AD-A152 512 SPECIFICATIONS FOR CONSTRUCTION OF CHANNEL AND JETTY SYSTEM MURRELLS INLE..(U) CORPS OF ENGINEERS CHARLESTON SC CHARLESTON DISTRICT 14 JUN 77 DACW60-77-B-0014 1/3

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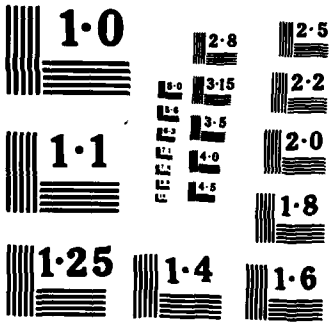
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Invitation Number
DACW 60-77-B-0014

2

AD-A152 512

SPECIFICATIONS

FOR

CONSTRUCTION OF

CHANNEL AND JETTY SYSTEM

MURRELLS INLET NAVIGATION PROJECT

MURRELLS INLET, SOUTH CAROLINA

QUALITY ENGINEERING & ENVIRONMENTAL EXCELLENCE-A SINGLE GOAL

U. S. ARMY ENGINEER DISTRICT, CHARLESTON
CORPS OF ENGINEERS
P.O. BOX 919
CHARLESTON, S. C. 29402

14 June 1977

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STANDARD FORM 20
JANUARY 1961 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.401

INVITATION FOR BIDS
(CONSTRUCTION CONTRACT)

REFERENCE
Invitation Number
DACW 60-77-B-0014

DATE
14 June 1977

NAME AND LOCATION OF PROJECT
Construction of Channel and Jetty System
Murrells Inlet Navigation Project
Murrells Inlet, S.C.

DEPARTMENT OR AGENCY
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
CHARLESTON DISTRICT

BY (*Issuing office*)
U. S. Army Engineer District, Charleston
Corps of Engineers
P. O. Box 919
Charleston, South Carolina 29402

Sealed bids in single copy for the work described herein will be received at the office of the District Engineer, Federal Building, 334 Meeting Street, Charleston. South Carolina. until 2:00 p.m.. local time. 14 July 1977 and at that time publicly opened. Hand carried bids will be deposited in the Bid Depository box located in Room 314 until 1:45 p.m., local time. From 1:45 p.m., local time, until 2:00 p.m., hand carried bids will be presented to the Bid Opening Officer in Room 333 (Bid Opening Room).

Information regarding bidding material, bid guarantee, and bonds

Bidding Material:

Instructions to Bidders	Standard Form 22
Bid Form	Standard Form 21
Unit Price Schedule	SAN Form 176
Representations and Certifications	Standard Form 19-B
Construction Contract	Standard Form 23
General Provisions	April 1975 Edition
Specifications	Invitation DACW60-77-B-0014 including Parts I thru X
Drawings	As listed in Part I, Special Provisions

Information regarding bidding material, bid guarantee, and bonds continued on page SF 20-1.

Description of Work: Construction of Channel and Jetty System in Murrells Inlet, South Carolina, in strict accordance with drawings and Specifications, Invitation for Bids Number DACW 60-77-B-0014.

Appropriation Data: The supplies and services to be obtained by this invitation are authorized by, for the purposes set forth in, and are chargeable to the following allotment: 96 X 3122 Const. Gen., CE 509-133 (CHAS. DIST.)

Approximate Cost of Work: Over $10,000,000.00

SEE STANDARD FORM 19-B REGARDING PENALTIES FOR FALSE STATEMENTS.

Invitation for Bid DACW60-77-B-0014 consists of 243 pages. (Reverse sides of inclosed sheets which contain written material are deemed separate pages.)

U.S. GOVERNMENT PRINTING OFFICE 1960 —O 572728

Information regarding bidding material, bid guarantee, and bonds (continued).

A. Bid Bonds. Each bidder shall submit with his bid a Bid Bond (Standard Form 24) with good and sufficient surety or sureties acceptable to the Government, or other security as provided in paragraph 4 of Instructions to Bidders (Standard Form 22) in the form of twenty per cent (20%) of the bid price or $3,000,000 whichever is lesser. The bid bond penalty may be expressed in terms of a percentage of the bid price or may be expressed in dollars and cents.

B. Performance and Payment Bonds. Within seven calendar days after the prescribed forms are presented to the bidder to whom award is made for signature, a written contract on the form prescribed by the specifications shall be executed and two bonds, each with good and sufficient surety or sureties acceptable to the Government, furnished; namely a Performance Bond (Standard Form 25) and a Payment Bond (Standard Form 25-A). The penal sums of such bonds will be as follows:

I. Performance Bond. The penal sum of the performance bond shall equal one hundred per cent (100%) of the contract price.

II. Payment Bond.

a. When the contract price is $1,000,000 or less, the penal sum will be fifty per cent (50%) of the contract price.

b. When the contract price is in excess of $1,000,000 but not more than $5,000,000, the penal sum shall be forty per cent (40%) of the contract price.

c. When the contract price is more than $5,000,000, the penal sum shall be $2,500,000.

Any bonds furnished will be furnished by the contractor to the Government prior to commencement of contract performance. (ASPR 16-401.2(c)(iii))

READ THE FOLLOWING IN CONJUNCTION WITH THE INSTRUCTIONS TO BIDDERS, STANDARD FORM 22. (ASPR 16-401.2 (c)(iii)(2)(A))

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

II. 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. (1975 OCT). (ASPR 2-201(b)(xxv))

READ THE FOLLOWING IN CONJUNCTION WITH THE INSTRUCTIONS TO BIDDERS, STANDARD FORM 22. (ASPR 16-401.2(c)(iii)(2)(A))

1. AVAILABLE AND PROPOSED PLANT. Each bidder shall furnish a list of the plant available to the bidder and proposed for use on the work on ENG Form 1619R attached hereto and made a part of this invitation.

2. COST OF PLANS AND SPECIFICATIONS. Sets of drawings, full size, and of specifications will be furnished upon receipt of payment of $ 10.00 per set. If individual plan sheets are requested, they will be furnished at the rate of $1.00 for full size for each sheet requested, but with a minumum charge of $1.00. The maximum charge shall not exceed the charge for a full set of plans. No refund of the payment for drawings will