Universal Numbering System (DUNS) Number applicable to that name and address. The DUNS Number should be preceded by "DUNS:". If the offeror does not have a DUNS Number, it may obtain one from any DUN and Bradstreet branch office. No offeror should delay the submission of its offer pending receipt of its DUNS Number. (FAR SUPP 52.204-7004)

11. PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (APR 1984)

The offeror represents that-

(a) It  has,  has not participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the clause originally contained in Section 310 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114;

(b) It  has,  has not filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards. (FAR 52.222-22)

12. PERCENT FOREIGN CONTENT (SEP 1978)

Approximately \_\_\_\_\_ percent of the proposed contract price represents foreign content or effort. (DAR 7-2003.81)

13. CERTIFICATION OF DEBARMENT/SUSPENSION STATUS

(a) The Offeror certifies with its submission of this offer that it \_\_\_\_\_ is, \_\_\_\_\_ is not (check one) suspended, debarred or ineligible from entering into contracts with the Executive Branch of the Federal Government, or in receipt of a notice of proposed debarment from another DOD Agency.

(b) The Offeror shall provide immediate notice to the Contracting Officer in the event of being suspended, debarred or declared ineligible by any Department or other Federal Agency, or upon receipt of a notice of proposed debarment from another DOD Agency, prior to award of this contract.

NOTE: Bids must set forth full, accurate and complete information as required by this invitation for bids (including attachments). The penalty for making false statements is prescribed in 18 U.S.C. 1001.

A completed REPRESENTATIONS AND CERTIFICATIONS is to be returned with the bid.

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CHANGES TO:

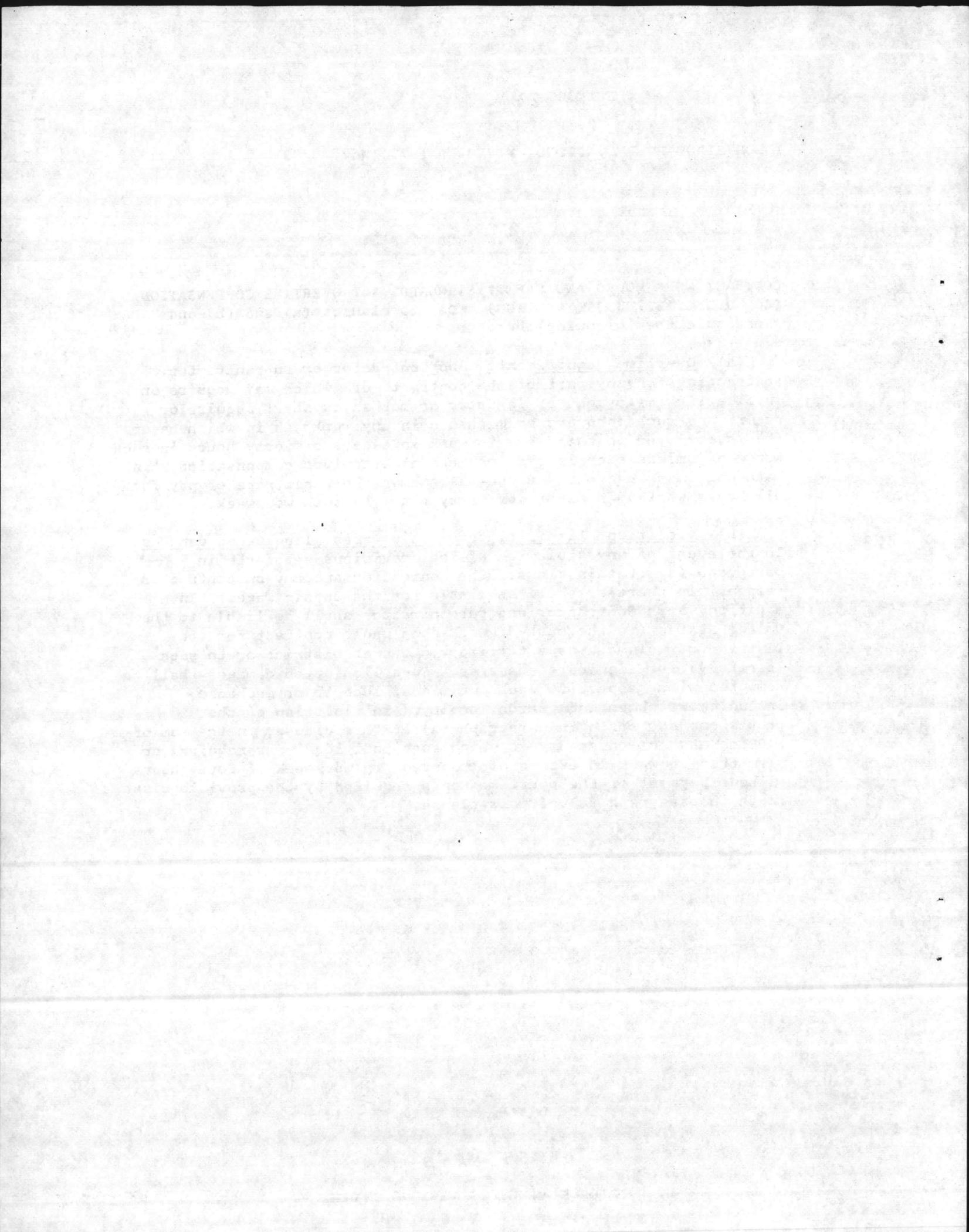
LABOR STANDARD PROVISIONS, NOVEMBER 1979 (Rev. 8/83)

2. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT-OVERTIME COMPENSATION (40. U.S.C. 327-333)(1983 AUG) - Delete clauses (a) and (b) and substitute the following therefor:

"(a) Overtime requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborers or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(b) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions set forth in paragraph (a) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the provisions set forth in paragraph (a) of this clause, in the sum of \$10 for each calendar day in which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the provisions set forth in paragraph (a) of this clause."

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SECTION 01010  
GENERAL PARAGRAPHS

1. GENERAL INTENTION: It is the declared and acknowledged intention and meaning to provide and secure meter and control replacement, complete and ready for use.
2. GENERAL DESCRIPTION: The work includes replacing various water and sewer system meters and controls with new meters and controls, and incidental related work.
3. The work shall be located at the Marine Corps Base, Camp Lejeune, North Carolina, approximately as shown. The exact location will be indicated by the Contracting Officer. "Officer in Charge of Construction (OICC)" and "Contracting Officer" are used interchangeably in this specification and have the same meaning.
4. NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (APR 1984).

(Applies when the amount of the contract is in excess of \$10,000.)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
23.5%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each

of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Director, Office of Federal Contract Compliance Programs, within 10 working days following award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the-

- (1) Name, address, and telephone number of the subcontractor;
  - (i) Employer identification number of the subcontractor;
- (2) Estimated dollar amount of the subcontract;
- (3) Estimated starting and completion dates of the subcontract; and
- (4) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is State of North Carolina; Counties of Columbus, Duplin, Onslow and Pender. (FAR 52.222-23)

5. REQUIRED INSURANCE: (a) The Contractor shall procure and maintain during the entire period of performance under this contract the following minimum insurance coverage.

<u>Type of Insurance</u>	<u>Per Person</u>	<u>Per Accident</u>	<u>Property</u>
1. Comprehensive General Liability		\$500,000	
2. Automobile Liability	\$200,000	\$500,000	\$ 20,000

3. Workmen's Compensation: As required by Federal and State workers' compensation and occupational disease statutes.

4. Employer's liability coverage: \$100,000, except in states where workers' compensation may not be written by private carriers.

5. Other as required by state law.

(b) Prior to commencement of work, the Contractor shall furnish to the Contracting Officer a certificate or written statement of the above required insurance. The policies evidencing required insurance shall contain an endorsement to the effect that cancellation or any material change in the policies adversely affecting the interests of the Government in such insurance shall not be effective for such period as may be prescribed by the laws of the State in which this contract is to be performed and in no event less than thirty (30) days after written notice thereof to the Contracting Officer.

(c) The Contractor agrees to insert the substance of this clause, including this paragraph (c), in all subcontracts hereunder.

6. STATION REGULATIONS: The Contractor and his employees and subcontractor shall become familiar with and obey all Station Regulations, including fire, traffic, and security regulations. All personnel employed on the station shall keep within the limits of the work (and avenues of ingress and egress), and shall not enter any restricted areas unless required to do so and are cleared for such entry. The Contractor's equipment shall be conspicuously marked for identification.

7. ORDER OF WORK: The Contractor shall schedule his work as to cause the least amount of interference with Station operations. Work schedules shall be subject to the approval of the Officer in Charge of Construction. Permission to interrupt any station roads, railroads and/or utility service shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.

8. SCHEDULE OF PRICES: Within 5 days of receipt of Award, the Contractor shall prepare and submit to the Officer in Charge of Construction, via the Resident Officer in Charge of Construction, nine copies of a Schedule of Prices (Construction Contract) on the forms furnished for this purpose. The Schedule of Prices shall consist of a detailed breakdown of the contract price, giving the quantities for each of the various kinds of work, the unit prices, and the total prices therefore. The Schedule of Prices shall be separated by building numbers with a Schedule and a subtotal for each building. The building numbers and subtotals shall be the first item listed and totaled on the Schedule of Prices. The required schedule must be based on the actual breakdown of the bid price. Accordingly, subcontractors who may be involved in work shall be advised of this requirement in order to furnish such data without delay. The submission of the required data shall not otherwise affect the contract terms. Each item in the Schedule of Prices shall be structured so as to identify the section of the specifications to which it applies. Further, the section number shall be listed, and then each item of work within that section shall be listed. Specification sections shall be referred to by five-digit CSI numbers which apply. Pursuant to clause entitled "Payments Under Fixed-Price Construction Contract," payments will not be made until the Schedule of Prices has been submitted and approved.

9. CONTRACTOR'S INVOICE: Requests for payment in accordance with the terms of the contract shall consist of:

(a) Contractor's Invoice on form NAVFAC 7300/30 (7/83), which shall show, in summary form, the basis for arriving at the amount of the invoice.

(b) Contractor's Monthly Estimate for Voucher (LANTNAVFACENGCOM 4-4330/110 (New 7/84)).

(c) Affidavit to accompany invoice (LANTDIV NORVA form 4-4235/4 (Rev 5/81)).

(d) Updated copy of progress schedule. (See Clause entitled "Schedules for Construction Contracts" of the Contract Clauses.)

Forms will be furnished by the Contracting Officer. The Contractor has the option to use the government furnished progress schedule and record form. Monthly invoices and supporting forms for work performed through the 20th of the month shall be submitted to the Contracting Officer by the 25th of the month in the following quantities.

- (a) Contractor's Invoice - Original and five copies
- (b) Contractor's Monthly Estimate for Voucher - Original and two copies shall be required on all jobs where there is a schedule of prices
- (c) Affidavit - Original
- (d) Progress Schedule - Two copies

10. PROPOSED MATERIAL SUBMITTALS, CATALOG DATA, AND SAMPLES:

(a) Proposed material submittals required of the Contractor shall be made allowing sufficient time for processing, reviews, approval, and procurement before the Contractor is ready to use the material. No material shall be used prior to written approval. Submittals shall be prepared and assembled as follows:

- (1) Submit specified number of copies of each submittal.
- (2) Present all submittals for each specification section as a complete bound volume, titled with project title and contract number. This requirement does not include qualifications statements, certificates of compliance, and test certifications.
- (3) Provide index of included items with each volume. Title the index with applicable specification section name and number.
- (4) Clearly mark each item in the volume with the specification paragraph number to which it pertains.
- (5) Assemble each volume in the same numerical sequence as specifications section paragraphs.
- (6) See individual technical sections for additional information.

The Contractor shall certify on all submittals that the material being proposed conforms to contract requirements. In the event of any variance, the Contractor shall state specifically which portions vary, and request approval of a substitute. The Contractor shall also certify that all Contractor-furnished equipment can be installed in the allocated spaces. Incomplete submittals and submittals with inadequate data will be rejected.

(b) When required, catalog data shall be printed pages on permanent copies of the manufacturer's catalogs.

(c) Samples in the number specified shall be shipped prepaid and delivered as directed by the Officer in Charge of Construction. Samples shall be marked to show the name of the material, name of supplier, contract number, segment of work where material represented by sample is to be used, and name of Contractor submitting the sample.

11. WORK OUTSIDE REGULAR HOURS: If the Contractor desires to carry on work outside regular hours or on Saturdays, Sundays, or holidays, he shall submit an application to the Officer in Charge of Construction. The Contractor shall allow ample time to enable satisfactory arrangements to be made by the Government for inspecting the work in progress. At night, he shall light the different parts of the work in an approved manner. All utility cutovers shall be made after normal working hours or on weekends. Anticipated costs shall be included in the bid.

12. EXISTING WORK:

(a) The disassembling, disconnecting, cutting, removal or altering in any way of existing work shall be carried on in such a manner as to prevent injury or damage to all portions of existing work, whether they are to remain in place, re-used in the new work, or salvaged and stored.

(b) All portions of existing work which have been cut, damaged or altered in any way during construction operations shall be repaired or replaced in kind in an approved manner to match existing or adjoining work. All work of this nature shall be performed by the Contractor at his expense and shall be as directed. Existing work shall, at the completion of all operations, be left in a condition as good as existed before the new work started.

13. EQUITABLE ADJUSTMENTS: WAIVER AND RELEASE OF CLAIMS:

(a) Whenever the Contractor submits a claim for equitable adjustment under any clause of this contract which provides for equitable adjustment of the contract, such claim shall include all types of adjustments in the total amounts to which the clause entitles the Contractor, including, but not limited to, adjustments arising out of delays or disruptions or both caused by such change. Except as the parties may otherwise expressly agree, the Contractor shall be deemed to have waived (i) any adjustments to which it otherwise might be entitled under the clause where such claim fails to request such adjustments, and (ii) any increase in the amount of equitable adjustments additional to those requested in its claim.

(b) The Contractor agrees that, if required by the Contracting Officer, he will execute a release, in form and substance satisfactory to the Contracting Officer, as part of the supplemental agreement setting forth the aforesaid equitable adjustment. The Contractor further agrees that such release shall discharge the Government, its officers, agents and employees, from any further claims, including, but not limited to, further claims arising out of delays or disruptions or both caused by the aforesaid change.

14. GOVERNMENT REPRESENTATIVES:

(a) The work will be under the general direction of the Contracting Officer, the Commander, Naval Facilities Engineering Command, who shall designate an officer of the Civil Engineer Corps, United States Navy, or other officer or representative of the Government, as Officer in Charge of Construction, referred to as the "OICC." Except in connection with the "Disputes" clause, the Officer in Charge of Construction shall be the authorized representative of the Contracting Officer, and have complete charge of the work and exercise full supervision of the work, so far as it affects the interest of the Government. For the purposes of the "Disputes" clause, "Contracting Officer" shall mean the Commander, Naval Facilities Engineering Command, the Acting Commander, their successors, or their representatives specially designated for this purpose.

(b) The provisions of this paragraph or elsewhere in this contract regarding supervision, approval or direction by the Contracting Officer or the OICC, or action taken pursuant thereto, are not intended to and shall not

relieve the Contractor of responsibility for the accomplishment of the work either as regards sufficiency or the time of performance, except as expressly otherwise provided herein.

15. ORAL MODIFICATION: No oral statement of any person other than the contracting officer or his representative, as provided in the clause in this contract entitled "Changes", shall in any manner or degree modify or otherwise affect the terms of this contract.

16. NO WAIVER BY GOVERNMENT: The failure of the Government, in any one or more instances, to insist upon the strict performance of any of the terms of this contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon such terms or option on any future occasion.

17. SANITATION: Contractor's employees will be allowed to use building toilets.

18. PAYMENTS TO CONTRACTOR:

(a) Payments made in accordance with the clause entitled "Payments Under Fixed-Price Construction Contract" shall be made on submission of itemized requests by the Contractor and shall be subject to reduction for overpayments or increase for underpayments on preceding payments to the Contractor.

(b) The obligation of the Government to make any of the payments required under any of the provisions of this contract shall, in the discretion of the OICC, be subject to (1) reasonable deductions on account of defects in material or workmanship, and (2) any claims which the Government may have against the Contractor under or in connection with this contract. Any overpayments to the Contractor shall, unless otherwise adjusted, be repaid to the Government upon demand.

19. CHANGES BOARD AND ESTIMATES: In determining any equitable adjustment under the Changes Clause, the OICC shall, in those instances where the adjustment is estimated by the OICC to be \$50,000 or more, convene and give full consideration to the report of an advisory board of three members, consisting of two Government representatives appointed by the OICC and one representative appointed by the Contractor. This board shall report to the OICC the amount of the change in cost, time, or both, resulting from the ordered change. In making all equitable adjustments under the Changes Clause, compensation for additions will be based upon estimated costs at the time the work is performed and credit for deductions will be based upon estimated costs at the time the contract was made. In arriving at the amount of the change in price, if any, allowance may be made for profit, overhead and general expenses, plant rental, and other similar items.

20. SECURITY REQUIREMENTS: No employee or representative of the Contractor will be admitted to the site of the work unless he furnishes satisfactory proof that he is a citizen of the United States or is specifically authorized admittance to the site of the work by the OICC.

21. NORTH CAROLINA STATE AND LOCAL SALES AND USE TAX (1977 JAN) (FAR 52.229-2):

(a) As used throughout this clause, the term "materials" means building materials, supplies, fixtures and equipment which become a part of or are annexed to any building or structure erected, altered, or repaired under this contract.

(b) If this is a fixed-price contract as defined in the Defense Acquisition Regulation, the contract price includes the North Carolina state and local sales and use taxes to be paid with respect to materials, notwithstanding any other provision of this contract. If this is a cost-reimbursement type contract as defined in such regulation, any North Carolina state and local sales and use taxes paid by the Contractor with respect to materials shall constitute an allowable cost under this contract.

(c) At the time specified in paragraph (d) below:

(i) The Contractor shall furnish the Contracting Officer certified statements setting forth the cost of the materials purchased from each vendor and the amount of North Carolina state and local sales and use taxes paid thereon. In the event the Contractor makes several purchases from the same vendor, such certified statement shall indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices and the North Carolina state and local sales and use taxes paid thereon by the Contractor. Any local sales or use taxes included in the Contractor's statements must be shown separately from the state sales and use tax. The Contractor shall furnish such additional information as the Commissioner of Revenue of the State of North Carolina may require to substantiate a refund claim for sales or use taxes.

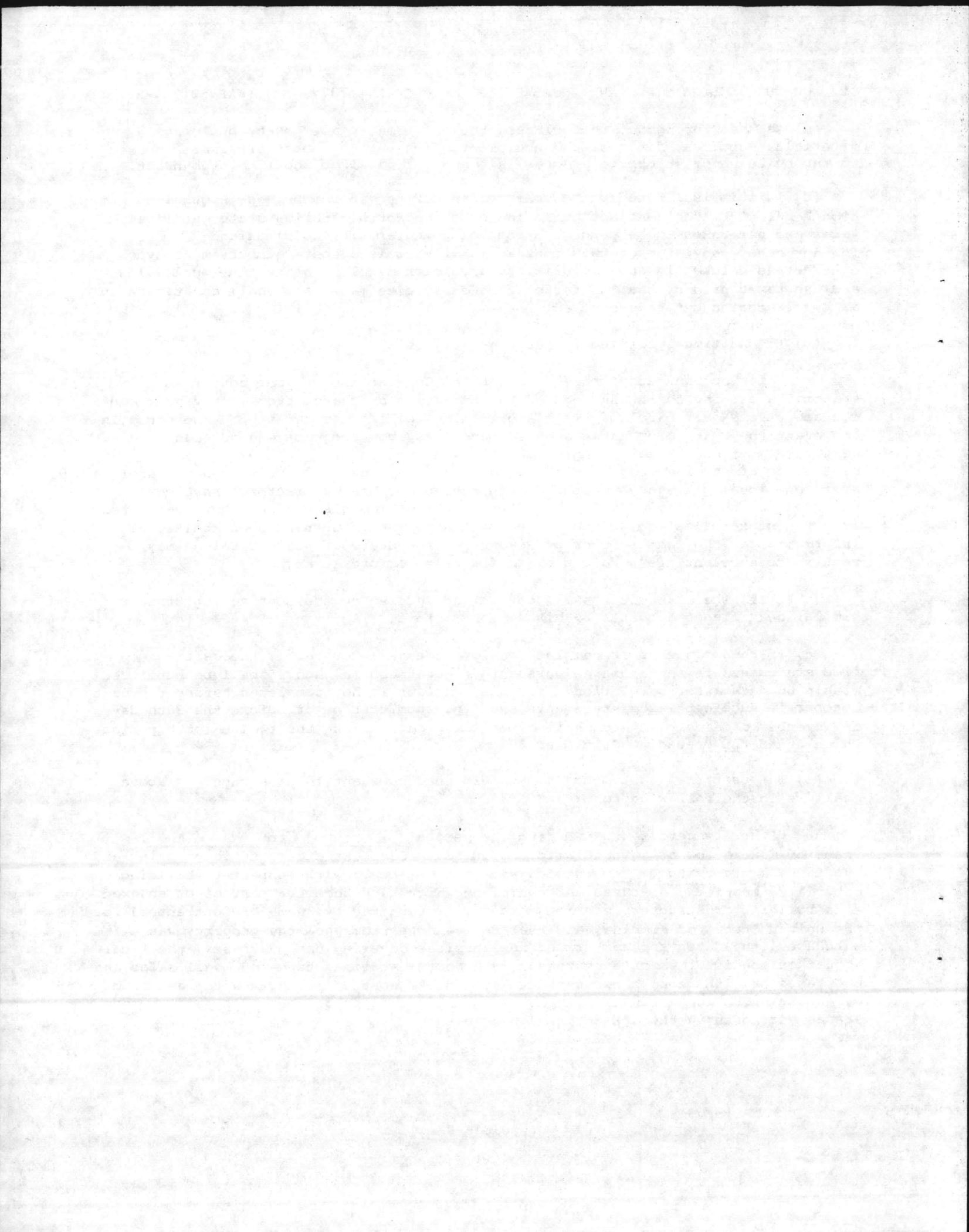
(ii) The Contractor shall obtain and furnish to the Contracting Officer similar certified statements by his subcontractors.

(d) If this contract is completed before the next October 1, the certified statements to be furnished pursuant to paragraph (c) above shall be submitted within 60 days after completion. If this contract is not completed before the next October 1, such certified statements shall be submitted on or before the 30th day of November of each year and shall cover taxes paid during the twelve-month period which ended the preceding September 30.

(e) The certified statements to be furnished pursuant to paragraph (c) above shall be in the following form:

I hereby certify that during the period \_\_\_\_\_ to \_\_\_\_\_,  
(name of Contractor or subcontractor) paid North Carolina state and local sales and use taxes aggregating \$ \_\_\_\_\_ (state) and \$ \_\_\_\_\_ (local) with respect to building materials, supplies, fixtures and equipment which have become a part of or annexed to a building or structure erected, altered or repaired by (name of Contractor) for the United States of America, and that the vendors from whom the property was purchased, the dates and numbers of the invoices covering the purchases, the total amount of the invoices of each vendor, the North Carolina state and local sales and use taxes paid thereon, shown separately, and the cost of property withdrawn from warehouse stock and North Carolina state and local sales or use taxes paid thereon are as set forth in the attachments hereto.

\*\*\* END OF SECTION \*\*\*



SECTION 01011  
ADDITIONAL GENERAL PARAGRAPHS

1 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984): The Contractor shall be required to (a) commence work under this contract within 10 calendar days, (b) prosecute the work diligently, and (c) complete the entire work ready for use within 120 calendar days.

2 LIQUIDATED DAMAGES--CONSTRUCTION (APR 1984): (a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$100.00 for each day of delay. (FAR 52.212-5)

(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.

3 DRAWINGS ACCOMPANYING SPECIFICATION: The following drawings accompany this specification and are a part thereof. Drawings are the property of the Government and shall not be used for any purpose other than that contemplated by the specification. If reduced size drawings are provided, graphic scales shall be used. Full-size drawings may be inspected during regular working hours at the office of the Contracting Officer.

NAVFAC

<u>DWG. NO.</u>	<u>SHEET NO.</u>	<u>TITLE</u>
4152859	CS-1	Vicinity Map, Location Map and Site Plans
4152860	C-1	Plans, Controls and Details
4152861	C-2	Plans and Control Diagram
4152862	C-3	Plans and Sections
4152863	C-4	Plans, Sections, and Control Diagram

3.1 Drawing Verification and Control: The Contractor shall check all drawings furnished him immediately upon their receipt and shall promptly notify the Contracting Officer of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The Contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby.  
(FAR SUPP 52.236-7002 (c))

4 SPECIFICATIONS AND PRINTS FURNISHED TO CONTRACTOR: Six copies of the project specifications, and six sets of the drawings accompanying the specifications will be furnished the Contractor without charge. Additional sets of the specifications and drawings can be obtained, if required, by application to the Contracting Officer, provided that the need therefore is justified to the satisfaction of the Contracting Officer.

5 MATERIALS AND EQUIPMENT TO BE SALVAGED: Contract Clause entitled "Salvage Materials and Equipment" is hereby deleted. Except where specifically specified otherwise herein, all existing materials and equipment which are required to be removed or disconnected to perform the work, but are not indicated or specified for use in the new work, shall become the property of the Contractor and shall be removed from Government property.

6 OPERATION OF STATION UTILITIES: The Contractor shall not operate nor disturb the setting of any control devices in the station utilities system, including water, sewer, electrical, and steam services. The Government will operate the control devices as required for normal conduct of the work. The Contractor shall notify the Contracting Officer giving reasonable advance notice when such operation is required.

7 UTILITIES:

7.1 Availability of Utilities Services: Contract clause entitled "Availability and Use of Utility Services" applies. Reasonable amounts of water and electricity from the nearest available outlet free of charge for pursuance of work under this contract. If the nearest available outlet cannot be utilized by the Contractor because of improper voltage, insufficient current, improper pressure, incompatible connectors, etc., it shall be the responsibility of the Contractor to provide temporary utilities as required. Under no circumstances will taps to Base fire hydrants for obtaining domestic water be allowed.

7.2 Energy and Utilities Conservation: The Contractor shall carefully conserve utilities furnished without charge. The Contractor, at his own expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines and remove the same prior to final acceptance of the construction.

7.3 Location of Underground Utilities: Where existing piping, utilities, and underground obstructions of any type are indicated in locations to be traversed by new piping, ducts, and other work provided hereunder, and are not indicated or specified to be removed, the elevations of the existing utilities and obstructions shall be determined before the new work is laid closer than the nearest manhole or other structure at which an adjustment in grade could be made. For any additional work required by reason of conflict between the new and existing work, an adjustment in contract price will be made in accordance with Contract clause entitled "Differing Site Conditions". The Base Telephone Officer, telephone 451-2531, will show the Contractor approximate locations of all buried telephone and fire alarm cables after receiving ten days notice. The locations of underground utilities shown is only approximate and the information is incomplete.

8 TRAILERS OR STORAGE BUILDINGS: In accordance with Contract Clause entitled "Operations and Storage Areas", trailers or storage buildings will be permitted, where space is available, subject to the approval of the Contracting Officer. The trailers or buildings shall be suitably painted and kept in a good state of repair. Failure of the Contractor to maintain his trailers or storage buildings in good condition will be considered sufficient reason to require their removal. A sign not smaller than 24 inches by 24 inches shall be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number.

9 EQUIPMENT GUARANTEES:

9.1 EQUIPMENT GUARANTEE LIST: The Contractor shall obtain and furnish to the Contracting Officer written guarantees for all equipment furnished by the Contractor under the contract and shall prepare a complete listing of all such equipment. This equipment list shall state the specification section applicable to the equipment, duration of the warranty therefor, start date of the warranty, ending date of the warranty, and the point of contact for fulfillment of the warranty. This listing shall be fully executed and delivered to the Contracting Officer prior to final acceptance of the facility, and such acceptable listing shall be a condition to final acceptance of the facility.

9.2 EQUIPMENT WARRANTY TAGS AND GUARANTOR'S LOCAL REPRESENTATIVE: The Contractor shall furnish with each guarantee the name, address, and telephone number of the guarantor's representative nearest to the location where the equipment and appliances are installed, who, upon request of the Using Service's representative, will honor the guarantee during the guaranty period and will provide the services prescribed by the terms of the guarantee. At the time of installation, the Contractor shall tag each item of warranted equipment with a durable, oil and water resistant tag approved by the Contracting Officer. Tag shall be attached with copper wire and sprayed with a clear silicone waterproof coating. Leave the date of acceptance and inspector's signature blank until project is accepted for beneficial occupancy. Tag shall show the following information:

EQUIPMENT WARRANTY TAG

Type of Equipment.....  
Accepted Date.....  
Warranted Until.....  
Under Contract N62470-.....  
Inspector's Signature.....

STATION PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE

10 SAFETY PROGRAM: The Contractor shall implement a safety program conforming to the requirements of Federal, State and Local laws, rules and regulations. The program shall include, but is not limited to, the following:

a. "Occupational Safety and Health Standards", which can be ordered from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.

b. Department of the Army, Corps of Engineers, "Safety and Health Requirements Manual", which may be examined in the office where bids are being received or may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.

c. Contract Clause entitled "Accident Prevention." In this clause the date of the U.S. Army Corps of Engineers "Safety and Health Requirements Manual" should be 1 October 1984.

d. NFPA 241-1981, Safeguarding Building Construction and Demolition Operations, which may be examined in the office where bids are being received or may be purchased from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

e. Work in Confined Spaces: In addition to the requirements in Section XXVII of the Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, "Work in Confined Spaces", the following provisions apply:

(1) Definitions

(a) Confined Space - Refers to a space which by design has limited openings for entry and exit; unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include but are not limited to storage tanks, compartments of ships, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines.

(b) Qualified Person - A person designated by the Contractor, in writing, as capable (by education or specialized training) of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space. This person shall be capable of specifying necessary control and protective action to insure worker safety. Where work involves work on existing fuel storage or fuel distribution systems this qualified person shall be a Certified Gas Free Engineer or NFPA Certified Marine Chemist.

(2) Entry into a confined or enclosed space by personnel for any purpose, including hot work, shall be prohibited until the qualified person has conducted appropriate tests to assure the confined or enclosed space is safe for the work intended.

(3) Daily Confined Space Entry Permit (LANTDIV NORVA 3-5100/4 (New 3-83)) shall be completed by the Qualified Person. The permit shall be posted in a conspicuous place close to the confined space entrance with a copy to the Resident Officer in Charge of Construction.

(4) The contractor shall submit to the Resident Officer in Charge of Construction a letter of certification for the qualified person. The letter shall state the qualified person's name and qualifications and delineate his authority to direct work stoppage in the event of hazardous conditions.

11 PROPRIETARY NAMES: Names indicated for colors, textures and patterns of materials are for the purpose of color, texture and pattern selection only. Other manufacturers materials are acceptable provided they closely approximate colors, textures and patterns indicated and provided they conform to all other requirements.

12 SCHEDULING THE WORK:

12.1 General Scheduling Requirements: Notwithstanding the requirements of Contract Clause entitled "Schedules for construction Contracts", immediately after award the Contractor shall meet with the Contracting Officer and present a schedule of work, prepared in accordance with said Clause, for review by the Contracting Officer. The schedule will be reviewed at this meeting and will be retained by the Contracting Officer for final review and approval. The normal working hours are 7:30 a.m. to 4:00 p.m. Monday through Friday.

12.2 All of the buildings will remain occupied and in operation during the entire construction period and the Contractor shall conduct his operations so as to cause the least possible interference with the normal operations of the buildings. The facilities shall remain functional between 4:00 P.M. and 8:00 A.M. Monday through Friday and Saturday and Sunday as the facilities operate as unmanned stations during these hours.

12.3 The existing buildings and their contents shall be kept secure at all times and the Contractor shall provide all temporary closures as required to maintain security as directed by the Contracting Officer. The Contractor shall remove all debris from all spaces being used by the activity at the end of each shift or more frequently if required to keep the space useable. Dust covers or protective enclosures shall be provided to protect existing work to remain and Government material located in the buildings during the construction period.

12.4 Permission to interrupt any utility service shall be requested in writing at least fifteen days in advance and approval of the Contracting Officer shall be received before any service is interrupted. Interruptions of utility services will be allowed only when they will cause no interference with the operations of the activity. All utility cutovers shall be made after normal working hours or on weekends; anticipated costs shall be included in the bid.

13 FORWARDING OF SAMPLES AND SUBMITTALS: Notwithstanding the requirements of Clause entitled "Shop Drawings" of the Contract Clauses, the quantity of submittals required shall be as specified hereinafter.

13.1 Address for Samples and Submittals:

OICC/ROICC  
Jacksonville, North Carolina Area  
Building 1005, Marine Corps Base  
Camp Lejeune, North Carolina 28542

13.2 Samples Required of the Contractor: As soon as practicable, and before installation, submit for approval, samples of materials and equipment as may be requested, including all samples required in the technical sections of this specification.

13.3 Shop Drawings, Manufacturers Data and Certifications Required of the Contractor: As soon as practicable after award of the contract, and before procurement or fabrication, submit all the shop drawings, manufacturers data and certifications required in the technical sections of this specification. Seven copies of all submittals to be approved by the Contracting Officer shall be forwarded.

13.4 Submittal Drawing Guidance: Specification DOD-D-1000B shall be used as a guide and its use is encouraged for all drawings and data submitted by the Contractor. Conformance to the provisions of specification DOD-D-1000B is not mandatory for maps, sketches, presentation drawings, perspectives, renderings, and all other drawings not requiring Naval Facilities Engineering Command drawing numbers.

14 APPROVAL OF SAMPLES, CUTS, AND DRAWINGS: Matter submitted for approval shall be accompanied by complete information concerning the material, articles, and/or design proposed for use in sufficient detail to show compliance with the specification, and shall be approved before incorporation into the work. Approval thereof will not be construed as relieving the Contractor of compliance with the specification, even if such approval is made in writing, unless the attention of the Contracting Officer is called to the noncomplying features by letter accompanying the submitted matter. Partial submittals or submittals of less than the whole of any system made up of interdependent components, will not be considered. Approval of drawings, cuts, and samples by the Contracting Officer shall not be construed as a complete check or approval of the detailed dimensions, weights, gauges, and similar details of the proposed articles. The conformance of such details with the contract requirements, together with the necessary coordination of dimensions and details between the various elements of the work and between the various subcontractors and suppliers, shall be solely the responsibility of the Contractor, approval of submitted matter notwithstanding. The drawings accompanying this specification shall not be used as shop drawings; for example, the editing of the drawings accompanying this specification and returning these edited drawings as shop drawings is prohibited.

15 SUBCONTRACTORS AND PERSONNEL: Promptly after the award of the contract, the Contractor shall submit to the Contracting Officer, in triplicate, a list of his subcontractors and the work each is to perform. On this form shall appear the names of the key personnel of the Contractor and subcontractors, together with their home addresses and telephone numbers, for use in event of any emergency. From time to time as changes occur and additional information becomes available, the Contractor shall amplify, correct, and change the information contained in previous lists.

16 AS-BUILT DRAWINGS: During the progress of the work, one full-size print of each of the drawings accompanying this specification shall be neatly and clearly marked in red to show all variations between the construction actually provided and that indicated or specified in the contract documents. The as-built drawings shall be kept up-to-date at the work site at all times during the contract, and shall be available for inspection by the Contracting Officer upon request. The Contractor shall also mark the drawings to indicate the exact location of any underground utility lines discovered in the course of the work. Where a choice of materials or methods, or both, is permitted herein, and where variations in the scope or character of the work indicated or specified are permitted either by award on bidding items specified for that purpose or by subsequent change to the contract, the as-built drawings shall define the construction actually provided. The representation of such variations shall conform to standard drafting practice and shall include such supplementary notes, legends, and details as may be necessary for legibility and clear portrayal of the as-built construction; the

marked prints shall be subject to approval of the Contracting Officer before acceptance. Upon completion of the work, the completed as-built drawings shall be presented to the Contracting Officer.

17 OMISSIONS AND MISDESCRIPTIONS: Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work but they shall be performed as if fully and correctly set forth and described in the drawings and specifications.  
(FAR SUPP 52.236-7002(b))

18 PRECEDENCE: In the event of conflict or inconsistency between any of the provisions of the various portions of this contract (the reconciliation of which is not otherwise provided for here), precedence shall be given in the following order, the provisions of any particular portion prevailing over those of a subsequently listed portion.

- (1) Typewritten portions of the contract.
- (2) The specifications referred to in Standard Form 1442 (including all addenda, and mechanical and technical but not contractual aspects of incorporated provisions) as specifically amended herein, if amended.
- (3) Printed provisions of the contract form, including printed provisions of added slip sheets.

19 EMERGENCY MEDICAL CARE: Emergency medical care only is available at Government facilities at Marine Corps Base, Camp Lejeune for Contractor employees who suffer on-the-job injury or disease. Emergency care will be rendered at the prevailing rates established in BUMEDINST 6320.4 series. Reimbursement shall be made by the Contractor to the Naval Regional Medical Center Collection Agent upon receipt of a monthly statement.

20 QUARANTINE FOR IMPORTED FIRE ANT (4/82): All of Onslow, Jones and Cartaret Counties and portions of Duplin and Craven Counties have been declared a generally infested area by the United States Department of Agriculture for the imported fire ant. Compliance with the quarantine regulations established by this authority as set forth in USDA Quarantine No. 81 dated 9 October 1970, and USDA Publication 301.81-2A of 23 July 1976, is required for operations hereunder.

20.1 The Quarantine applies to materials originating from Camp Lejeune and the Marine Corps Air Station (Helicopter), New River, which are to be transported outside the Onslow County or adjacent suppression areas.

20.2 Certification is required for the following articles, and they shall not be moved from the reservation to any point outside the Onslow County and adjacent designated areas unless accompanied by a valid inspection certificate issued by an Officer of the Plant Protection and Quarantine Program of the U.S. Department of Agriculture.

- (1) Bulk soil.
- (2) Used mechanized soil-moving equipment.

NOTE: Used mechanized soil-moving equipment is exempt if cleaned of all loose noncompacted soil.

- (3) Any other products, articles, or means of conveyances, if it is determined by an inspector that they present a hazard of spread of the imported fire ant and the person in possession thereof has been so notified.

20.3 Authorization for movement of equipment outside the imported fire ant regulated area shall be obtained from USDA, APHIS, PPQ, Box 83, Goldsboro, North Carolina, 27530, Attn: Mr. Haywood Cox, Telephone (919) 735-1941, and requests for inspection shall be made sufficiently in advance of the date of movement to permit arrangements for the services of authorized inspectors. The equipment shall be prepared and assembled so that it may be readily inspected. All soil on or attached to equipment, supplies and materials shall be removed by washing with water and/or such other means as necessary to accomplish complete removal. Resulting spoil shall be wasted as necessary and as directed.

21 GENERAL PROVISIONS CLAUSES: Wherever a reference to a clause of the General Provisions occurs in the technical sections of the specifications, it shall be taken to mean the Contract Clause having the same title as the referenced General Provisions Clause.

22 SUBMISSION OF OPERATION AND MAINTENANCE MANUALS: Operation and Maintenance Manuals required under this contract shall be submitted to the Contracting Officer at least 60 days prior to contract completion. In addition, one complete Operation and Maintenance Manual shall be submitted to the Contracting Officer for review and approval not more than 90 calendar days after an item is approved but at least 60 calendar days prior to field acceptance testing of the item.

23 ADDITIONAL PRECAUTIONS FOR PROTECTING MATERIALS AND EQUIPMENT IN EXISTING BUILDINGS AND STRUCTURES; Extreme hazards may be caused by rain or other natural elements entering the building through temporary openings, particularly at roofs during reroofing. It is, therefore, essential that the Contractor take all necessary precautions to assure that roof openings and other critical openings in the building are monitored very carefully. The Contractor shall take all immediate actions required to seal off such openings immediately when rain or other detrimental weather is imminent, and at the end of each workday, and shall insure that the openings are completely sealed off to protect materials and equipment in the building from damage.

24 ADDITIONAL INSTRUCTIONS ON SUBMITTALS AND THE USE OF THE CONTRACTOR'S SUBMITTAL TRANSMITTAL FORM: The instructions specified herein represent applicable instructions provided to Contractors on projects administered by the OICC/ROICC, Jacksonville, North Carolina Area, Building 1005, Marine Corps Base, Camp Lejeune, North Carolina 28542. They are specified here to integrate submittal presentation requirements, as well as to place them in full force in this contract. These instructions appear as Appendix "A" at the end of this section.

\*\*\* END OF SECTION \*\*\*

APPENDIX "A" - ADDITIONAL INSTRUCTIONS ON SUBMITTALS AND THE  
USE OF THE CONTRACTOR'S SUBMITTAL TRANSMITTAL FORM

1. All submittals shall be clearly marked to indicate the specific items submitted for approval.
2. Items submitted for approval shall be accompanied by complete information concerning the item proposed in sufficient detail to show compliance with the contract requirements.
3. When more than one item is included in the SUBMITTAL TRANSMITTAL FORM, each sheet or bound set of sheets of attached submittals shall be identified by the item numbers assigned on the transmittal form.
4. Approval of an item cannot be construed as relieving the Contractor of responsibility to comply with the contract requirements unless the Contractor calls attention to the noncomplying features (subparagraph 5f).
5. The following instructions apply to the use of the CONTRACTOR'S SUBMITTAL FORM:
  - a. Transmittal No. - Transmittals shall be numbered consecutively as submitted. Resubmittals should bear the original transmittal number with the letter (A) added to identify the first resubmittal. The letters (B), (C), etc., may be used if additional resubmittals are necessary.
  - b. Each transmittal form must be restricted to submittals for one section of the project specifications.
  - c. Each transmittal form must be restricted to submittals in only one of the following categories: (1) Contractor Approved (CQCR approval items only), (2) OICC Approval, or (3) Deviation or Substitution for OICC Approval.
  - d. The "item number" next to the Project Specification section and paragraph and/or project drawing number block should match the item number on the submittal log for that specification section or drawing number. This will ensure that all required submittals from each section of the contract specification are received.
  - e. Project specification section and paragraph number and/or project drawing number - This is the specific project specification section and paragraph(s) that describe and require the item or the project drawing that is being detailed. Referenced LANTDIV plates, if applicable, should be entered here.
  - f. When approval of a deviation is requested, the following supporting data must be submitted on a separate sheet attached to the transmittal form:

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APPENDIX "A"

- (1) Identify and describe proposed deviations or substitutions.
  - (2) Reason for each proposed deviation or substitution.
  - (3) If material or equipment is unavailable, the Contractor's efforts to procure must be documented (contact with minimum of three different suppliers and/or manufacturers).
  - (4) Complete technical data on the proposed substitution, sufficient to determine acceptability.
  - (5) Warrant that the entire contract has been reviewed to establish that a deviation, if incorporated, will be compatible with all other elements of construction. Also, warrant that any necessary action or additional expense which may arise by reason of incorporating the proposed deviation, including but not limited to change in this or other elements of construction resulting from the incompatibility of the proposed deviation with any other element of construction, will be the responsibility of the Contractor.
  - (6) Separate cost estimates for each specified item and each proposed item and proposed change, if any, in the contract time.
- g. Each submittal will be signed by the Contractor Representative after the Contractor's comments block.
- h. The Contractor's Submittal Transmittal form will be filled out by the Contractor on Contractor Quality Control Contracts as stated above, and additionally as follows:
- (1) The CQC will annotate the results of "his" review of the submittal data in the "reviewer use only" box with an appropriate action code and initials and date.
  - (2) The CQC will sign the submittal in the "Contractor's Representative" signature block.
  - (3) The CQC will make no marks in the reviewer's blocks below the double line under the Construction Representative signature block.
- i. All product literature and catalog data will be conspicuously marked to indicate the specific item; product, or option being offered for consideration by the Contractor. Failure to mark the product literature or catalog data will be cause for return of the submittal data by the Government.

SECTION 01040  
CUTTING AND PATCHING

1. CUTTING shall be done by sawing along straight lines, The amount cut out shall be the minimum necessary to accommodate the new work. No flame cutting will be permitted without written permission of the Officer in Charge of Construction.

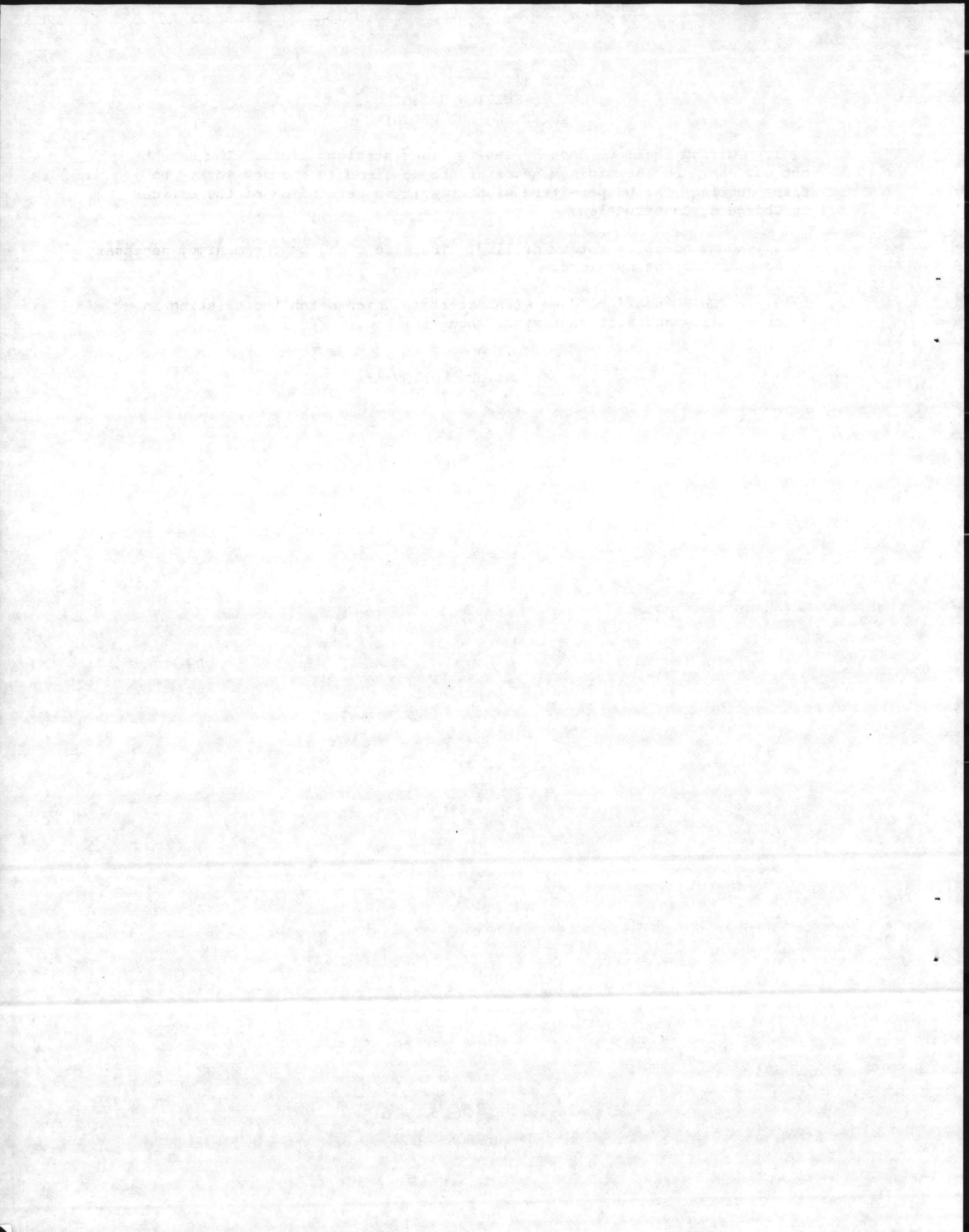
2. HOLES shall be rotary drilled. The size shall be the minimum necessary to accommodate the new work.

3. PATCHING shall be done with materials which match the existing in color, quality and surface texture when finished.

\*\*\*END OF SECTION\*\*\*

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SECTION 01080  
IDENTIFICATION SYSTEMS

PART 1 - GENERAL

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

FEDERAL SPECIFICATION (Fed. Spec.):

L-P-387A(2) Plastic Sheet, Laminated, Thermosetting (for Design Plates)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

C2-84 National Electrical Safety Code (NEC)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

70-87 National Electric Code (NEC)

1.2 APPLICATION: This section applies to all sections of this Specification except as specified otherwise in each individual section.

1.3 CODES APPLICABLE: Work and materials for identification of components shall conform to NFPA 70 and/or ANSI C2 for code requirements and to the requirements of this Specification.

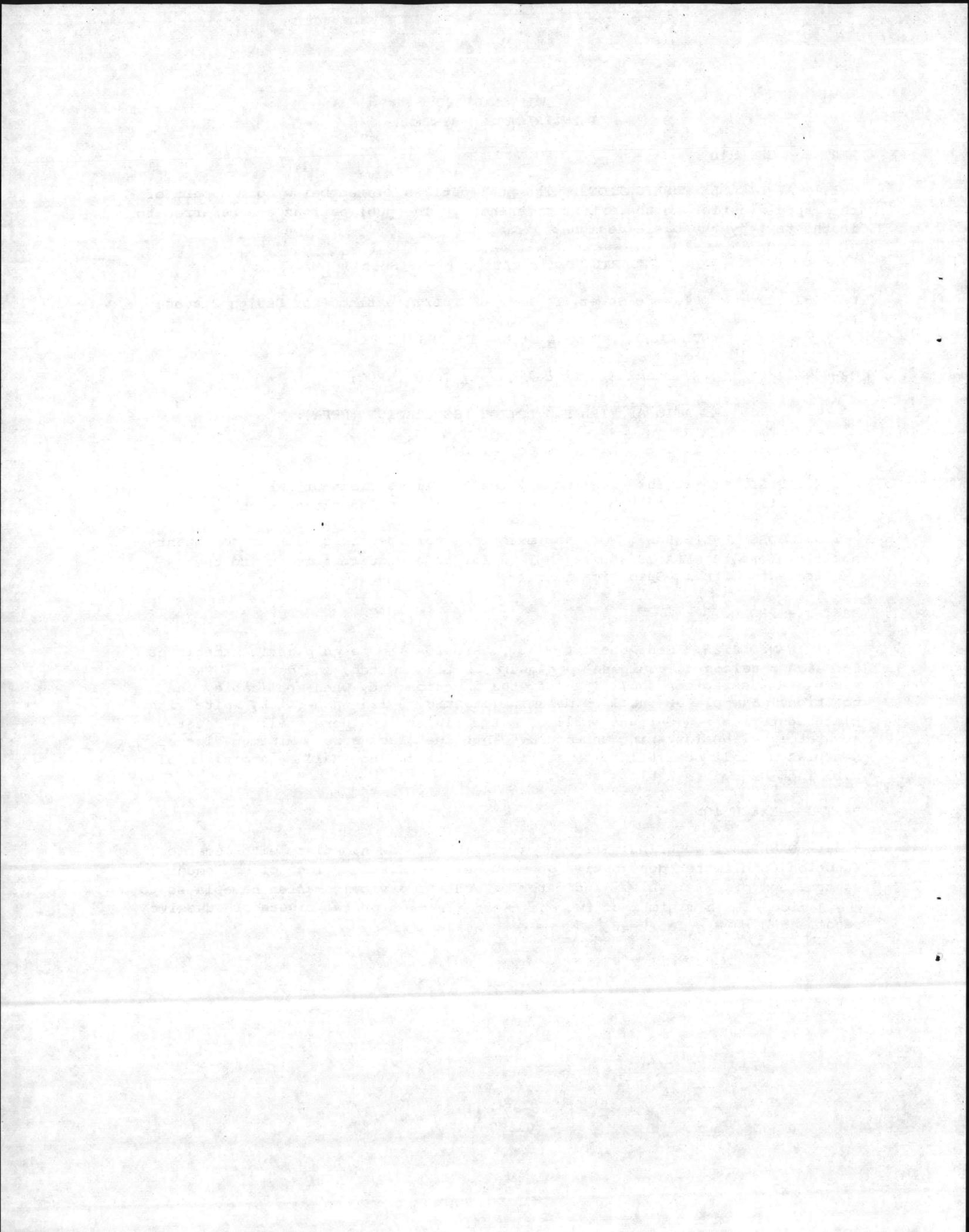
PART 2 - PRODUCTS

2.1 NAMEPLATES: Fed. Spec. L-P-387. Provide laminated plastic nameplates for each panelboard, equipment enclosure, relay, switch, and device. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125-inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the black core. Minimum size of nameplates shall be 1.0 inch by 2.5 inches. Lettering shall be a minimum of 0.25-inch high normal block style.

PART 3 - EXECUTION

3.1 NAMEPLATE MOUNTING: Provide a minimum of one nameplate with location, function, and letter designation on each new or existing piece of equipment, control box or panel valve, indicator or control device. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets or adhesive recommended by manufacturer.

\*\*\* END OF SECTION \*\*\*



SECTION 01401  
CONTRACTOR INSPECTION SYSTEM

PART 1 - GENERAL

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):

D 3666-83	Evaluation of Inspection and Testing Agencies for Bituminous Paving Materials
D 3740-80	Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
E 329-77 (R 1983)	Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction
E 543-83	Determining the Qualification of Nondestructive Testing Agencies
E 548-79	Generic Criteria for Use in Evaluation of Testing and Inspection Agencies

1.2 QUALITY CONTROL: Quality Control of this contract will be administered under the clause entitled "Inspection of Construction" of the Contract Clauses.

1.3 DEFINITIONS:

1.3.1 Factory Tests: Tests made on various products and component parts prior to shipment to the job site, including but not limited to such items as transformers, boilers, air conditioning equipment, electrical equipment, and precast concrete.

1.3.2 Field Tests: Tests or analyses made at, or in the vicinity of the job site in connection with the actual construction.

1.3.3 Product: The term "product" includes the plural thereof and means a type or a category of manufactured goods, constructions, installations, and natural and processed materials or those associated services whose characterization, classification, or functional performance determination is specified by standards.

1.3.4 Person: The term "person" means associations, companies, corporations, educational institutions, firms, government agencies at the Federal, State and local level, partnerships, and societies, as well as divisions thereof, and individuals.

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1.3.5 Testing Laboratory: The term "testing laboratory" means any "person," as defined above, whose functions include testing, analyzing, or inspecting "products," as defined above, and/or evaluating the designs or specifications of such "products" according to the requirements of applicable standards.

1.3.6 Certified Test Reports: Test reports signed by an authorized official stating that tests were performed in accordance with the test method specified, that the results reported are accurate, and that items tested either meet or fail to meet the stated minimum requirements. These test reports include those performed by Factory Mutual, Underwriters Laboratories, Inc. and others.

1.3.7 Certified Inspection Reports: Reports signed by approved inspectors attesting that the items inspected meet the specification requirements other than any exception included in the report.

1.3.8 Manufacturer's Certificate of Compliance: A certificate signed by an authorized manufacturer's official attesting that the material or equipment delivered meets the specification requirements.

1.4 SUBMITTALS: Prepare in accordance with the Contract Clauses and Section 01010, "General Paragraphs," and submit for approval. Each submittal shall be accompanied with a cover letter signed by the Contractor. Clearly mark each item proposed to be incorporated into the contract and identify in the submittals, with cross-references to the contract drawings and specifications so as to identify clearly the use for which it is intended. Identify each item submitted by reference to the specific technical paragraph which specifies the item. Likewise, identify each item on the Contractor's Submittal Transmittal form by reference to the specific technical paragraph which specifies the item. Stamp each sheet of submittal with the Contractor's certification stamp. Data submitted in a bound volume or on one sheet printed on two sides, may be stamped on the front of the first sheet only. The Contractor's certification stamp shall be worded as follows:

"It is hereby certified that the (equipment) (material) shown and marked in this submittal is that proposed to be incorporated into Contract Number \_\_\_\_\_, is in compliance with the Contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by \_\_\_\_\_ Date \_\_\_\_\_"

The person signing the certification shall be one designated in writing by the Contractor as having that authority. The signature shall be in original ink. Stamped signatures are not acceptable.

1.4.1 Submittal Status Logs: Within 15 calendar days after date of Contract Award the Contractor shall submit to the Resident Officer in Charge of Construction a copy of a submittal status log listing all submittals required in this contract. The Contractor shall maintain at the job site the submittal status log showing the status of all submittals. A sample format of an acceptable log is attached at the end of this section. While the use of this sample format is not required, any other format must contain the same information as shown on the sample. The submittal status log shall be made available for review by the Contracting Officer at all times.

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1.4.2 Shop Drawings: These submittals shall be in accordance with the requirements of the clauses entitled "Shop Drawings" of the Contract Clauses and "Proposed Material Submittals, Catalog Data, and Samples" of Section 01010, "General Paragraphs."

1.4.3 Manufacturer's Data: Catalog cuts, technical data sheets, and descriptive literature, shall be in accordance with the clause entitled "Proposed Material Submittals, Catalog Data, and Samples" of Section 01010, "General Paragraphs."

1.4.4 Samples: Prepare and submit in accordance with the clause entitled "Proposed Material Submittals, Catalog Data, and Samples" of Section 01010, "General Paragraphs."

1.4.5 Certified Test Reports: Before delivery of materials and equipment, four certified copies of the reports of all tests listed in the technical sections shall be submitted and approved. The testing shall have been performed in a laboratory meeting the requirements specified herein. The tests shall have been performed within 3 years of submittal of the reports for approval except that tests for concrete and bituminous mix designs shall have been performed within one year of submittal. Test reports shall be accompanied by the certificates from the manufacturer certifying that the material and equipment proposed to be supplied is of the same type, quality, manufacture, and make as that tested.

1.4.6 Manufacturer's Certificates of Compliance: Before delivery, manufacturer's certifications shall be furnished by the Contractor as required on items of materials and equipment indicated in the technical sections. Pre-printed certifications will not be acceptable. All certifications shall be in the original. The original of all manufacturer's certifications shall name the appropriate item of equipment or material, specification, standard, or other document specified as controlling the quality of that item and shall have attached thereto certified copies of test data upon which the certifications are based. All certificates shall be signed by the manufacturer's official authorized to sign certificates of compliance.

1.4.7 Laboratory Reports: Reports shall cite the contract requirements, the test or analysis procedures used, the actual test results, and include a statement that the item tested or analyzed conforms or fails to conform to the specification requirements. Each report shall be conspicuously stamped on the cover sheet in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements as the case may be. All test reports shall be signed by a representative of the testing laboratory authorized to sign certified test reports. The Contractor shall arrange for immediate and direct delivery of the signed original of all reports, certifications, and other documentation to the Contracting Officer.

1.4.8 Tabulation of Tests: Prior to final payment the Contractor shall obtain from each laboratory a tabulation of all tests it has performed in connection with the construction contract. Conforming, nonconforming, and retesting shall be tabulated. The tabulation(s) shall be certified as complete, and signed by the authorized representative of the laboratory, and shall be delivered to the Contracting Officer.

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1.4.9 Deviations from contract requirements are discouraged. In the event the Contractor determines that a deviation is necessary, the Contractor shall state specifically what portion varies, why a deviation is necessary, and include a complete breakdown of the difference in cost, either additive or deductive, in compliance with the Contract Clause entitled "Modification Proposals--Price Breakdown." Without such documentation, deviations will not be considered by the Contracting Officer.

1.4.10 Warrants for Deviations: If the Contractor determines that a deviation is necessary, the Contractor shall warrant:

1.4.10.1 That he has reviewed the entire contract in order to establish that the deviation, when incorporated, will be compatible with all other elements of construction.

1.4.10.2 That he shall take any action and bear any additional expense which may arise by reason of incorporating the proposed deviation, including but not limited to change in this or other elements of construction resulting from the incompatibility of the proposed deviation with any other element of construction.

## PART 2 - EXECUTION

2.1 QUALITY CONTROL REQUIREMENTS: In accordance with the clause entitled "Inspection of Construction" of the Contract Clauses, the Contractor shall inspect and test all work under the contract and maintain records of the inspections and tests; however, the Government will perform testing when so stated in the specifications. Approvals, except those required for field installations, field applications, and field tests, shall be obtained before delivery of materials and equipment to the project site. Surveillance of the inspection system will be performed by the Contracting Officer.

2.1.1 Factory Tests: Unless otherwise specified, the Contractor shall arrange for factory tests when they are required under the contract.

2.1.2 Factory Inspections by the Contractor: Unless otherwise specified, the Contractor shall arrange and perform all factory inspections specifically required in the technical sections of the specifications. These inspections shall be reported in the Daily Report to Inspector.

2.1.3 Field Inspections and Tests by the Contractor: The Contractor shall furnish all equipment, instruments, qualified personnel, and facilities necessary to inspect all work and perform all tests required by the contract. All inspections and tests performed and test results received each day shall be included in the Daily Report to Inspector.

2.1.4 Field Inspections and Tests by the Government: If deemed necessary by the Contracting Officer, field inspections and tests will be made in accordance with the clause entitled "Inspection of Construction" of the Contract Clauses.

2.1.5 Approval of Testing Laboratories: All laboratory work under this contract shall be performed by a laboratory approved by the Government, whether the laboratory is employed by the Contractor, or is owned and operated by the Contractor. The basis of approval includes the following:

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- a. Testing laboratories performing work in connection with concrete, steel, and bituminous materials shall comply with ASTM E 329 and ASTM D 3666, respectively.
- b. Testing laboratories engaged in the testing and inspection of soils and rock or performing non-destructive testing shall comply with ASTM D 3740 and ASTM E 543, respectively.
- c. Testing laboratories performing work not in connection with concrete, steel, bituminous materials, soils and non-destructive testing shall comply with ASTM E 548.

2.1.5.1 Laboratory Inspection: Prior to approval the laboratory shall submit in writing the following:

- a. Functional description of the laboratories organizational structure, operational departments, and support departments and services.
- b. A list and resume of the personnel assigned to the proposed testing, including the person charged with engineering managerial responsibility.
- c. Affidavit of compliance with the applicable ASTM publication and certification that the laboratory performs work in accordance with technical requirements as required by the contract specifications.
- d. A list of test and inspection equipment for each of the proposed test procedures and certification that the equipment is calibrated at prescribed intervals to insure the validity of the test and inspection data.
- e. A copy of any recent certification of inspection report of the laboratory by a nationally recognized agency, including a statement of corrections made based on the findings of the agency. In the absence of inspection by a nationally recognized agency, the laboratory will be subject to inspection by the Contracting Officer upon receipt of all the above information 30 days before the required approval of the testing laboratory.

2.1.6 Repeated Tests and Inspections: The Contractor shall repeat tests and inspections after each correction made to nonconforming materials and workmanship until tests and inspections indicate the materials, equipment, and workmanship conform to the contract requirements. The retesting and reinspections shall be performed at no additional cost to the Government.

2.1.7 Contractor's Daily Report: The Contractor will be required to submit a "Daily Report to Inspector" on the form furnished for this purpose. The form shall be completed daily and delivered to the Officer in Charge of Construction. Data to be reported includes data on workers by classification, the move-on and move-off of construction equipment furnished by the prime and subcontractor or furnished by the Government, and materials and equipment delivered to the site.

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## INSTRUCTIONS

1. This form may be used by the Contractor for listing all material submittals that require action by either the Contractor or the Government.
2. Columns (a) through (e) should be completed by the Contractor and must include all submissions that are required by the specifications.
3. As submittals are received and processed, the remaining columns are to be completed by the Contractor.
4. In column (f) for those items requiring ROICC action (action code "D"), THE REASON FOR FORWARDING TO THE ROICC should be entered in the column (1), the remarks column, e.g., Government approval required; waiver requested because of variance, substitution, etc.
5. Column (j) is completed when material or equipment is delivered to the project. Column (k) is completed only after verification that the delivered item is that represented by the approved submittal.

ACTION CODE: To be used when completing columns (f) and (h)

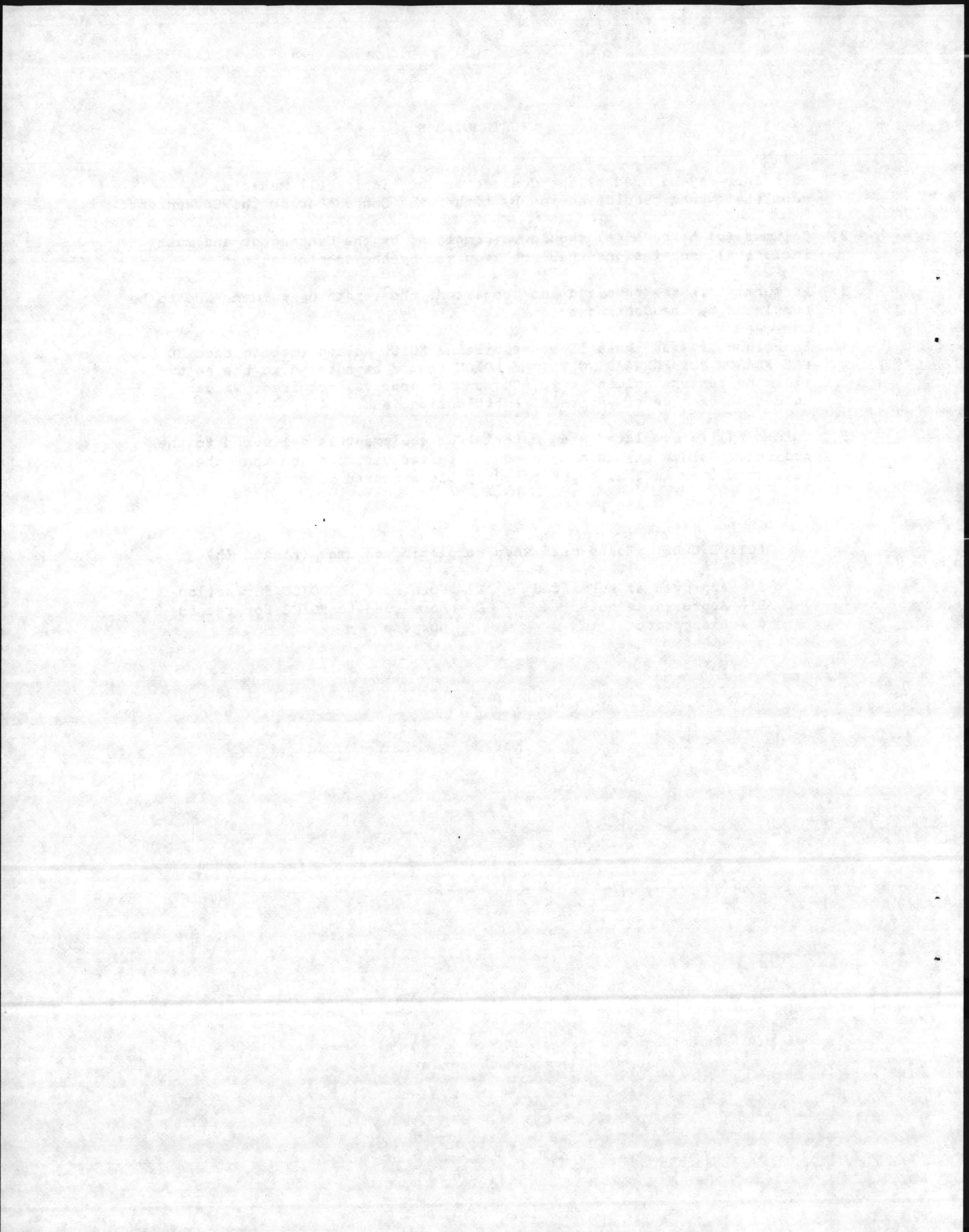
A - Approved as submitted

B - Approved as noted

C - Disapproved

D - Forwarded to ROICC for action

E - Forwarded to ROICC for record  
purpose



SECTION 01560.1  
ENVIRONMENTAL PROTECTION

PART 1. GENERAL

1.1 ENVIRONMENTAL PROTECTION PLAN: The Contractor may be responsible for the preparation and submission of an Environmental Protection Plan. After the contract is awarded, but prior to the commencement of the work, the Contractor shall meet with the Contracting Officer, or his representative, and discuss the proposed Environmental Protection Plan. The meeting shall develop mutual understanding relative to details of environmental protection, including required reports and measures to be taken should the Contractor fail to provide adequate protection in an adequate and timely manner. Not more than 14 days after the meeting, the Contractor shall submit for approval his proposed Environmental Protection Plan, if so required.

1.2 GENERAL REQUIREMENTS: The Contractor shall provide and maintain environmental protection during the life of the contract as defined herein. The Contractor's operations shall comply with all Federal, State and Local regulations pertaining to water, air, solid waste, and noise pollution.

PART 2. PRODUCTS

2.1 DEFINITIONS OF POLLUTANTS:

2.1.1 Non-Hazardous Wastes: Solid or liquid substances that are to be discarded by the Contractor and that normally do not constitute a hazard to man or to the environment. This includes, but is not limited to, paper, metal (other than toxic metals such as lead and mercury), masonry, wood, brick, stone, asphaltic concrete, plastics, rubber, rubbish and concrete.

2.1.2 Hazardous Wastes: Solid and liquid substances that are to be discarded by the Contractor and that constitute a significant active or potential hazard to man and/or to the remainder of the environment. This includes, but is not limited to asbestos, glass, lead, mercury, pesticides, herbicides, other toxic chemicals and waste, liquid petroleum products, human excrement, garbage, sediment and radioactive materials.

2.1.3 Protection of Natural Resources: It is intended that the natural resources within the limits of permanent work performed under this contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. The Contractor shall confine his construction activities to areas defined by the work schedule, plans, and specifications.

PART 3. EXECUTION

3.1 CONTROL AND DISPOSAL OF HAZARDOUS AND NON-HAZARDOUS WASTES:

3.1.1 Non-hazardous wastes, except rubble, shall be picked up and disposed of daily or placed in containers which are emptied on a weekly schedule. All handling and disposal shall be so conducted as to prevent contamination of the site and other areas. The Contractor shall transport all such waste off the Base, unless he desires to use the Base Sanitary Landfill or rubble disposal areas.

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3.1.2 If transporting any material off Government property, the Contractor shall provide the Contracting Officer a copy of State and/or local permit which reflects the responsible agency's approval of the disposal area and proposed waste disposal methods.

3.1.3 Rubble such as masonry, stone, concrete without reinforcing steel, and brick may be deposited as directed on the Base. Upon completion, the work and disposal area shall be left clean and natural looking. All signs of temporary construction and activities incidental to construction of the required permanent work in place shall be obliterated.

3.1.4 Optional use of Base Landfill shall require compliance with Landfill rules. Such rules do not allow accepting recyclable metals nor reusable wood or lumber over six feet in length.

### 3.2 HAZARDOUS WASTES:

3.2.1 Garbage Disposal: The Contractor shall transport any garbage to the Base Sanitary Landfill. However, the preparation, cooking and disposing of food are strictly prohibited on the project site.

3.2.2 Liquid wastes shall be stored in corrosion-resistant containers, removed from the project site, and disposed of not less frequently than monthly unless directed otherwise. Disposal of liquid waste shall be in accordance with Federal, State and Local regulations. Fueling and lubricating of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spills and evaporation. For oil and hazardous material spills which may be large enough to violate Federal, State and Local regulations, the Contracting Officer shall be notified immediately. The Base Sanitary Landfill will not accept liquid wastes nor empty drums.

3.2.3 Asbestos disposal in the Base Sanitary Landfill will be mandatory when friable asbestos is encountered. If such asbestos is encountered, provisions for handling or disposal shall comply with the applicable section of this specification; if not specified, such requirements shall be as directed.

\*\*\*END OF SECTION\*\*\*

SECTION 01730  
OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

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

DEFENSE LOGISTICS AGENCY HANDBOOK:

H 4-1 Federal Supply Code for Manufacturers; United States and Canada - Name to Code, June 1982

1.2 CONTRACTOR RESPONSIBILITY: Provide the manufacturers' information specified herein for the components, assemblies, subassemblies, attachments, and accessories whether the item is assembled at the site from separately purchased items or is purchased as a factory-fabricated unit. Submitted information shall pertain to the equipment and systems installed in this construction contract. Submittals containing information on equipment and systems not installed as a part of this contract will be considered incomplete.

PART 2 - PRODUCTS

2.1 SUBMITTALS:

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

- a. Safety Precautions: List personnel hazards and equipment safety precautions for all operating conditions.
- b. Operator Prestart: Include requirements to set up and prepare each system for use.
- c. Startup, Shutdown, and Postshutdown Procedures: Include a control sequence for each phase of operation. Note required startup precautions.
- d. Normal Operations: Include control diagrams with data to explain operation and control of systems and specific equipments.
- e. Emergency Operations: Include emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or any contingency. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.
- f. Operator Service Requirements: Include instructions for services to be performed by the operator such as lubrication, adjustments, and inspection.

2.1.2 Preventive Maintenance: Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair.

2.1.2.1 Lubrication Instructions (Other Than Services Performed by the Operator): Include:

- a. A table showing recommended lubricants for specific temperature ranges and applications;
- b. Chart(s) with schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities; and
- c. A lubrication schedule showing service interval frequency.

2.1.2.2 Preventive Maintenance Plan and Schedule: Include manufacturer's schedule for routine preventive maintenance, inspections, and adjustments required to ensure proper and economical operation and to minimize corrective maintenance and repair.

2.1.3 Corrective Maintenance: Include manufacturer's recommendations on procedures and instructions for correcting problems and making repairs as follows:

2.1.3.1 Troubleshooting Guides and Diagnostic Techniques: Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Indicate clearly why the checkout is performed and what conditions are to be sought. Include tests or inspections and test equipment required to determine if parts and equipment may be reused or must be replaced.

2.1.3.2 Maintenance and Repair Procedures: Include instructions and list tools required to restore equipment to proper operating standards.

2.1.3.3 Removal and Replacement Instructions: Include step-by-step procedures and list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Instructions should include a combination of text and illustrations.

2.1.3.4 Spare Parts and Supply Lists: Include lists of parts and supplies required for maintenance and repair to ensure continued operation without unreasonable delays. Special consideration is required for facilities at remote locations.

2.1.4 Appendices: Provide information not specified in the preceding paragraphs. Include the following:

2.1.4.1 Parts Identification: Provide identification and coverage for the parts of components, assemblies, subassemblies, and accessories of the end item subjected to replacement. Include special hardware requirements (e.g., high-strength bolts and nuts). Identify parts by make, model, serial number, and source of supply to allow reordering without further identification.

Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number which will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies with individual parts identified to the assembly.

- a. **Manufacturer's Standard Commercial Practice:** The parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as a master parts catalog, in accordance with the manufacturer's standard commercial practice.
- b. **Other Than Manufacturer's Standard Commercial Practice:** End item manufacturer may add a cross-reference to implement components' assemblies/parts requirements when implementation in manual form varies drastically from the style, format, and method of manufacturer's standard commercial practice. Use the following format:

<u>End Item Manufacturer's Alphanumeric Sequence</u>	<u>Actual Manufacturer's Name and/or FSCM* From H 4-1</u>	<u>Actual Manufacturer Part No.</u>
100001	John Doe & Co. 00000	2000002

\* Federal Supply Code for Manufacturers

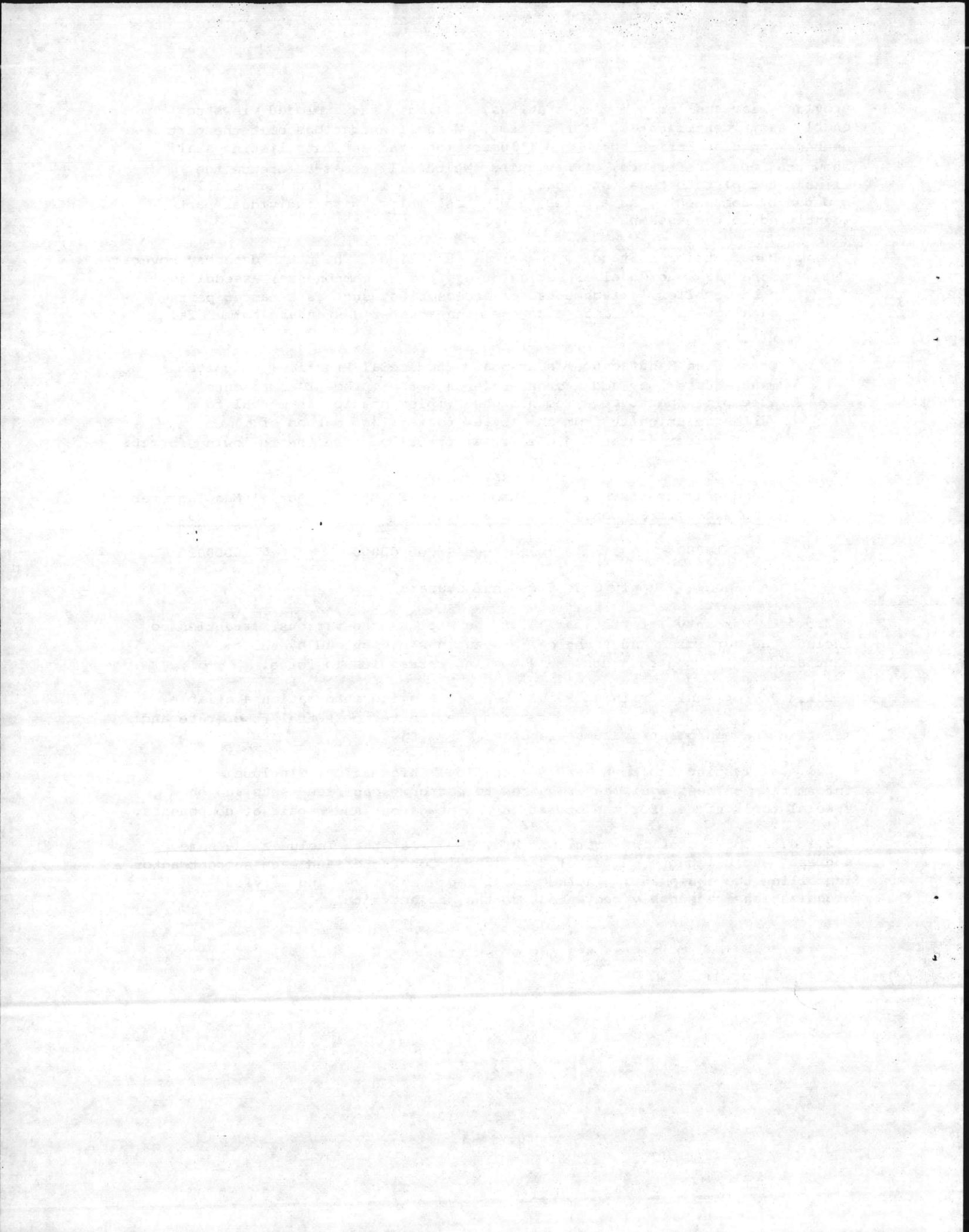
2.1.4.2 **Warranty Information:** List and explain the various warranties to include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force.

2.1.4.3 **Personnel Training Requirements:** Provide information available from the manufacturers to use in training designated personnel to operate and maintain the equipment/systems properly.

2.1.4.4 **Testing Equipment and Special Tool Information:** Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

2.1.4.5 **Contractor Information:** Provide a list that includes the name, address, and telephone number of the general Contractor and each subcontractor installing the equipment. Include local representatives and service organizations reasonably convenient to the project site.

\*\*\* END OF SECTION \*\*\*



SECTION 13400  
INSTRUMENTATION AND CONTROLS

PART 1 - GENERAL

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

MILITARY SPECIFICATIONS (Mil. Spec.):

MIL-C-18480B Coating Compound, Bituminous, Solvent, Coal Tar Base

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

C80.1-83 Specification for Rigid Steel Conduit, Zinc-Coated

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):

B 1-81 Hard-Drawn Copper Wire

B 8-81 Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA):

ICS1-83(85) General Standards for Industrial Control and Systems

ICS2-83(84) Standards for Industrial Control Devices, Controllers and Assemblies

ICS4-83 Terminal Blocks for Industrial Control Equipment and Systems

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

70-87 National Electrical Code (NEC)

UNDERWRITERS LABORATORIES, INC. (UL):

50-80(85) Cabinets and Boxes

486A-80(86) Wire Connectors and Soldering Lugs for Use with Copper Conductors

486C-83(85) Splicing Wire Connectors

510-82 Insulating Tape

514A-83 Metallic Outlet Boxes

514B-82(83) Fittings for Conduit and Outlet Boxes

698-85 Control Equipment (ANSI/UL 698)

886-85 Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations

1242-83 Intermediate Metal Conduit

1.2 NAMEPLATES and other identification are specified in Section 01080, "Identification Systems."

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT: All materials, equipment, and devices shall, as a minimum, meet the requirements of UL where UL standards are established for those items, and the requirements of NFPA 70. All items shall be new unless specified or indicated otherwise. Where two units of the same class of equipment are required, these units shall be products of a single manufacturer; however, the component parts of the system need not be the products of a single manufacturer. Each major component of equipment shall have the manufacturer's name and address, and the model and serial number in a conspicuous place.

2.1.1 Water Plant Instruments and Controls (BB-190): The instrument control panel shall be approximately 72 inches wide, 84 inches high, and 18 inches deep constructed of 22 gauge sheet aluminum with a baked on enamel finish. The configuration shall be approximately as shown on Plate 1, which is included in the Section, and have access panels for maintenance of all instruments, wiring, and connections. The control panel shall be mounted on a 4-inch concrete base. The following equipment/devices shall be incorporated in the control panel and displayed:

- a. 1 service pump automatic program controller (pressure type)
- b. 1 service water indicating/totalizer, and recording flow meter
- c. 1 filter pump automatic program controller (differential pressure range 0-1200 GPM)
- d. 1 elevated tank water depth indicating and recording receiver
- e. 1 reservoir water depth indicating and recording receiver
- f. 1 ~~well pump and aerator blower automatic controller~~
- g. 1 detention tank water depth indicating and recording receiver
- h. 1 raw water indicating, totalizing, and recording flow meter range 0-600 GPM ← 0-1000 g.p.m.
- i. 3 service pump H-O-A switches
- j. 6 filter pump H-O-A switches
- k. 5 well pump H-O-A switches
- l. 1 blower motor H-O-A switches
- m. 1 lime pump H-O-A switches

2.1.1.1 The panel shall contain all switches, indicators, relays, horns, and all other equipment as necessary to provide a fully functional control system as specified.

2.1.1.2 Indicators: Indicator lamps shall be incandescent with colored lens cap as indicated. They shall have a screw or plug in base to facilitate easy replacement. Provide legend plates with wording as indicated on the drawings.

2.1.1.3 Pushbuttons: Provide momentary push buttons with voltage and ampere ratings, and contact arrangements suitable for the intended use. Contacts shall be rated in accordance with NEMA ICS 2.125. Provide legend plates with wording as indicated on the drawings.

2.1.1.4 Multi-Position Rotary Switches: Provide multi-position rotary switches with voltage and ampere ratings, and contact arrangements suitable for the intended use. Contacts shall be non-shorting and rated in accordance with NEMA ICS 2.125. Provide legend plates with wording as indicated on the drawings.

2.1.1.5 Alarm Horn: Provide an alarm horn or buzzer mounted to the front of the cabinet. It shall be rated at 90-100 dB SPL at 4 feet on axis with an output frequency between 1000 and 2000 hz. Provide a legend plate with wording as indicated on the drawing.

2.1.1.6 Relays: Provide new relays as indicated and necessary. Contacts shall be rated for 115 VAC at 1A. Relays shall have a minimum of two sets of silver-cadmium, Form C contacts, protected by a dustproof enclosure. Life span rating shall be one million operations. Operating time shall be 80 milliseconds or less, with a release time of 40 milliseconds or less. Relay coils shall be rated for operation as required and provided with transients suppression which limits transients to nondamaging levels.

2.1.1.7 Programmable Controller (PC): The controller shall be microprocessor based and programmed via relay ladder logic diagrams. All control functions as indicated in this specification section and on the drawings shall be implemented wholly within the controller. Chassis wired logic is not acceptable. Processor, memory, battery back-up, power supply, and additional associated electronics, wiring, and mechanical components shall be contained within the PC enclosure.

2.1.1.7.1 Memory: The memory shall be read/write magnetic core, semi-conductor (MOS) with battery back up, or non-volatile Random Access Memory (RAM). The memory shall be programmed by adding, deleting, or altering data without removing the memory from the PC and while the PC is operating the system. A hardware key switch shall be provided to prevent unauthorized program changes. Memory shall be sized for all control and monitoring functions plus fifty percent spare capacity.

2.1.1.7.2 Battery Backup (Required for MOS Memory): Provide replaceable battery which shall supply power necessary to maintain the memory for a minimum of 30 days when AC power is not available. The controller shall monitor the charge of the battery and indicate with a lamp that the battery has sufficient charge to maintain the memory.

2.1.1.7.3 Power Supply: Provide a power supply for the memory, I/O modules, and processor. Power supply shall operate on 120 V AC. Provide circuitry that limits the output current and protects both the load and power supply.

2.1.1.7.4 Programming Features: Programming the controller shall be accomplished using ladder relay logic. At the Contractors option, high-level language may be utilized in addition to ladder relay logic programming. As a minimum, the following programming features shall be provided for programming the controller: normally open contacts; normally closed contacts; coils; timers; counters; addition; subtraction; multiplication; division. The number of times each of these features can be used shall be limited only by the amount of memory available.

2.1.1.7.5 Programming Unit: Provide a portable programmer unit with ~~CRT~~ or LCD display which shall be utilized to program the controller and to trouble shoot the control system. Provide the necessary interfacing hardware and software to allow the programming unit to be operated at its highest possible level. As a minimum, the programming unit shall graphically display, in real time, powerflow through any network or group of ladders selected by the operator; to graphically show the status of any ladder element; to monitor, in real time, the numerical content of any register, or timer or counter element; to edit any element while the controller is executing the program (i.e., programming on the fly).

2.1.1.7.6 Discrete Input/Output Modules: Provide discrete input/output modules as necessary to implement all inputs and outputs shown on the drawings. Optical isolation shall be incorporated to separate the programmable controller circuit from the field connections. Modules shall be of the plug-in type and shall not require removal of power and wiring from either field devices or processor. Provide modules of the proper input and output levels. For each type of input and output module provided, provide a minimum of four implemented spare discrete inputs or outputs of that type. The total number of spares shall not be less than that indicated on the drawings. Each discrete input and output shall have a status indicating LED.

2.1.1.7.7 Analog Input Module (AIM): The AIM shall scan each connected analog input one at a time, perform A/D conversion, and provide the digital result to the processor. Minimum resolution shall be 1 in 1024 and linearity shall be .08% or better. Accuracy shall be .30% or better. A minimum of two spare analog inputs shall be provided.

2.1.1.8 Elevated Tank Water Depth Metering: The Contractor shall provide an elevated tank water depth metering system consisting of a level transmitter, existing telemetry system, and receiver. The equipment shall be designed to measure and record the water depth in the elevated tank within an accuracy of 3 inches at all times. The equipment shall operate on 120 volts, 60 hertz, single phase. Transmitter shall be housed in a suitable metal wall mounted, moisture proof case with thermostatic controlled heater and shall incorporate a suppression head of 98 feet and an operating range of 25 feet. The transmitter shall send out a 4-20 milliamp signal over an existing telephone line. The topworks cover and base shall be constructed of die-cast low-copper aluminum alloy finished with blue textured vinyl paint. The enclosure classification shall meet the requirements of IP65 (IEC 529) and provide the environmental protection of NEMA Type 4 enclosure including an electric heating device and thermostat to prevent freezing. Heating devices using a light bulb will not be acceptable.

2.1.1.8.1 Receiver for the elevator tank, service water, reservoir, detention tank and raw water shall be circular chart type and shall be scaled and ranged for each application.

2.1.1.9 Raw water and service water recorders shall be provided with 5 digit totalizers. Detention tank, reservoir, and elevated tank recorders, *Raw flow, Service flow* shall provide 4-20 ma linear outputs to associated programmers/controllers.

2.1.1.10 Recorders shall be synchronous chart drive assemblies with a chart speed for 24 hour, ~~7 day~~ recording and a solid state servo balance system meeting the following requirements: AMB TEMP 40-120 degrees Fahrenheit; AMB HUM 5-90%; AMB VIBR .05-60 cps; MECH SHOCK .5g @ 30 ms duration; Power 110-125 VAC; inference (stray) rejection normal - 20 times span, common 30 volts magnetic field: 0.5 Oersted, 39.8 amp/meter; accuracy +/- 1% of span; reproducibility - 0.5% of span; dead band 0.5% of span max.; inputs 4-20 ma; disposable fiber tip pens on 55 pen arms; 10.34 inch diameter, 4-inch calibrated width charts; package of 100 charts shall be supplied with each instrument.

2.1.1.11 Differential pressure sensors/transmitters shall be two-wire type capable of measuring ranges of 0-25-inches H<sub>2</sub>O to 0-400 inches H<sub>2</sub>O with linear and square root output conformity available in the same electronics module; utilize pressure and temperature on-line compensation; AMB TEMP 40-200 degrees Fahrenheit operative limits; accuracy of +/- 1% of calibrated span or upper range value, whichever is greater; output 4-20 ma; RFI protection - negligible effect; materials - process barrier diaphragms 316LSS, process head-carbon steel, electronics housing - NEMA 4 and NEMA 7. Carbon steel three-valve manifolds shall be supplied with transmitters. Transmitter shall be capable of providing elevated zero for elevated tank applicators. Calibration and transmitter configuration shall be accomplished via a field communication which can be connected at any point on two-wire loop.

2.1.2 Sewage Plant Digester Temperature Controls: The following equipment shall be provided and installed at the sewage treatments plants as indicated:

- a. Building 22: 6 RTD's (temperature probes)  
6 Process Controllers  
1 Multipoint Electronic Digital Strip Chart Recorders
- b. Building TT-35: 2 RTD's (temperature probes)  
2 Process Controllers  
2 Circular Chart Recorders  
2 Temperature Probe Wells
- c. Building TC-645: 2 Circular Chart Recorders
- d. Building STC-567: 1 RTD (temperature probe)  
1 Process Controller
- e. Building STC-648: 1 RTD (temperature probe)  
1 Process Controller

2.1.2.1 Resistor Temperature Detectors (RTD) shall have a range of minus 30 to plus 500 degrees F with an interchangeability of plus or minus 0.1 percent at the reference temperature. RTD's shall be encapsulated in epoxy, series 300 stainless steel, or anodized aluminum.

2.1.2.2 Thermowells shall be series 300 stainless steel for use in sewage digestors and corrosive environment.

2.1.2.3 Temperature Controllers shall be highly visible LCD Digital type capable of receiving input from the RTD and providing output to the recorder. Controller shall have an accuracy of +/- 0.5%, setting resolution 1 degree, minimum 1/2-inch LED display, enclosure size of approximate 4-inches by 4-inches by 4-inches, minimum input span of 15 ohms for RTD, 110-120 YAC power supply, deviation-alarm and be adjustable set point type. Controllers shall be installed where indicated and connected as shown on the sequence of operation.

2.1.2.4 Temperature Recorders shall be capable with output from controllers and meet requirements of chart recorders specified in Paragraph 2.1.1.10 of this Section except suitable for temperature control applications.

2.1.2.5 Control Relays Contacts shall be rated for the application, with a minimum of 2 sets of Form C contacts, enclosed in a dustproof enclosure. Relays shall have silver-cadmium contacts with a minimum life span rating of one million operations. Operating time shall be 20 milliseconds or less, with release time of 10 milliseconds or less. Relays shall be equipped with coil transient suppression limiting transients to non-damaging levels.

2.1.2.6 Multipoint Strip Chart Recorder: Provide one multipoint strip chart recorder in Building 22 for reporting and recording digester temperatures. The recorder shall be a high-speed multichannel (30 min), microprocessor-based recorder that prints a 10-inch calibrated width chart and have four (4) data presentation formats, and six-color printing. The recorder shall have alarm flexibility that provides keystroke assignments of alarms to each channel, mixed input capability, digital displays that show channel number, process variable value, engineering units, and provide operator prompting.

2.1.2.6.1 Reporting Formats: The recorder shall have a minimum of four data presentation formats: tabular, trend with deviation, tabular deviation, and trend. The recorder shall use a uniformly spaced 100 division chart for recording.

## 2.2 CONDUIT AND FITTINGS:

2.2.1 Rigid Steel Conduit (Zinc-Coated): ANSI C80.1.

2.2.2 Intermediate Metal Conduit (IMC): UL 1242, zinc-coated steel only.

2.2.3 Fittings for Metal Conduit: UL 514B. All ferrous fittings shall be cadmium- or zinc-coated in accordance with UL 514B.

2.2.3.1 Fittings for rigid metal conduit and IMC shall be threaded type. Split couplings are not acceptable.

2.2.3.2 Fittings for use in Hazardous Locations: UL 886.

2.3 OUTLET BOXES AND COVERS: UL 514A, cadmium- or zinc-coated if of ferrous metal.

2.3.1 Outlet Boxes and Covers in Hazardous Locations: UL 886.

2.4 CABINETS, JUNCTION BOXES, AND PULL BOXES (WITH VOLUME GREATER THAN 100 CUBIC INCHES): UL 50, hot-dip zinc-coated if of sheet steel.

2.4.1 Cabinets, Junction Boxes and Pull Boxes in Hazardous Locations: UL 886.

2.5 WIRES AND CABLES shall meet the applicable requirements of NFPA 70 and UL for the type of insulation, jacket, and conductor specified or indicated. Wires and cables manufactured more than 12 months prior to date of delivery to the site shall not be used.

2.5.1 Conductors: Conductors No. 10 AWG and smaller shall be solid, and those No. 8 AWG and larger shall be stranded. Unless indicated otherwise, conductor sizes shown are based on copper. All conductors shall be copper.

2.5.2 Minimum Conductor Sizes: Minimum size for branch circuits shall be No. 12 AWG; for Class 1 remote-control and signal circuits, No. 14 AWG; and for Class 2 low-energy remote-control and signal circuits, No. 16 AWG.

2.5.3 Color Coding: Provide for all service, feeder, branch, control, and signaling circuit conductors. Color shall be green for grounding conductors, and white for neutrals, except where neutrals of more than one system are installed in same raceway or box, the other neutral shall be white with a colored (not green) stripe. The color of the ungrounded conductors in different voltage systems shall be as follows:

- a. 120/208 volt, 3-phase: Phase A - black  
Phase B - red  
Phase C - blue
- b. 120/240 volt, single phase: red and black.
- c. On a 3-phase, 4-wire delta system, the high leg shall be orange as required by NFPA 70.

2.5.4 Insulation: Unless specified or indicated otherwise, or required to be otherwise by NFPA 70, all power and lighting wires shall be 600-volt, Type THW, THWN, XHHW, or RHW, except that grounding wire may be Type TW; remote-control and signal circuits shall be Type TW, THW or TF.

2.5.5 Bonding Conductors: ASTM B 1, solid copper wire for sizes No. 8 AWG and smaller; ASTM B 8, Class B, stranded copper wire for sizes No. 6 AWG and larger.

2.6 SPLICES AND TERMINATION COMPONENTS: UL 486A for wire connectors, and UL 510 for insulating tapes. Connectors for wires No. 10 AWG and smaller shall be insulated pressure-type in accordance with UL 486A or UL 486C (twist-on splicing connector). UL-1059 for solderless terminal blocks and provide terminal blocks where indicated.

2.7 CONTROL STATIONS: UL 698; NEMA ICS1 and NEMA ICS2.

2.7.1 Pushbutton Stations: Provide with "start-stop" momentary contacts and with colored buttons, green for start, and red for stop.

2.7.2 Pilot and Indicating Lights: 120 volt, 6 watt lamp with jewel/guard assembly. Light colors shall be red for motor running and green for motor stopped (safe).

2.7.3 Terminal Blocks: NEMA ICS4.

2.8 ELECTRIC SOLENOID OPERATED PNEUMATIC (EP) VALVE: EP valves shall have three port operation: common, normally open, and normally closed. EP valves shall have an outer cast aluminum body with internal parts constructed of brass, bronze, or stainless steel. EP valves shall be rated for 30 psig when used in control system operation at 25 psig or less, or rated at 150 psig when used in control system operation from 25 to 100 psig. EPs shall be equipped with transient suppression to limit transients to non-damaging levels.

2.9 REMOTE CONTROL SETPOINT ADJUSTMENT (CPA) CONTROLLER: CPA controllers shall have a setpoint adjustment of plus or minus 10 percent of the primary sensor input span. The operating span of the CPA controller authority-submaster effect of secondary transmitter on setpoint shall be adjustable from 33 to 200 percent of primary sensor range. The controller shall have built in or external means of checking input and output signals for calibration.

2.10 ELECTRIC TO PNEUMATIC (EP) TRANSDUCERS: EP transducers shall be matched to the AO signals and have proportional output compatible with pneumatic control loops. The EP transducer shall have pressure calibration adjustments and withstand up to 150 percent of rated pressure. The pneumatic output signal shall be within 2 percent of the electric input signal.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION:

3.1.1 General Requirements: Electrical installations shall conform to the requirements of NFPA 70 and to the requirements specified herein.

3.1.2 Wiring Methods: Wiring method shall be insulated conductors installed in rigid metal conduit or IMC, except where specifically indicated or specified otherwise, or required by NFPA 70 to be installed otherwise. An insulated equipment grounding conductor shall be provided in circuits.

3.1.2.1 Rigid Metal Conduit or IMC: Where conduit is installed underground, the conduit shall be field coated with a coal tar base conforming to MIL-C-18480, 30 mils thick.

3.1.3 Conduit Installation: Unless indicated otherwise, keep conduit at least 6 inches away from parallel runs of flues and steam or hot-water pipes.

3.1.3.1 Conduit Support: Support conduit by pipe straps as indicated. Fasten by wood screws to wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; by machine screws or welded threaded studs to steel structures. Do not weld conduits or pipe straps to steel structures. The load applied to fasteners shall not exceed one-fourth of the proof test load. Fasteners attached to concrete ceiling shall be vibration and shock resistant. Holes cut to a depth of more than 1-1/2 inches in reinforced concrete beams or to a depth of more than 3/4 inch in concrete joints shall not cut the main reinforcing bars. Fill holes that are not used. Support at intervals not to exceed 10-feet and as indicated. All fasteners shall be stainless steel when installed outside.

3.1.3.2 Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with a hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of all obstructions.

3.1.4 Boxes, Outlets, and Supports: Provide boxes in the wiring or raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be of the cast-metal hub type when located in normally wet locations, when surface mounted on outside of exterior surfaces, when installed exposed up to 7 feet above interior floors and walkways, and when installed in hazardous areas. Each box shall have the volume required by NFPA 70 for the number of conductors enclosed in the box. Provide gaskets for cast-metal boxes installed in wet locations and boxes installed flush with the outside of exterior surfaces. Fasten boxes and supports with wood screws on wood, with bolts and expansion shields on concrete or brick, with toggle bolts on hollow masonry units, and with machine screws or welded studs on steel work. In open overhead spaces, cast boxes threaded to raceways need not be separately supported except where used for device support. When penetrating reinforced-concrete members, avoid cutting any reinforcing steel. All fasteners shall be stainless steel when installed outside.

3.1.4.1 Pull Boxes: Construct of not less than the minimum size required by NFPA 70 of code-gage aluminum or galvanized sheet steel, except where cast-metal boxes are required in locations specified above. Furnish boxes with screw-fastened covers. Where several conductors pass through a common pull box, tag the conductors to indicate clearly the electrical characteristics, circuit number, and designation as indicated.

3.1.5 Mounting Heights: Mount devices as indicated. Measure mounting heights of wiring devices and outlets to the center of device or outlet.

3.1.6 Conductor Identification: Provide conductor identification within each enclosure where a tap, splice, or termination is made. Provide numerical identification on each circuit conductor within each enclosure. Identification shall denote panelboard and branch circuit number for power

circuits; identification shall denote point to point connections for control circuits. For conductors No. 6 and smaller, color coding shall be by factory-applied color-impregnated insulation. For conductors No. 4 and larger, color coding shall be by plastic-coated self-sticking markers, colored nylon cable ties and plates, or heat-shrink type sleeves. Identify control circuit terminations.

3.1.7 Splices: Make splices in accessible locations. Make splices in conductors No. 10 AWG and smaller with an insulated pressure type connector. Make splices in conductors No. 8 AWG and larger with a solderless connector and cover with an insulation material equivalent to the conductor insulation.

3.1.8 Terminations: Make terminations in accessible locations as indicated.

3.1.9 Covers and Device Plates: The use of sectional type device plates will not be permitted. Plates installed in wet locations shall be gasketed.

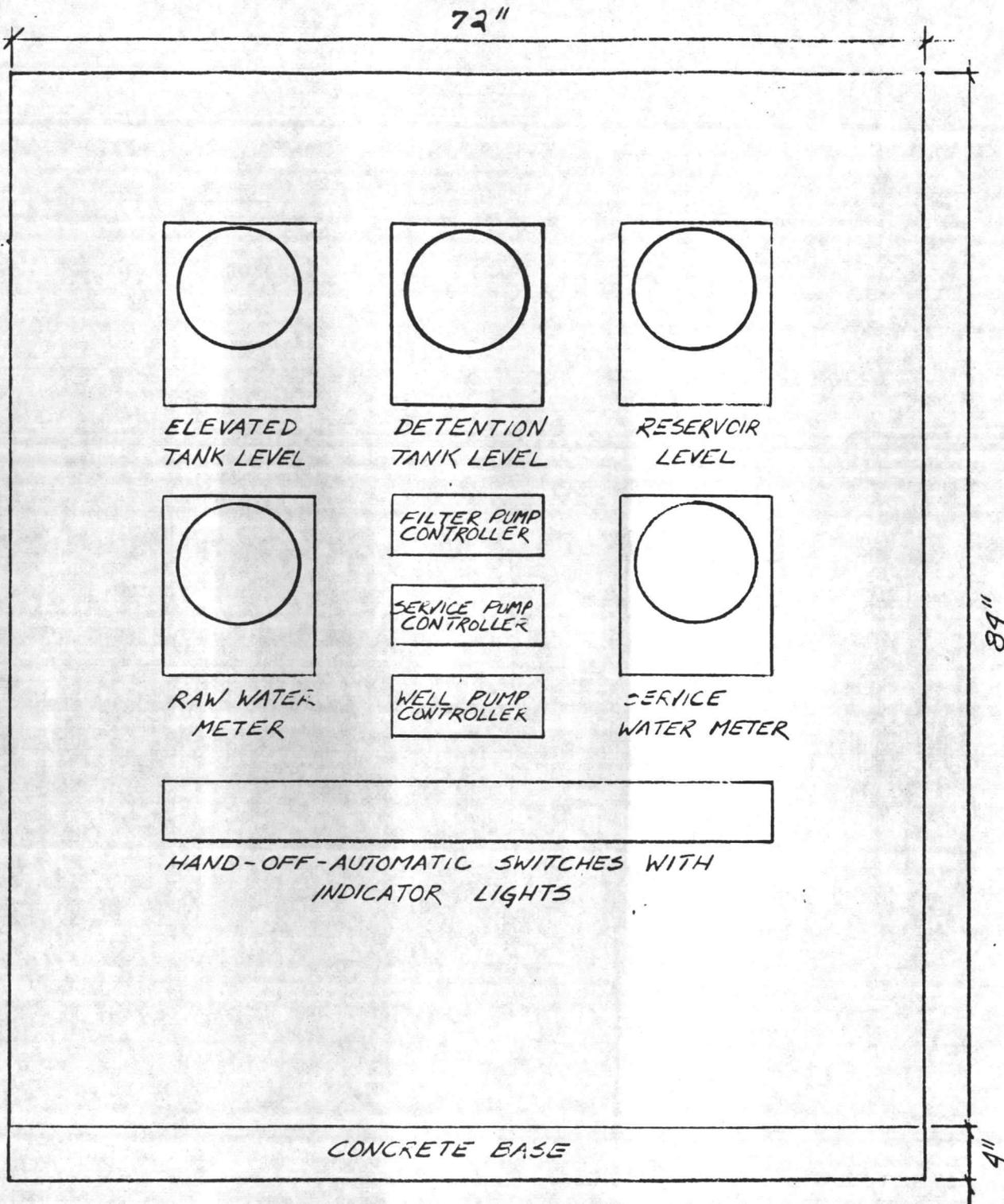
3.1.10 Grounding and Bonding: In accordance with NFPA 70. Ground all exposed non-current-carrying metallic parts of electrical equipment, metallic raceway systems. Make ground connection at the main service equipment.

3.1.10.1 Grounding Conductor: Provide an insulated, green-colored equipment grounding conductor in all circuits. This conductor shall be separate from the electrical system neutral conductor.

3.1.10.2 Resistance: The maximum resistance to ground of the grounding system shall not exceed 25 ohms under normally dry conditions. Where the resistance obtained exceeds 25 ohms, contact the Contracting Officer for further instructions.

3.1.11 Existing Equipment: The Contractor shall make connections to this equipment to make it operate as intended, including providing miscellaneous items such as plugs, receptacles, wire, cable, conduit, flexible conduit, and outlet boxes or fittings.

3.2 ACCEPTANCE TESTS: After the system has been completely installed, the Contractor shall perform a system acceptance test. The level control and alarm setpoints shall be verified to within +/- 0.2 feet. The system shall perform all control of pumps and alarms as required in the sequence of operation and indicated in the logic diagrams. All control panel functions, alarms and telemetry shall be demonstrated to operate as specified. The Contractor shall furnish all instruments connecting devices, tools, and personnel necessary to perform the testing. Failure to pass the acceptance test shall require the Contractor to make corrections or repairs and begin a new test. The system shall not be accepted by the Government unless it operates within the above guidelines. A proposed test schedule shall be submitted to the Contracting Officer at least 14 days prior to proposed testing for approval.

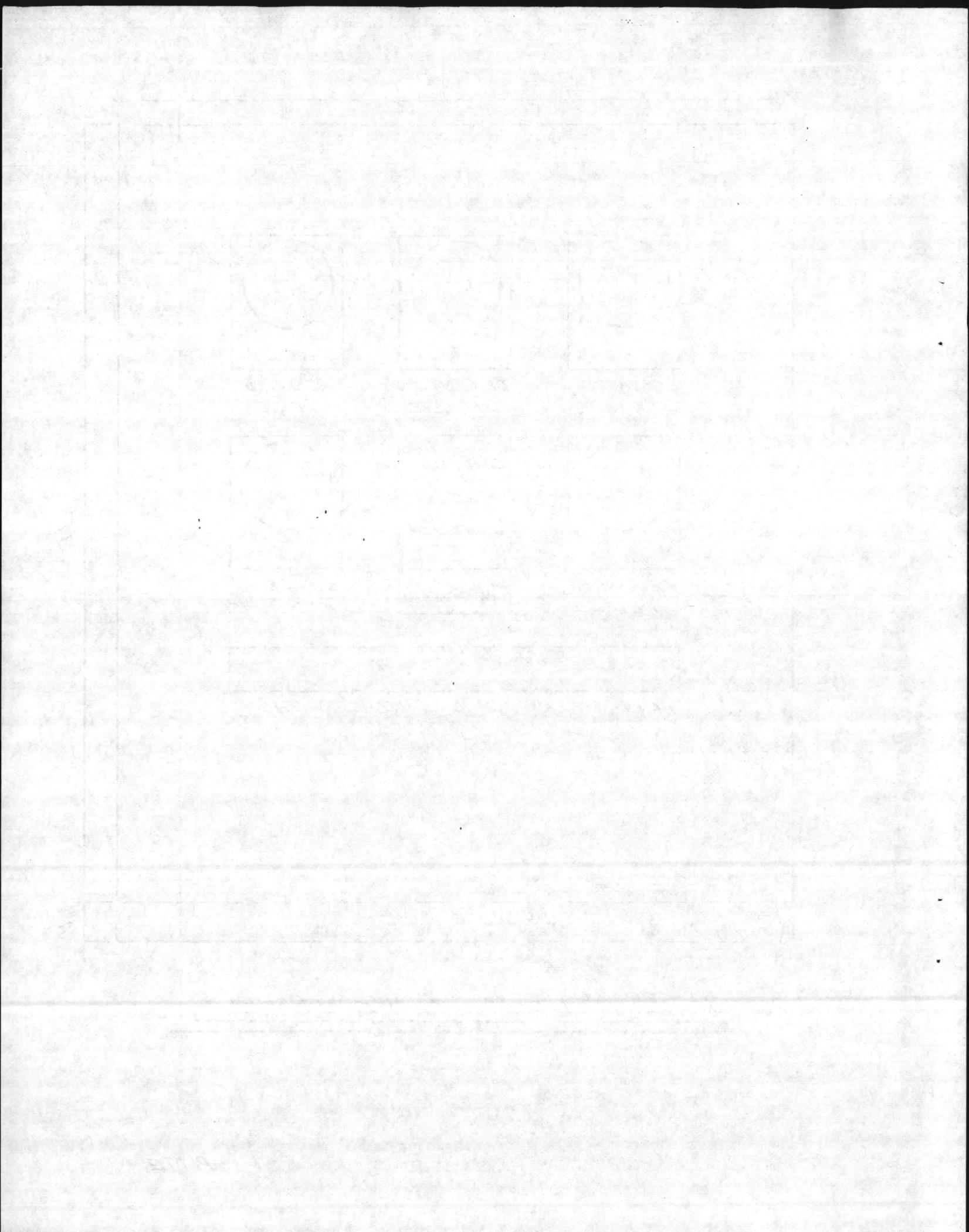


INSTRUMENT AND CONTROL PANEL

\*\*\*END OF SECTION\*\*\*

05-85-6446  
13400-11

PLATE 1



SECTION 16011  
ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

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

FEDERAL SPECIFICATION (Fed. Spec.):

L-P-387A(2) Plastic Sheet, Laminated, Thermosetting (for Design Plates)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

C2-84 National Electrical Safety Code (NEC)  
C37.20-74(R81) Switchgear Assemblies, Including Metal-Enclosed Bus

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA):

ICS 6-78(R83) Enclosures for Industrial Controls and Systems

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

70-87 National Electric Code (NEC)  
70B-83 Electrical Equipment Maintenance

1.2 APPLICATION: This section applies to all sections of Division 16, "Electrical," of this project except as specified otherwise in each individual section.

1.3 SUBMITTALS: Obtain approval before procurement, fabrication, or delivery of items to the job site. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's name, trade name, place of manufacture, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable Federal, Military, industry, and technical society publication references, and other information necessary to establish contract compliance of each item to be furnished.

1.3.1 Shop Drawings: In addition to the requirements of the Contract Clauses, shop drawings shall meet the following requirements. Drawings shall be a minimum of 8.5 inches by 11 inches in size, except as specified otherwise. Drawings shall include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to assure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. If equipment is disapproved, revise drawings to show acceptable equipment and resubmit.

1.3.2 Manufacturer's Data: Submittals for each manufactured item shall be current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts.

1.3.3 Publication Compliance: Where equipment or materials are specified to conform to industry and technical society publications of organizations such as American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and Underwriters Laboratories Inc. (UL), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. In lieu of the label or listing, submit a certificate from an approved independent testing organization, adequately equipped and competent to perform such services, stating that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's publication.

1.3.4 Certified Test Reports: Furnish as specified in Section 01401, "Contractor Inspection System".

1.3.5 Certificates of Compliance: Submit manufacturer's certifications as required on products, materials, finish, and equipment indicated in the technical sections. Certifications shall be documents prepared specifically for this contract. Preprinted certifications and copies of previously submitted documents will not be acceptable. The manufacturer's certifications shall name the appropriate products, equipment, or materials and the publication specified as controlling the quality of that item. Certification shall not contain statements to imply that the item does not meet requirements specified, such as "as good as"; "achieve the same end use and results as materials formulated in accordance with the referenced publications"; or "equal or exceed the service and performance of the specified material." Certifications shall simply state that the item conforms to the requirements specified. Certificates shall be printed on the manufacturer's letterhead and shall be signed by the manufacturer's official authorized to sign certificates of compliance.

1.4 OPERATION AND MAINTENANCE MANUAL: Submit as required for systems and equipment indicated in the technical sections. Furnish three copies, bound in hardback binders or an approved equivalent. Furnish one complete manual prior to performance of systems or equipment tests, and furnish the remaining manuals at least 60 days prior to contract completion. Inscribe the following identification on the cover: the words "OPERATION AND MAINTENANCE MANUAL," the name and location of the system, equipment, building, name of Contractor, and contract number. Include in the manual the names, addresses, and telephone numbers of each subcontractor installing the system or equipment and the local representatives for the system or equipment. Include a table of contents and assemble the manual to conform to the table of contents, with the tab sheets placed before instructions covering the subject. The instructions shall be legible and easily read, with large sheets of drawings folded in. The manual shall include:

- a. Internal and interconnecting wiring and control diagrams with data to explain detailed operation and control of the system or equipment.
- b. A control sequence describing startup, operation, and shutdown.
- c. Description of the function of each principal item of equipment.
- d. Installation and maintenance instructions.
- e. Safety precautions.
- f. Diagrams and illustrations.
- g. Testing methods.
- h. Performance data.
- i. Lubrication schedule including type, grade, temperature range, and frequency.
- j. Parts list. The list shall indicate sources of supply, recommended spare parts, and name of servicing organization.
- k. Appendix: List qualified permanent servicing organizations for support of the equipment, including addresses and certified qualifications.

1.5 POSTED OPERATING INSTRUCTIONS: Furnish approved operating instructions for systems and equipment indicated in the technical sections for use by operation and maintenance personnel. The operating instructions shall include wiring diagrams, control diagrams, and control sequence for each principal system and equipment. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions as directed. Attach or post operating instructions adjacent to each principal system and equipment including startup, proper adjustment, operating, lubrication, shutdown, safety precautions, procedure in the event of equipment failure, and other items of instruction as recommended by the manufacturer of each system or equipment. Provide weather-resistant materials or weatherproof enclosures for operating instructions exposed to the weather. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.6 INSTRUCTION TO GOVERNMENT PERSONNEL: Where indicated in the technical sections, furnish the services of competent instructors to give full instruction to Government personnel in the adjustment, operation, and maintenance of systems and equipment, including pertinent safety requirements as required. Each instructor shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Government for regular operation.

1.7 DELIVERY AND STORAGE: Handle, store, and protect equipment and materials in accordance with the manufacturer's recommendations and with the requirements of NFPA 70B, Appendix I, titled "Equipment Storage and Maintenance During Construction." Replace damaged or defective items with new items.

1.8 CATALOGED PRODUCTS/SERVICE AVAILABILITY: Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The 2-year period shall be satisfactorily completed by a product for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished. The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.9 MANUFACTURER'S RECOMMENDATIONS: Where installation procedures or any part thereof are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendations shall be cause for rejection of the equipment or material.

1.10 ELECTRICAL CHARACTERISTICS: Electrical characteristics for this project shall be as indicated. Final connections to the power distribution system at the existing panels shall be made by the Contractor as directed by the Contracting Officer.

1.11 ELECTRICAL REQUIREMENTS: As indicated.

1.12 CODES APPLICABLE: Work and materials shall conform to NFPA 70 and/or ANSI C2 for code requirements and to the requirements of this Specification.

## PART 2 - PRODUCTS

2.1 NAMEPLATES: Fed. Spec. L-P-387. Provide laminated plastic nameplates for each panelboard, equipment enclosure, relay, switch, and device. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125-inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the black core. Minimum size of nameplates shall be 1.0 inch by 2.5 inches. Lettering shall be a minimum of 0.25-inch high normal block style.

PART 3 - EXECUTION

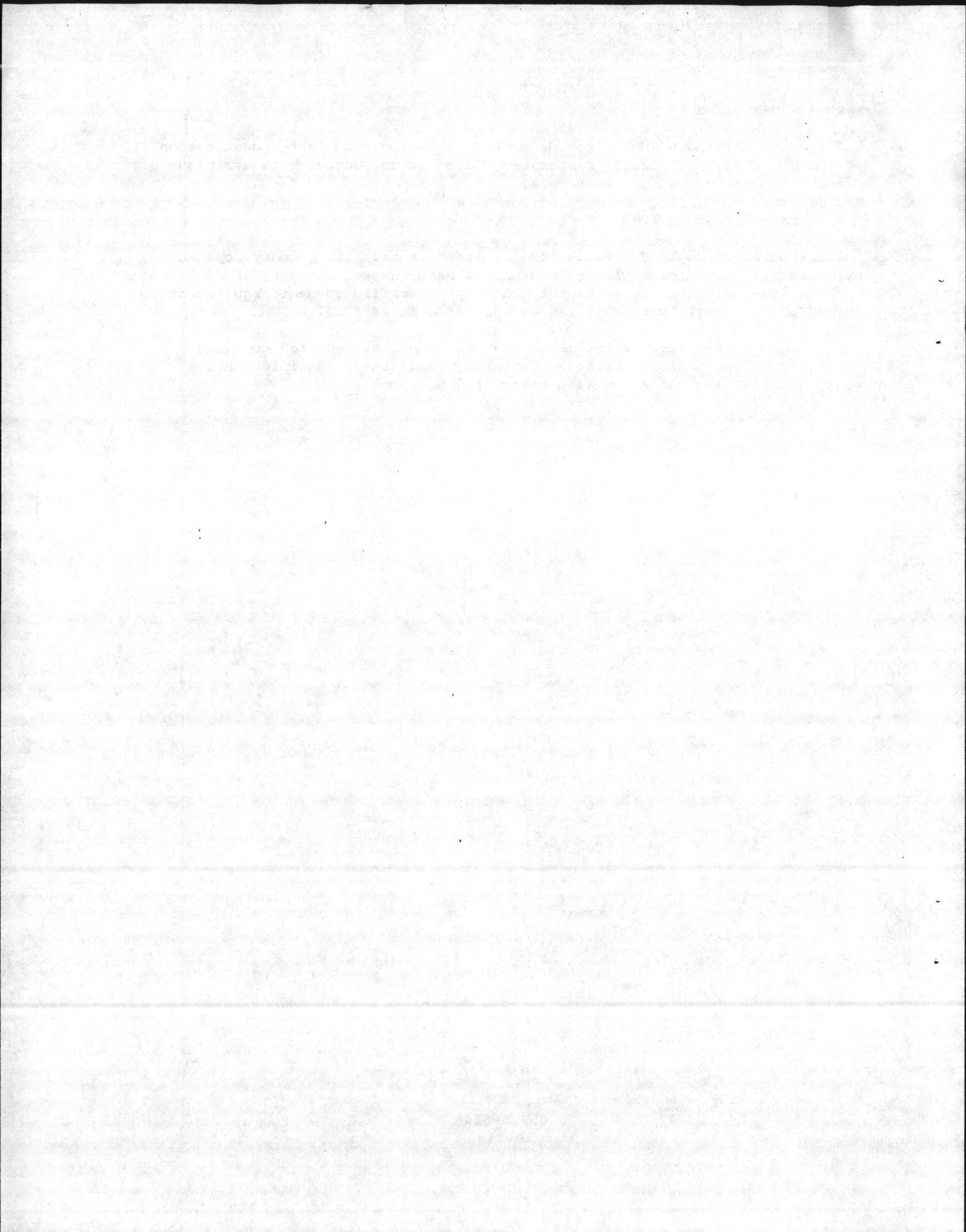
3.1 NAMEPLATE MOUNTING: Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

3.2 PAINTING OF EQUIPMENT:

3.2.1 Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.

3.2.2 Field Applied: Paint electrical equipment as required to match finish or to meet safety criteria. Painting shall be as specified in the section specifying the associated electrical equipment.

\*\*\* END OF SECTION \*\*\*



SECTION 16740  
CONTROL CABLE SYSTEM

PART 1 - GENERAL

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

C2-84 National Electrical Safety Code (NESC)  
C80.1-83 Specification for Rigid Steel Conduit, Zinc-Coated

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):

B 8-81 Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard,  
or Soft  
D 698-78 Moisture-Density Relations of Soils and Soil- Aggregate  
Mixtures Using 5.5-lb (2.49-kg) Rammer and 12-in. (305-mm) Drop  
D 1556-82 Density of Soil in Place by the Sand-Cone Method  
D 1557-78 Moisture-Density Relations of Soils and Soil- Aggregate  
Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop

NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA):

TC 2-78(81) Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80)  
TC 3-82 PVC Fittings for Use With Rigid PVC Conduit and Tubing

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

70-87 National Electrical Code (NEC)

U.S. DEPARTMENT OF AGRICULTURE, RURAL ELECTRIFICATION ADMINISTRATION (REA):

344-2(81) List of Materials Acceptable for Use on Telephone Systems of  
REA Borrowers  
345-6(78) Splicing Plastic-Insulated Cables (PC-2)  
345-26(76) Buried Plant Housings (PE-35)  
345-67(76) Filled Telephone Cables (PE-39)  
(Reprint Feb 80)  
PC-2(78) Splicing Plastic-Insulated Cables (Bulletin 345-6)  
PE-20 Plastic Insulated, Plastic-Jacketed Station Wire

UNDERWRITERS LABORATORIES INC. (UL):

467-84(85) Grounding and Bonding Equipment  
510-82 Insulating Tape  
1242-83 Intermediate Metal Conduit

1.2 GENERAL REQUIREMENTS: Section 16011, "Electrical General Requirements," applies to this section with additions and modifications specified herein. In each of the standards referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears. Interpret reference in these standards to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer.

1.2.1 Basic Requirements: The system described herein and shown on the drawings is basically the installation of Contractor furnished cables and associated components. Control cable shall be continuous between associated connections and terminations.

1.2.2 Connections to Existing Control Systems: Notify the Contracting Officer in writing at least 15 days prior to the date the connections are required; receive approval before interrupting any service. Furnish materials required to make connections into the existing systems, and perform excavating, backfilling, and other incidental labor as required.

1.2.3 Laboratory Test:

1.2.3.1 Determine soil-density relationships for compaction of backfill material in accordance with ASTM D 1557, Method D.

1.3 SUBMITTALS:

1.3.1 Manufacturer's Data: Grounding conductors, control cables, splices, terminals, pedestals, ground rods.

## PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT, GENERAL: All materials, equipment, and devices shall, as a minimum, meet the requirements of UL where UL standards are established for those items, and the requirements of NFPA 70. All items shall be new unless specified or indicated otherwise.

2.2 CONDUIT AND FITTINGS:

2.2.1 Plastic conduit for direct burial shall be PVC conforming to NEMA TC 2 (conduit) and NEMA TC 3 (fittings), Type EPC-80-PVC.

2.2.2 Rigid Steel Conduit (Zinc-Coated): ANSI C80.1.

2.2.3 Intermediate Metal Conduit (IMC): UL 1242, zinc-coated steel only.

2.2.4 Plastic Insulating Tape: UL 510.

2.3 WIRE AND CABLE:

2.3.1 Wire and cable conductor sizes are designated by American Wire Gauge (AWG) and Thousands of Circular Mills (MCM). Conductor and conduit sizes indicated are for copper conductors, unless otherwise noted. Insulated

conductors shall bear the date of manufacture imprinted on the wire insulation with other identification. Wire and cable manufactured more than 24 months before delivery to the job site shall not be used.

2.3.2 Control Cable System: Equipment and materials for control cable system shall be listed in REA Bulletin 344-2.

a. Control Cable: Cable shall be suitable for 300 volts service; for direct burial shall conform to REA Bulletin 345-67 for filled cable. Conductor size and number of pairs in each cable shall be as indicated.

b. Control Cable Splices: Provide splices conforming to REA Bulletin 345-6 for the cable type specified.

c. Control Cable: Cable for indoor shall conform to REA PE-20.

d. Pedestals: REA Bulletin 345-26. Provide pedestals of galvanized steel or fiberglass channel (H) type, stake mounted, and gray-green in color. Size pedestals for the number of pairs indicated and the cable type specified. Make splices in pedestals only. Provide grounding bus and bond to ground rod.

2.4 CONNECTORS AND TERMINALS shall be designed and approved for use with the associated conductor material, and shall provide a uniform compression over the entire contact surface. Solderless terminal lugs shall be used on all stranded conductors. For connecting aluminum to copper, connectors shall be the circumferentially compressed, metallurgically bonded type.

2.5 GROUNDING AND BONDING EQUIPMENT shall conform to UL 467. Ground rods shall be copperweld type copper clad steel with diameter adequate to permit driving to full length of the rod, but not less than 3/4-inch in diameter and 10 feet long unless otherwise indicated.

2.6 BONDING CONDUCTORS: ASTM B8, Class B, stranded insulated copper wire for size No. 6 AWG.

### PART 3 - EXECUTION

3.1 GENERAL: Underground installation shall conform to ANSI C2 and NFPA 70 except as otherwise specified or indicated.

3.1.1 Contractor Damage: The Contractor shall promptly repair any indicated utility lines or systems damaged by Contractor operations. Damage to lines or systems not indicated, which are caused by Contractor operations, shall be treated as "Changes" under the terms of the General Provisions of the contract. If the Contractor is advised in writing of the location of a nonindicated line or system, such notice shall provide that portion of the line or system with "indicated" status in determining liability for damages. In any event, the Contractor shall immediately notify the Contracting Officer of any such damage.

3.1.2 Direct Burial System: Bury cables directly in earth, except under railroad tracks, paved areas, and roadways, install cables in conduit. Slope ducts to allow drainage. Trenches in which the cables are placed shall

be excavated by hand or with mechanical trenching equipment. Provide a minimum cable cover of 24 inches below finished grade. Trenches shall be not less than 6 inches wide, and shall be in straight lines between cable markers. Bends in trenches shall have a radius of not less than 36 inches. Where two or more cables are laid parallel in the same trench, space cables laterally at least 3 inches apart. If rock is encountered, remove rock to a minimum depth of 3 inches below the cable and fill the space with sand or clean earth free from particles larger than 1/4 inch. Cables shall not be unreeled and pulled into the trench from one end. However, the cable may be unreeled on grade and lifted into position. Provide a plastic warning tape as specified herein.

3.1.2.1 Cables crossing other cables or metal piping shall be separated from the other cables or pipe by not less than 3 inches of well-tamped earth.

3.1.2.2 Cables shall be in one piece without splices between connections except where the distance exceeds the lengths in which the cable is furnished.

3.1.2.3 Bends in cables shall be not less than 10 times the outside diameter of the cable.

3.1.2.4 Horizontal slack of approximately 3 feet shall be left in the ground on each end of cable runs, on each side of connection boxes, and at all points where connections are brought above ground. Where cable is brought above ground, leave additional slack to make necessary connections.

3.1.2.5 Cable or Wire Ends shall be kept sealed at all times; i.e., during transportation, in storage and during cable placement to prevent moisture entry into the cable core. Acceptable cable end caps shall be used for this purpose.

3.1.2.6 Cables and Wires shall be carefully inspected by the Contractor during the plowing and trenching operation prior to their installation in the project to be certain that they are free from defects.

3.1.2.7 The plowshare shall be designed so that the buried cable passing through the plow shall not bind nor be bent in a radius less than ten times the outside diameter of the cable. The plowshare shall have a hinged fairlead which shall be equipped with smooth, free wheeling rollers or low friction surfaces to prevent damage to the cable or wire passing through. The plow shall be provided with a means to assure positive hold-down of the plow blade to maintain the required minimum depths. The equipment and construction methods used by the Contractor shall cause minimum displacement of the soil. The slot made in the soil by the cable plow shall be closed immediately by driving a vehicle track or wheel over the slot or by other suitable approved means.

3.1.2.8 The Contractor shall exercise particular care in the use of trenching equipment and shovels in joining trenches to the slots made by the plow to be certain that the cable and wire are not damaged.

3.1.2.9 Care is to be exercised during the plowing operation, to feed the cable or wire into the ground through the plow loose and at no tension. Equipment and construction methods shall be such as to assure compliance with this requirement. The Contractor shall furnish competent supervision at all times at the site of plowing operations to assure compliance with this requirement.

3.1.2.10 If, during the plowing operation, the plow should strike a buried object or rock that stops the equipment and necessitates removal of the plow from the ground, the plow shall be removed from the ground carefully and, if practicable, without backing the plow to avoid damage to the cable or wire. Should it be necessary to back the plow to remove it from the ground, the cable or wire shall be uncovered a sufficient distance back for inspection by the Contracting Officer to determine whether the cable or wire has been damaged.

3.1.2.11 Every instance of damaged cable or wire discovered at any time whether prior to installation in plant, occurring during construction, or discovered by test or observation subsequent to installation in plant, shall be immediately called to the attention of the Contracting Officer. The method of repair or correction of such damage shall be in accordance with the written instructions of the Contracting Officer. The Contractor shall promptly repair such damage or make such corrections in accordance with such written instructions of the Contracting Officer.

3.1.2.12 Minor damage to the outer jacket of the cable or wire observed prior to or occurring during construction shall be repaired in accordance with REA Splicing Standard PC-2.

3.1.2.13 Damage to cable or wire of greater severity than that set forth in the previous paragraph, observed prior to or during construction, shall be corrected as follows.

3.1.2.14 The damaged section of wire or cable shall be enclosed in a buried plant housing or in a buried wire or cable splice enclosure if approved by the Contracting Officer, buried to the same depth as that specified for the wire or cable. If the shield has been broken or the conductor insulation damaged, the wire or cable shall be restored to the equivalent of new condition. This may require cutting out the damaged section of wire or cable, if required by the Contracting Officer.

3.1.3 Cable Terminating: Protect terminations of cables from accidental contact, deterioration of coverings, and moisture by the use of terminating devices and materials. Make terminations by using materials and methods indicated or specified herein or as designated by the written instruction of the cable manufacturer and termination kit manufacturer. Terminations of single- and multiconductor cables shall include the securing and sealing of the sheath and insulation of the cable conductors, stress relief and grounding of cable shields of shielded cable, and grounding of neutral conductors, metallic sheaths, and armor. Adequately support cables and cable terminations to avoid any excessive strain on the termination and the conductor connection.

3.1.4 Splices for Cables: Splices in underground systems shall be made in pedestals.

3.1.5 Underground Duct Without Concrete Encasement: Conduits shall be PVC, Type EPC-80.

3.1.5.1 The top of the conduit shall be not less than 24 inches below grade, shall have a minimum slope of 3 inches in each 100 feet away from buildings and toward manholes and other necessary drainage points, and shall run in straight lines except where a change of direction is necessary. As each conduit run is completed, a testing mandrel not less than 12 inches long with a diameter 1/4 inch less than the inside diameter of the conduit shall be drawn through each conduit, after which a stiff-bristled brush shall be drawn through until the conduit is clear of earth, sand, or gravel particles. Conduit plugs shall then immediately be installed. Ensure a minimum 3-inch clearance from the conduit to each side of the trench. Grade the bottom of the trenches smooth; where rock, soft spots, or sharp-edged materials are encountered, excavate the bottom for an additional 3 inches; fill with sand or earth, free from particles that would be retained on a 1/4-inch sieve; and tamp level with the original bottom.

3.1.5.2 Under roads, paved areas, and railroad tracks, install conduits and extend at least 5 feet beyond the edges of paved areas and roads, and 12 feet beyond the rails on each side of railroad tracks. Conduits to be installed under existing paved areas may be jacked into place. Hydraulic jet method shall not be used.

3.1.5.3 Separate multiple conduits by a minimum distance of 2 inches, except that light and power conduits shall be separated from control, signal, and telephone conduits by a minimum distance of 3 inches. Stagger the joints of the conduits by rows and layers to strengthen the conduit assembly. Provide plastic duct spacers that interlock vertically and horizontally. Spacer assembly shall consist of base spacers, intermediate spacers, and top spacers to provide a completely enclosed and locked-in conduit assembly. Install spacers per manufacturer's instructions, but provide a minimum of two spacer assemblies per 10 feet of conduit assembly.

3.1.5.4 Terminate conduits in end bells.

3.1.6 Buried Utility Warning and Identification Tape: Provide detectable aluminum foil plastic-backed tape or detectable magnetic plastic tape manufactured specifically for warning and identification of buried cable and conduit. Tape shall be detectable by an electronic detection instrument. Provide tape in rolls, 2 inches minimum width, color coded for the utility involved with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be CAUTION BURIED CONTROL CABLE BELOW or similar. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material. Bury tape with the printed side up at a depth of 12 inches below the top surface of earth or the top surface of the subgrade under pavements.

### 3.1.7 Reconditioning of Surfaces:

3.1.7.1 Unpaved surfaces disturbed during the installation of duct or direct burial cable shall be restored to the original elevation and condition. Sod or topsoil shall be preserved carefully and replaced after the backfilling is completed. Replace damaged sod with sod of equal quality. Where the surface is disturbed in a newly seeded area, the disturbed surface shall be reseeded with the same quantity and formula of seed as that used in the original seeding.

3.1.7.2 Paving Repairs: Where trenches, pits, or other excavations are made in existing roadways and other areas of pavement where surface treatment of any kind exists, such surface treatment or pavement shall be restored to the same thickness and in the same kind as previously existed, except as otherwise specified, and to match and tie into the adjacent and surrounding existing surfaces in a neat and acceptable manner.

3.1.8 Cable Pulling: Test existing ducts with a mandrel and thoroughly swab out to remove foreign material before the pulling of cables. Cables shall be pulled down grade with the feed-in point at the manhole or buildings of the highest elevation. Flexible cable feeds shall be used to convey cables through the manhole opening and into the ducts. Cable lubricants shall be lubricants specifically recommended by the cable manufacturer. Cable-pulling tensions shall not exceed the maximum pulling tension recommended by the cable manufacturer. Do not exceed the specified cable bending radii when installing cable under any conditions, including turnups into switches, transformers, switchgear, switchboards, and other enclosures. Cable with tape shield shall have a bending radius not less than 12 times the overall diameter of the completed cable. Cable with wire shield shall have a bending radius not less than eight times the overall diameter of the completed cable. If basket-grip type cable-pulling devices are used to pull cable in place, cut off the section of cable under the grip before splicing and terminating.

3.1.9 Excavating, Backfilling, and Compacting: Excavate underground structures to depths indicated. If hard material is encountered, the provisions of the contract respecting an adjustment for changed conditions shall apply, subject to the requirements of notification thereunder being given. Hard material shall be defined as solid rock; firmly cemented unstratified masses; conglomerate deposits possessing the characteristics of solid rock not ordinarily removed without systematic drilling and blasting; or any boulder, masonry, or concrete (except pavement) exceeding 1/2 cubic yard in volume.

3.1.9.1 Excavated materials not required or suitable for backfill shall be wasted on the project site as directed. Provide sheeting and shoring as necessary for protection of work and safety of personnel. Remove water from excavation by pumping or other approved method.

3.1.9.2 Backfilling around structures shall consist of earth, loam, sand-clay, or sand and gravel, free from large clods of earth or stones over 1 inch in size. Backfill materials shall be placed symmetrically on all sides

in loose layers not more than 9 inches deep. Each layer shall be moistened, if necessary, and compacted with mechanical or hand tampers to 90 percent compaction.

3.1.9.3 Backfilling Trenches: Place backfill in layers not more than 6 inches thick, and compact each layer. Backfilling shall progress as rapidly as the construction, testing, and acceptance of the work permits. Backfill shall be free from roots, wood scrap material, and other vegetable matter and refuse. Compaction of backfill shall be to 90 percent of ASTM D 698 density. The first layer shall be earth or sand, free from particles that would be retained on a 1/4-inch sieve and extending not less than 3 inches above the top of the conduit or cables. The succeeding layers shall be excavated material having stones no larger than would pass through a 4-inch ring. The backfill may be moistened. The backfill shall be level with the adjacent surface, except that in sodded areas, leave a space equal to the thickness of the sod.

3.1.10 Stake-Mounted Housing: The separate steel stakes of stake-mounted housing shall be driven 12 inches in undisturbed earth, below the depth of the buried cable.

3.1.10.1 Horizontal buried slack of approximately five feet shall be provided at each end of cable run by installing the stake-mounted housing approximately five feet distance and perpendicular to the major centerline of the cable.

3.1.10.2 Provide grounding electrode and bond to grounding strap of housing.

3.1.11 Grounding: Noncurrent carrying metallic parts associated with control cable distribution system shall have a maximum resistance to solid earth ground not exceeding the following values:

Noncurrent carrying metal parts associated with distribution systems and grounds not otherwise covered - 25 ohms.

When work in addition to that indicated or specified is directed in order to obtain the specified ground resistance, the provisions of the contract covering "Changes" shall apply.

3.1.11.1 Grounding electrodes shall be cone pointed driven ground rods driven full depth plus six inches, installed when indicated to provide an earth ground of the value before stated for the particular equipment being grounded.

3.1.11.2 Grounding connections which are buried or otherwise normally inaccessible, shall be made by exothermic weld or by using a compatible mechanical connection and brazing over. Exothermic welds shall be made strictly in accordance with the weld manufacturer's written recommendations. Welds which have puffed up or which show convex surfaces, indicating improper cleaning, are not acceptable. No mechanical connector is required at exothermic weldments.

3.1.11.3 Grounding conductors shall be No. 6 AWG bare stranded copper conforming to ASTM B8.

3.1.12 Indoor Cable Installation: Install cables concealed behind ceiling or wall finish where practicable. Thread cables through holes bored on the approximate centerline of wood members; notching of end surfaces will not be permitted. Provide sleeves through concrete or masonry for threading cables. Install exposed cables parallel or at right angles to walls or structural members. Protect exposed nonmetallic sheathed cables less than 4 feet above floors from mechanical injury by installation in conduit or tubing. When cable is used in metal stud construction, insert plastic stud grommets in the studs at each point through which the cable passes.

3.2 FIELD TESTS: As an exception to requirements that may be stated elsewhere in the contract, notify the Contracting Officer in writing at least 5 working days prior to each tests. The Contractor shall provide all labor, equipment, and incidentals required for testing. All defective material and workmanship disclosed as the result of the tests given herein shall be corrected by the Contractor at no cost to the Government.

3.2.1 The Contractor and Contracting Officer shall jointly inspect full and partial reels of filled cable and wire for the presence of filling compound prior to installation. The Contracting Officer will determine the reels of cable and wire which shall be inspected to measure mutual capacitance of the cable or wire. The mutual capacitance values must be within the applicable REA specification requirements.

3.2.2 Ground Rods: Test ground rods for ground resistance value before any wire is connected. Perform ground resistance measurements in normally dry weather, not less than 48 hours after rainfall. Ground resistance shall also be measured for each piece of equipment to the ground electrode. Use a portable ground testing megger to test each ground or group of grounds. The instrument shall be equipped with a meter reading directly in ohms or fractions thereof to indicate the ground value of the ground electrode under test. Provide one copy of the ground megger manufacturer's directions, indicating the method to be used.

3.2.3 Operational Test: Measure mutual capacitance between each conductor to other conductors. Mutual capacitance values shall be within the applicable cable manufacturer's specification requirements.

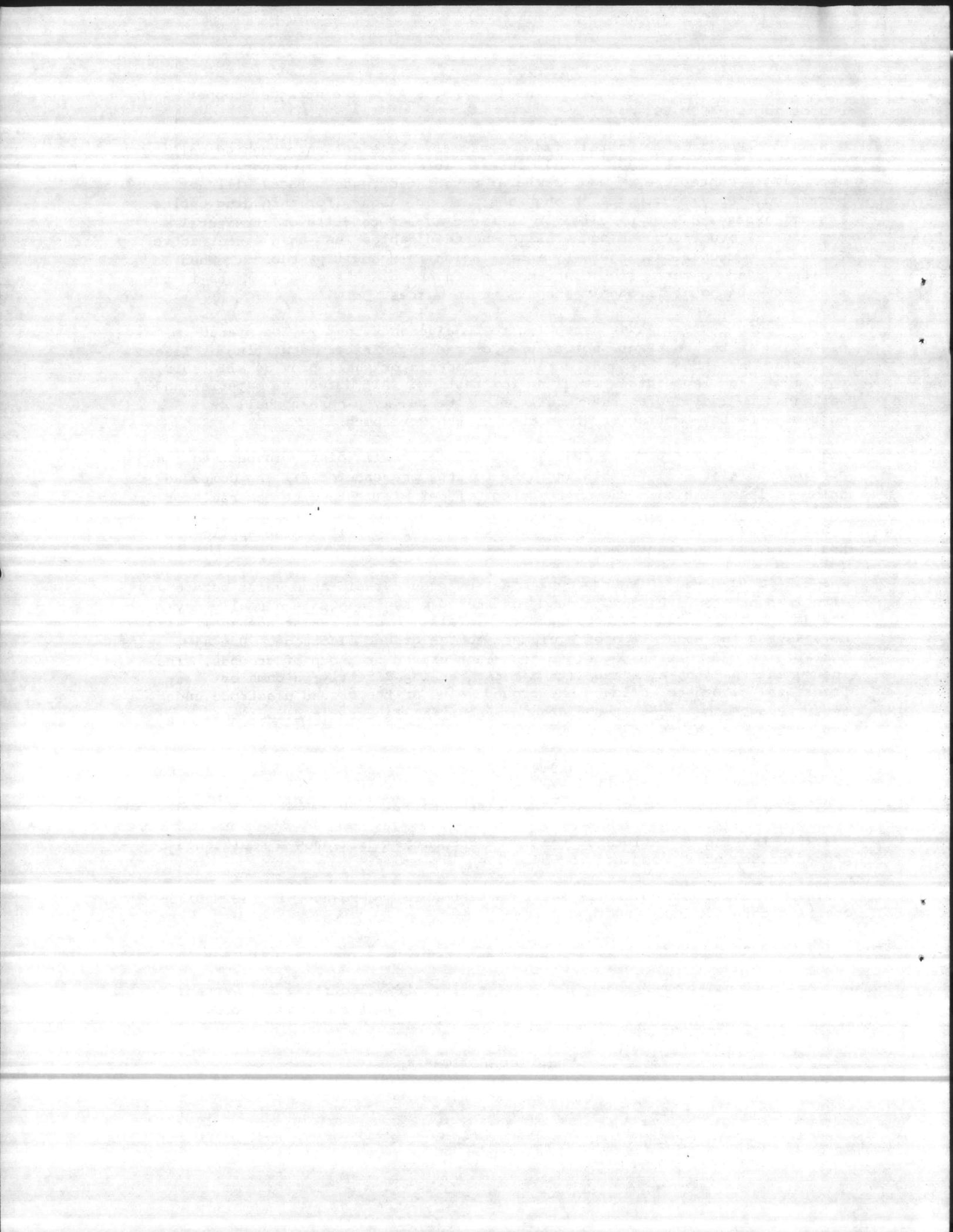
3.2.4 Insulative resistance test of a conductor shall show a resistance to ground or any other conductor or more than 1 megaohm.

3.2.5 Compaction: Backfill shall be tested in accordance with ASTM D1556 one test per lift per 2000 square feet.

3.2.6 Test Report:

- a. Grounding Electrodes and Systems: Identify electrodes and systems for each test, as well as the resistance and soil conditions at the time the measurements were made.

\*\*\*END OF SECTION\*\*\*





GENERAL WAGE DECISION NO. NC87-4

Supersedes General Wage Decision No. NC86-4

State: NORTH CAROLINA

County(ies): BRUNSWICK, CARTERET, COLUMBUS, CRAVEN, DUPLIN, JONES, LENOIR, NEW HANOVER, ONSLOW, PAMLICO, AND PENDER.

Construction Type: BUILDING

Construction Description: BUILDING CONSTRUCTION (does not include single family homes and apartments up to and including 4 stories ).

Modification Record: No.	Publication Date	Page No.(s)
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05 85 6446

529



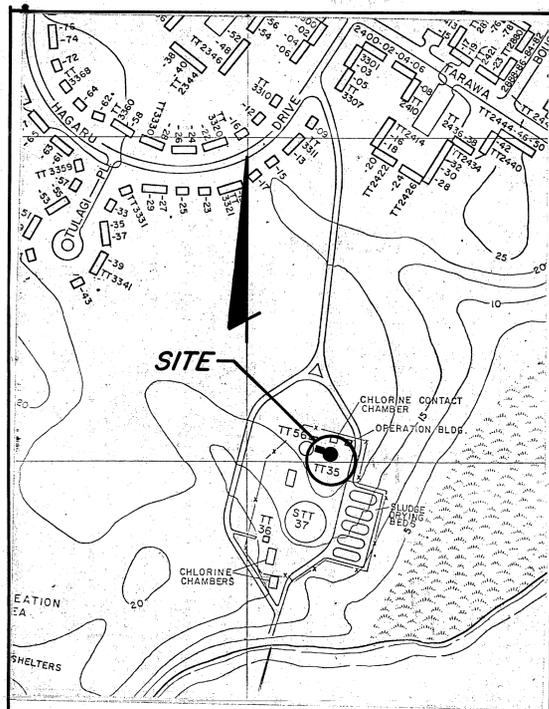
NC87-4

	BASIC HOURLY RATES	FRINGE BENEFITS
ASBESTOS WORKERS		
BRICKLAYERS	7.26	
CARPENTERS	7.10	
CEMENT MASONS	6.02	
DRYWALL MECHANICS	5.68	
ELECTRICIANS	7.00	
ELECTRONIC TECHNICIANS	6.22	
GLAZIERS	4.50	
IRONWORKERS	5.38	
LABORERS:	6.66	
LABORERS - GENERAL		
PIPE LAYERS	3.78	
MILLWRIGHTS	4.94	
PAINTERS	9.45	
PLASTERERS	5.00	
PLUMBERS & PIPEFITTERS	6.00	
ROOFERS	6.52	
SHEET METAL WORKERS	5.91	
SOFT FLOOR LAYERS	6.38	
SPRINKLER FITTERS	7.00	
TILE SETTERS	7.95	
TRUCK DRIVERS	6.00	
	3.90	
WELDERS - Recieve rate for craft performing operation to which welding is incidental.		
EQUIPMENT OPERATORS:		
ASPHALT RAKERS		
BACKHOE	4.27	
BULLDOZER	5.32	
CRANE	5.25	
DISTRIBUTOR	6.80	
FORK LIFT	4.70	
FRONT END LOADER	6.50	
MOTOR GRADER	4.50	
PAVER - SCREED	5.36	
ROLLER	4.25	
SCRAPER - PAN	5.00	
TRACTOR	4.60	
	5.00	

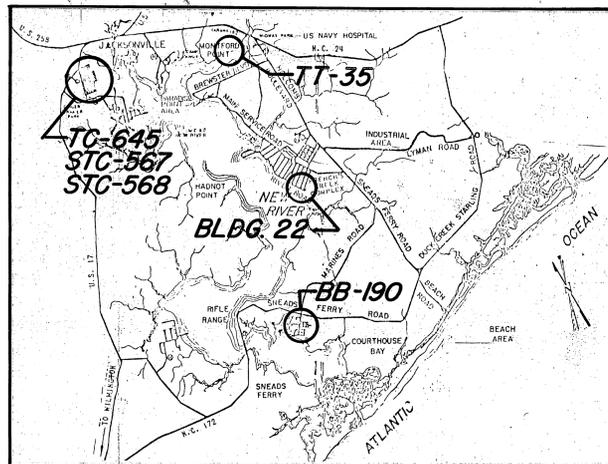
Unlisted classifications needed for work not included within the scope of the classifications listed may be added only as provided in the labor standards contract clauses (29 CFR, 5.5 (a) (1) (11)).

05 85 6446

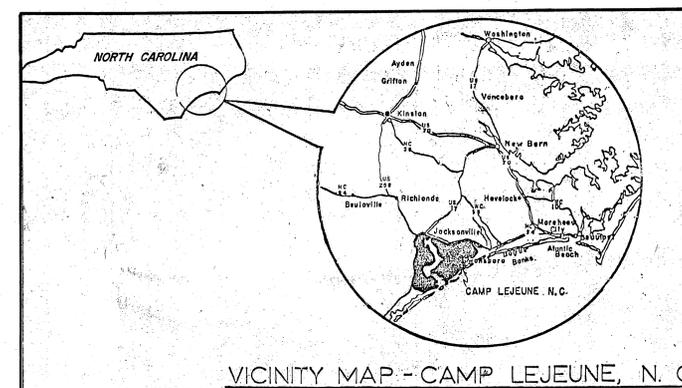
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



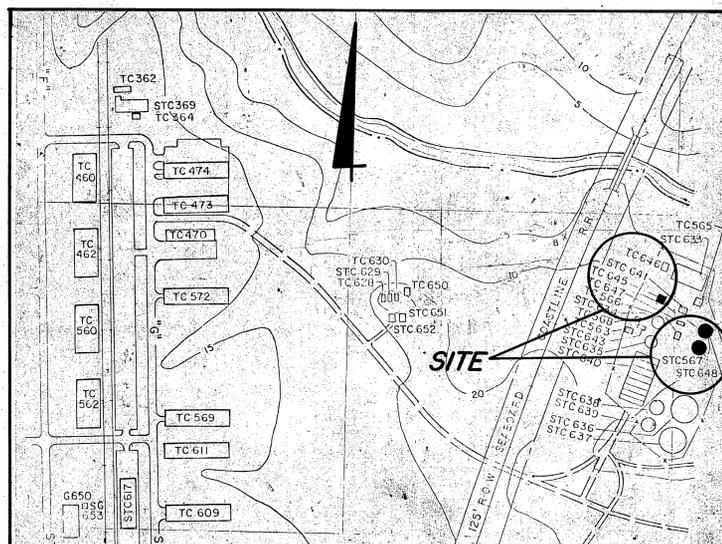
**SITE PLAN TT-35**  
SCALE 1" = 200'



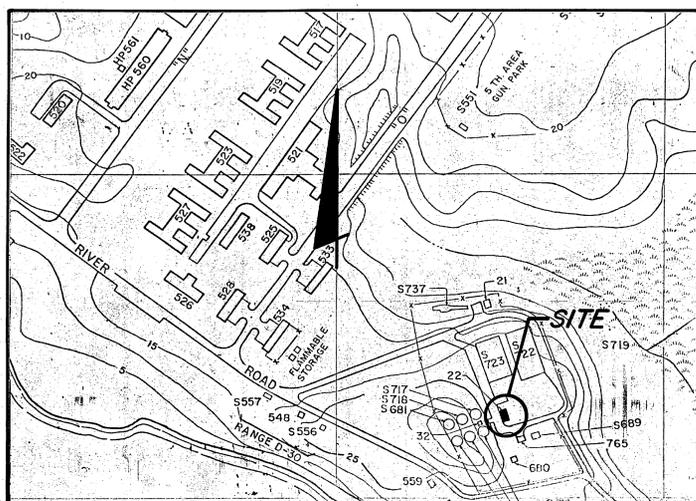
**LOCATION MAP**



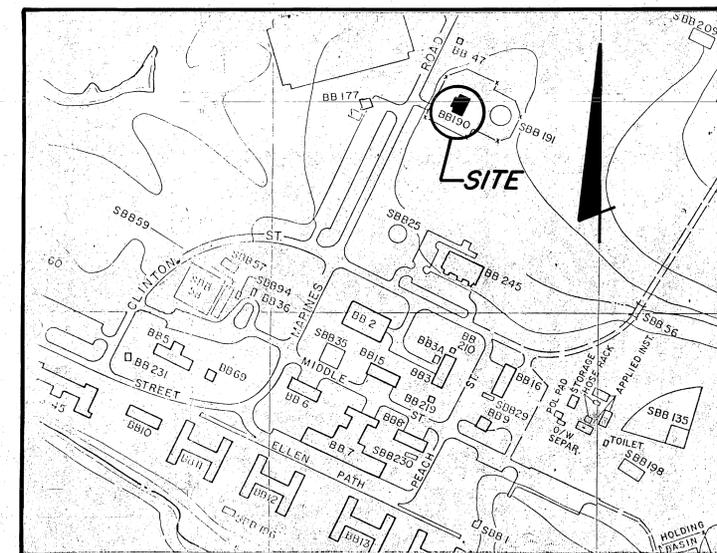
VICINITY MAP - CAMP LEJEUNE, N. C.



**SITE PLAN TC-645, STC-567 & 568**  
SCALE 1" = 200'

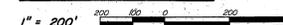


**SITE PLAN BLDG. 22**  
SCALE 1" = 200'



**SITE PLAN BB-190**  
SCALE 1" = 200'

**GRAPHIC SCALE**



DES. C. BAKER		DR. R. WISNIEWSKI		CHK.		SUBMITTED BY:		DESIGN DIR. <i>MA</i>		APPROVED: PHO OR DIC		DATE: <i>4-2-87</i>		SATISFACTORY TO:		DATE:	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND		MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA		<b>REPLACE METERS AND CONTROLS, BASEWIDE</b>		VICINITY MAP, LOCATION MAP, & SITE PLANS		NAVAID DRAWING NO. <b>4152859</b>		CONSTR. CONTR. NO. <b>NO2470-85-B-6446</b>		SHEET <b>1</b> OF <b>5</b>	
SIZE: <b>F</b>		CODE IDENT. NO. <b>80091</b>		SCALE: <b>GRAPHIC</b>		SPEC. <b>05-85-6446</b>		SHEET <b>1</b>		OF <b>5</b>							

**CS-1**



**SCHEDULE OF WELL PUMP OPERATIONS FOR AUTOMATIC PUMP CONTROL**

RISING LEVEL			DETENTION TANK WATER LEVEL	FALLING LEVEL		
START PUMP	STOP PUMP	PUMPS RUNNING		PUMPS RUNNING	STOP PUMP	START PUMPS
WELL PUMPS OFF			8.5	WELL PUMPS OFF		
WELL(S) SELECTED				WELL(S) SELECTED		
WELL(S) SELECTED				WELL(S) SELECTED		
WELL(S) SELECTED				WELL(S) SELECTED		
WELL(S) SELECTED			5.5	WELL(S) SELECTED	FILTER PUMPS	

**SCHEDULE OF SERVICE PUMPS OPERATIONS FOR AUTOMATIC PROGRAM CONTROL**

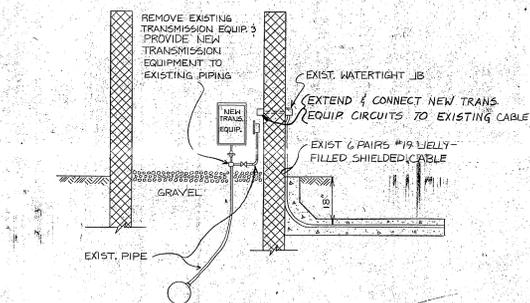
RISING LEVEL			ELEVATED TANK WATER LEVEL	FALLING LEVEL		
START PUMP	STOP PUMP	PUMP RUNNING		PUMP RUNNING	STOP PUMP	START PUMP
ALL PUMPS OFF			24	ALL PUMPS OFF		
1				1		
1 3				1 1		
2 3				1 3		
3 2			20	3		2
3 2			20	3 2		2

NOTE:  
AN ALTERNATOR SHALL BE PROVIDED TO AUTOMATICALLY ALTERNATE THE STARTING SEQUENCE AND OPERATIONAL CYCLES OF PUMPS NO.1 & NO.2. ON THE ALTERNATE CYCLE PUMP NO.2 SHALL START FIRST AND SHALL FUNCTION AS PUMP NO.1 SHOWN ABOVE PUMP NO.1 SHALL FUNCTION AS PUMP NO.2 SHOWN ABOVE. ALL PUMPS TO SHUT-OFF WHEN RESERVOIR WATER LEVEL DROPS TO 2 FT. & REMAIN OFF UNTIL MANUALLY RESET AT PANEL.

**SCHEDULE OF FILTER PUMP OPERATIONS FOR AUTOMATIC PUMP CONTROL**

RISING LEVEL			RESERVOIR WATER LEVEL	FALLING LEVEL		
STOP PUMP	PUMP RUNNING	PUMP RUNNING		PUMP RUNNING	STOP PUMP	START PUMP
ALL PUMPS OFF			14.0	ALL PUMPS OFF		
1				1		
1				1		
1				1		
1			12.0	1		1

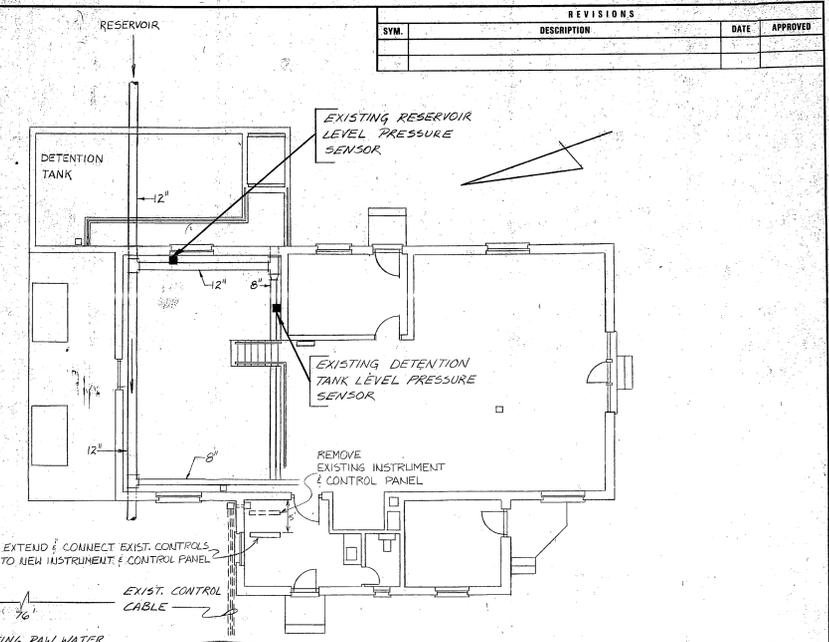
NOTE:  
AN ALTERNATOR SHALL BE PROVIDED TO AUTOMATICALLY ALTERNATE THE STARTING CYCLES OF FILTER PUMPS & 2. CONTROLLER TO BE INTERCONNECTED WITH AUTOMATIC FILTER CONTROL VALVE AND DETENTION TANK TELEMETERING FACILITY SO AS TO CAUSE FILTER PUMPS TO BE ON DURING PERIODS OF FILTER BACKWASH AND OFF DURING PERIODS OF LOW-WATER IN DETENTION TANK.



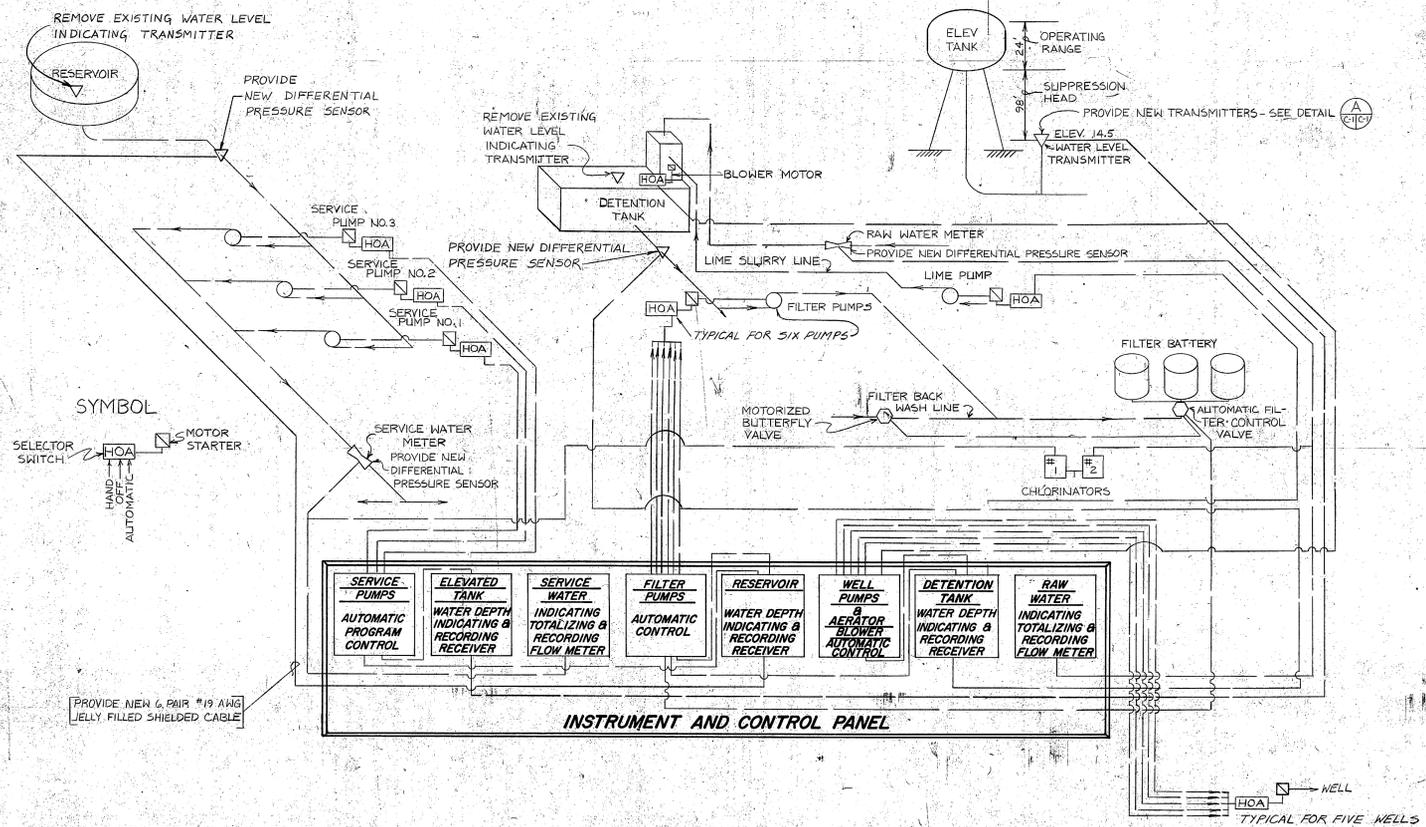
**A WATER LEVEL TRANSMITTER DETAIL**  
SCALE 1/2" = 1'-0"

**LEGEND**

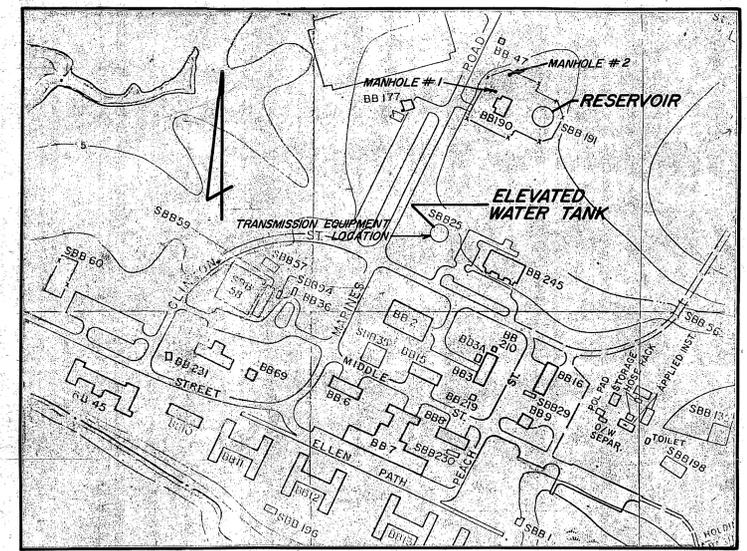
- EXIST'G PIPE/PIPING
- EXIST'G MOTOR CONTROLLER
- CONTROL/METERING DEVICE
- MANHOLE
- EXIST'G CONTROL CIRCUIT
- NEW CONTROL CIRCUIT



**FLOOR PLAN BB-190**  
SCALE 1/8" = 1'-0"



**SCHEMATIC DIAGRAM SHOWING AUTOMATIC CONTROL OPERATION - BB-190**  
NOT TO SCALE



**SITE PLAN - COURTHOUSE BAY**  
SCALE 1" = 200'

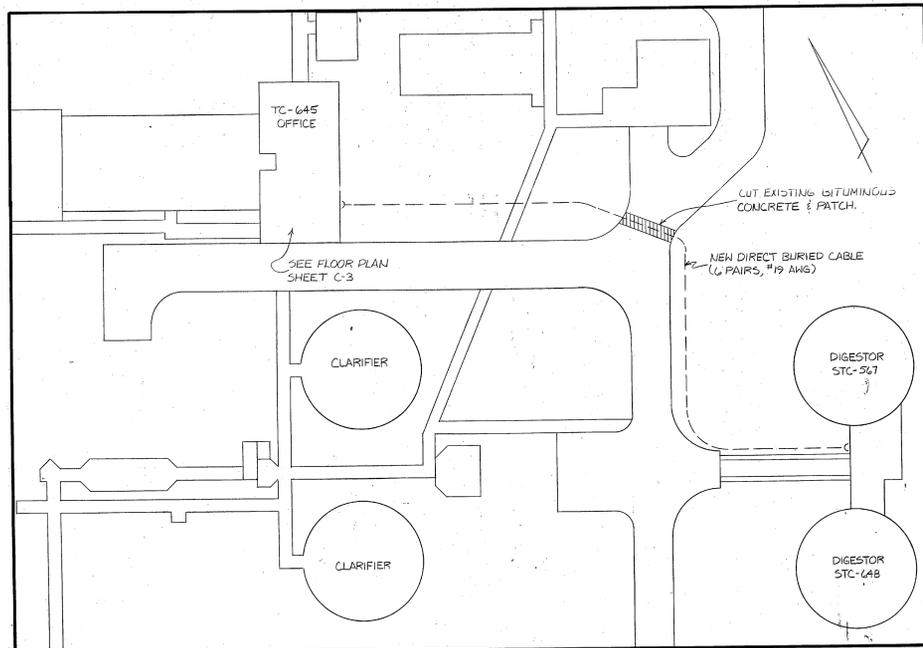


DES. C. BAKER DR. R. WISNIEWSKI CHK. B. ASHTON SUBMITTED BY: DESIGN DIR. <i>M</i>		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
		<b>REPLACE METERS AND CONTROLS, BASEWIDE</b>	
APPROVED: PWD OR OICC <i>M</i>	DATE: 4-2-87	SIZE: F	CODE IDENT. NO.: 80091
SATISFACTORY TO:	DATE:	NAVFAC DRAWING NO.: 4152860	CONSTR. CONTR. NO. 162470-85-B-6446
SCALE: GRAPHIC		SPEC: 05-85-6446	SHEET 2 OF 5

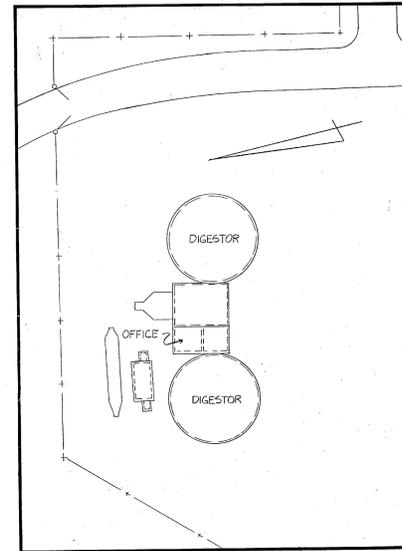
C-1



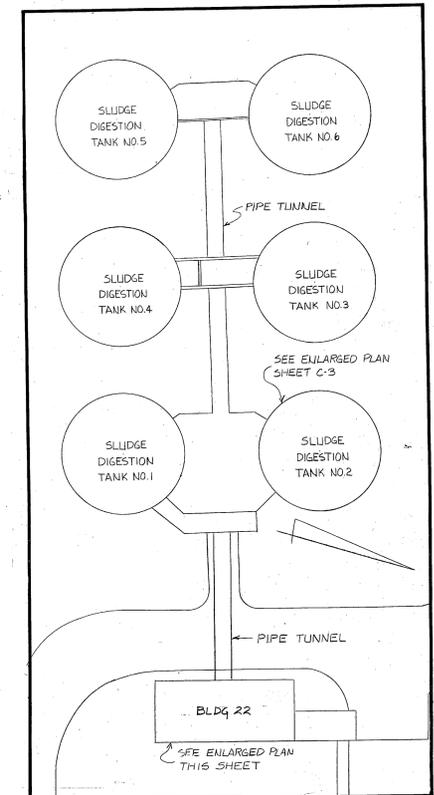
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



**SITE PLAN TC-645, STC-567 & STC-648**  
SCALE 1" = 20'



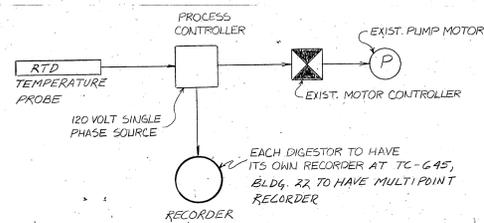
**SITE PLAN TT-35**  
SCALE 1" = 30'



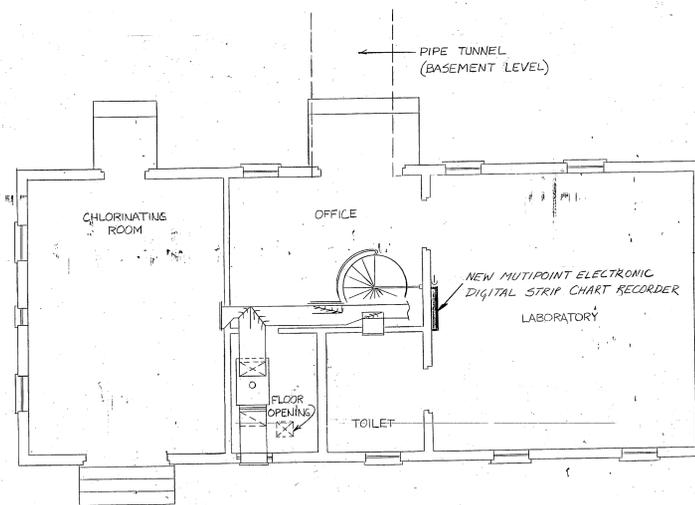
**SITE PLAN BLDG. 22**  
SCALE 1" = 20'

**DIGESTER TEMPERATURE CONTROLS OPERATING SEQUENCE FOR BLDGS. 22 and TC - 645**

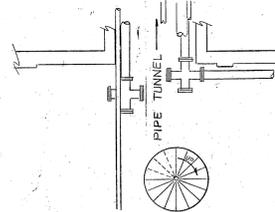
1. RTD IN THERMOMETER WELL CONTINUOUSLY SENSES SLUDGE TEMPERATURE AND TRANSMITS SIGNAL TO CONTROLLER. CONTROLLER DISPLAYS TEMPERATURE ON DIRECT READOUT DISPLAY AND TRANSMITS SIGNAL TO RECORDER.
2. WHEN SLUDGE TEMPERATURE FALLS BELOW 90°F, CONTROLLER STARTS HOT WATER CIRCULATING PUMP.
3. WHEN SLUDGE TEMPERATURE RISES ABOVE 95°F, CONTROLLER STOPS HOT WATER CIRCULATING PUMP.



**CONTROL DIAGRAM FOR BLDGS. 22 and TC-645**  
NOT TO SCALE

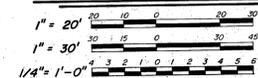


**FLOOR PLAN BLDG. 22 - FIRST FLOOR**  
SCALE 1/4" = 1'-0"



**FLOOR PLAN BLDG. 22 - BASEMENT**  
SCALE 1/4" = 1'-0"

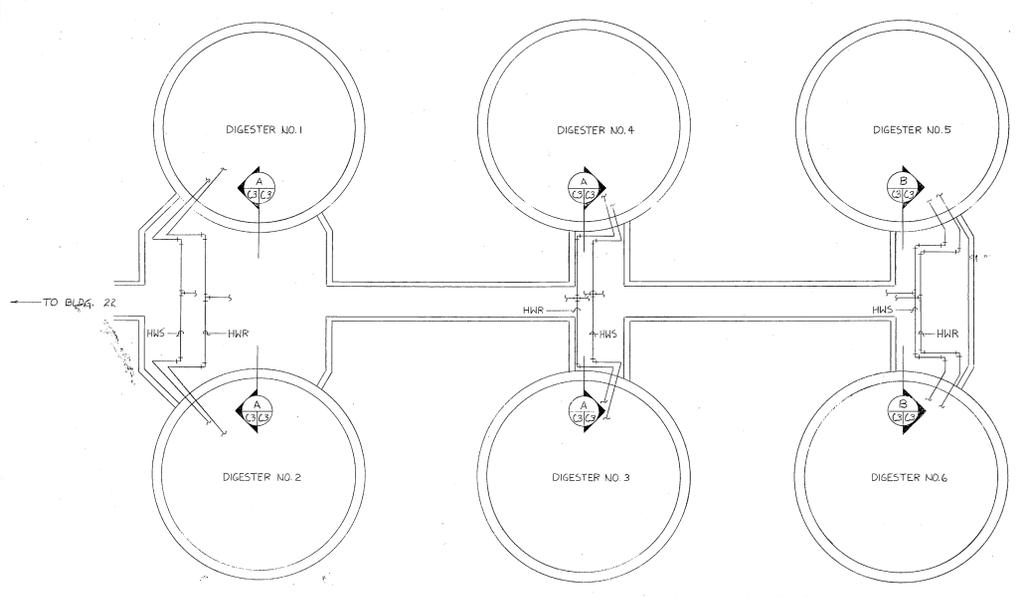
**GRAPHIC SCALES**



DES. C. BAKER, A. YOUNG DR. R. WISNIEWSKI CHK. B. ASHTON SUBMITTED BY: DESIGN DIR. <i>[Signature]</i>		C-2	
		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
APPROVED: PWD DR. OICC <i>[Signature]</i> DATE 4-2-87		REPLACE METERS AND CONTROLS, BASEWIDE PLANS AND CONTROL DIAGRAM	
SATISFACTORY TO: DATE		SIZE F	CODE IDENT. NO. 80091
		NAVJAC DRAWING NO. 4152861 CONSTR. CONT. NO. A62470-85-B-5446 SCALE: GRAPHIC   SPEC. 05-85-6446   SHEET 3 OF 5	

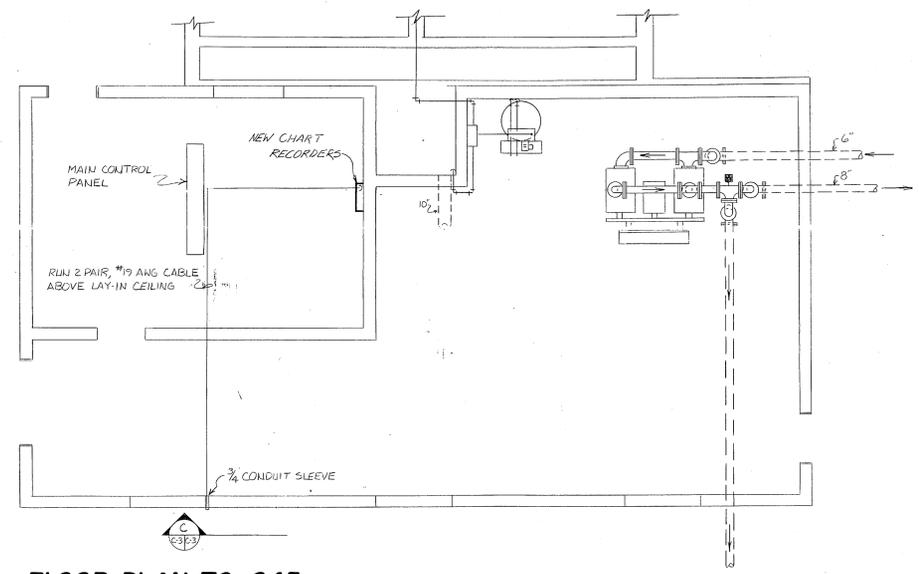


REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED

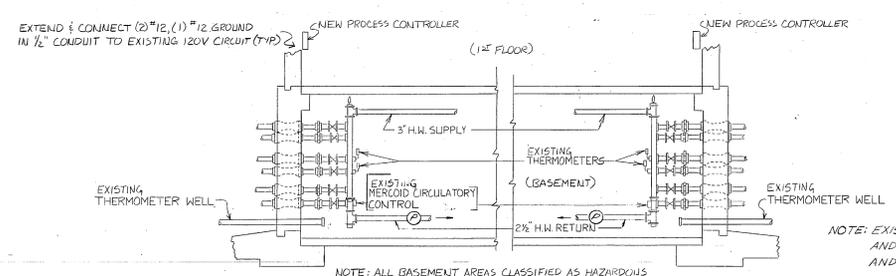


**DIGESTER PLAN BLDG. 22**  
SCALE 3/32" = 1'-0"

NOTE: NEW CONTROL CABLES TO BE LOCATED IN EXISTING PIPE TUNNEL. TUNNEL IS CONGESTED WITH EXISTING PIPES, CONDUITS, HANGERS, AND EQUIPMENT.

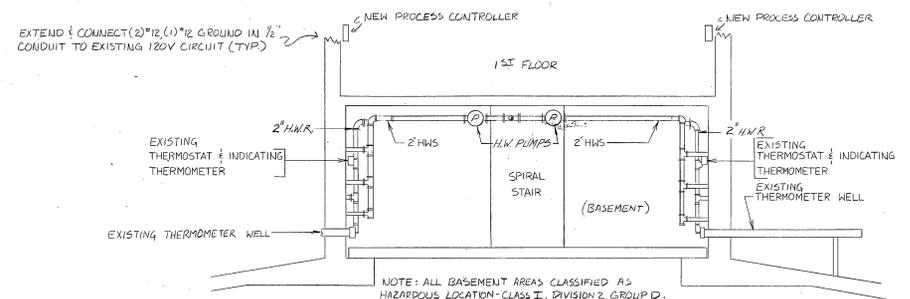


**FLOOR PLAN TC-645**  
SCALE 1/4" = 1'-0"



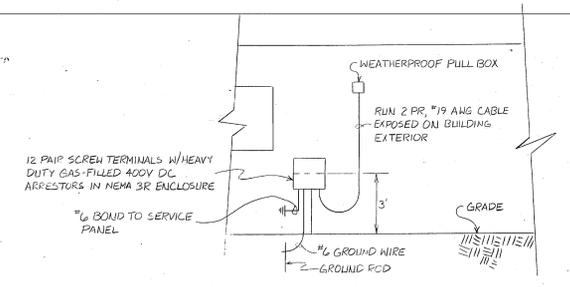
**A TYPICAL SECTION DIGESTER 1, 2, 3, & 4**  
SCALE 1/4" = 1'-0"

NOTE: EXISTING CONTROLLERS, RECORDERS, AND ASSOCIATED WIRING TO BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.



**B TYPICAL SECTION DIGESTER 5 & 6**  
SCALE 1/4" = 1'-0"

NOTE: EXISTING CONTROLLERS, RECORDERS, AND ASSOCIATED WIRING TO BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

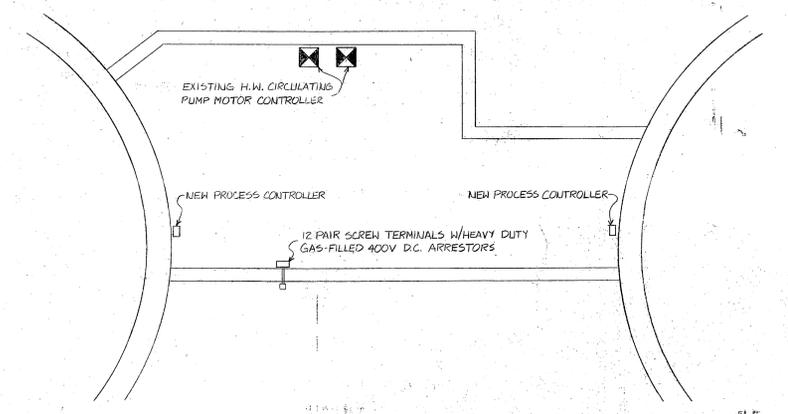


**C ELEVATION**  
NOT TO SCALE

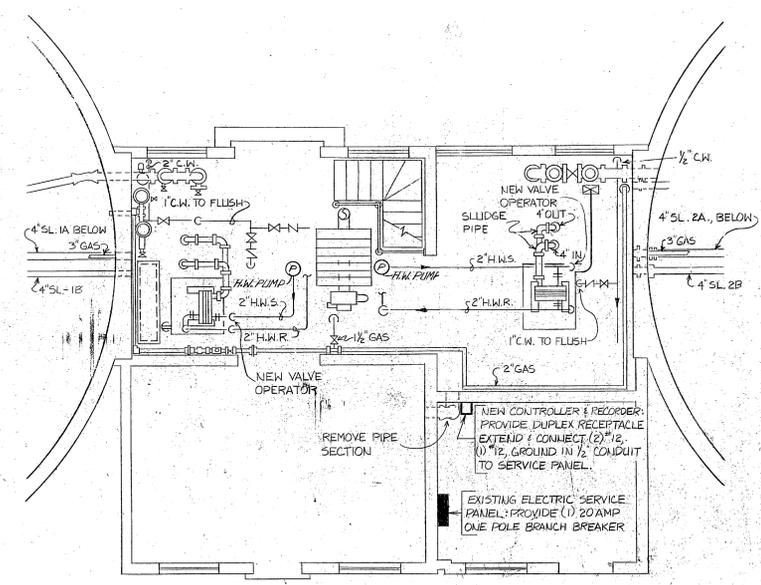
<b>C-3</b>	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA	
<b>REPLACE METERS AND CONTROLS, BASEWIDE</b> PLANS AND SECTIONS	
DES. C. BAKER, A. YOUNG	SIZE CODE IDENT. NO. NAVFAC DRAWING NO.
DR. R. WISNIEWSKI	F 80091 4152862
CHK. B. ASHTON	CONSTR. CONTR. NO. 162470-85-B-6446
SUBMITTED BY: <i>ML</i>	SCALE: GRAPHIC SPEC. 05-85-6446 SHEET 4 OF 5
APPROVED: PWD OR DICG DATE: <i>None</i> 4-2-87	
SATISFACTORY TO: DATE:	



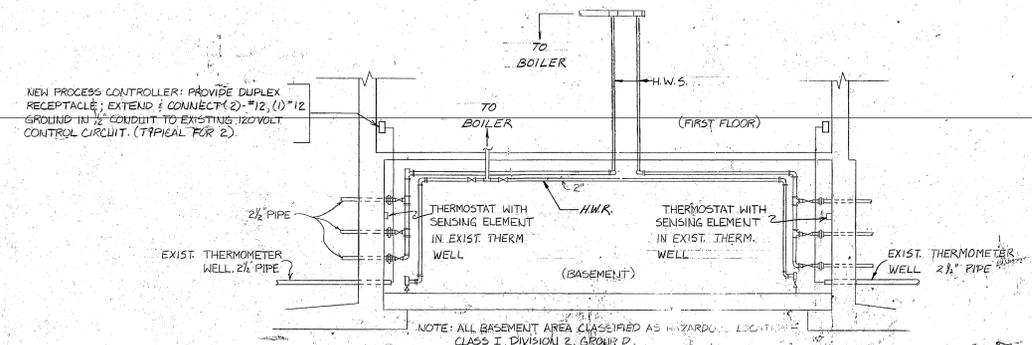
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



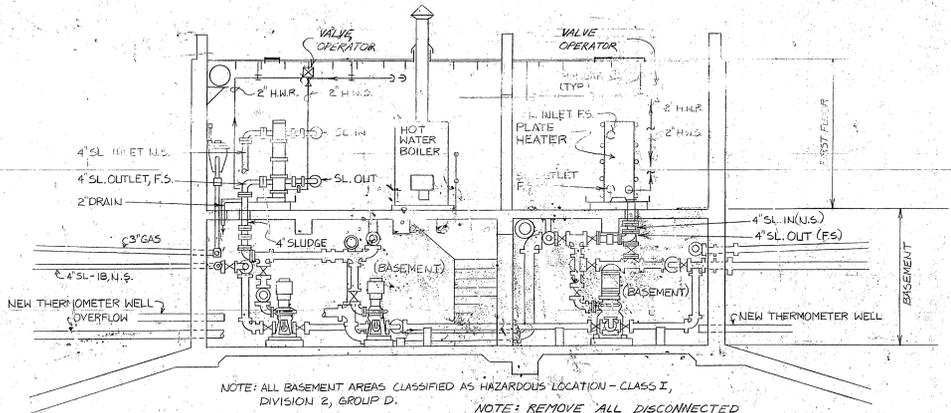
**FIRST FLOOR PLAN - DIGESTER STC-567 & STC-648**  
NOT TO SCALE



**FLOOR PLAN TT-35**  
SCALE 1/4" = 1'-0"



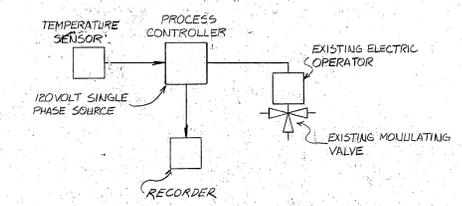
**ELEVATION STC-567 & STC-648**  
SCALE 1/4" = 1'-0"



**ELEVATION TT-35**  
SCALE 1/4" = 1'-0"

**DIGESTER TEMPERATURE CONTROLS OPERATING SEQUENCE FOR TT-35**

1. RTD IN THERMOMETER WELL CONTINUOUSLY SENSES SLUDGE TEMPERATURE AND TRANSMITS SIGNAL TO CONTROLLER. CONTROLLER DISPLAYS TEMPERATURE ON DIRECT READOUT DISPLAY AND TRANSMITS SIGNAL TO 24-HOUR CHART RECORDER.
2. WHEN SLUDGE TEMPERATURE FALLS BELOW 90° F. CONTROLLER ACTIVATES ELECTRIC OPERATOR WHICH OPENS HOT WATER SUPPLY LINE VALVE.
3. WHEN SLUDGE TEMPERATURE RISES ABOVE 95° F. CONTROLLER DEACTIVATES ELECTRIC OPERATOR WHICH CLOSES HOT WATER SUPPLY LINE VALVE.



**CONTROL DIAGRAM TT-35**  
NOT TO SCALE



<b>C-4</b>	
DEPARTMENT OF THE NAVY - NAVAL FACILITIES ENGINEERING COMMAND <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA	
<b>REPLACE METERS AND CONTROLS, BASEWIDE PLANS, SECTIONS, AND CONTROL DIAGRAM</b>	
DES. C. BAKER, A. YOUNG CHK. R. WISNIEWSKI SUBMITTED BY: DESIGN DIR. <i>YU</i> APPROVED: PWO DR. OICC <i>Mo</i> 4-2-87 SATISFACTORY TO:	NAVAFAC DRAWING NO. <b>4152863</b> CONSTR. CONTR. NO. <b>N62470-85-B-6446</b> SCALE: GRAPHIC SPEC. 05-85-6446 SHEET <b>5</b> OF 5.

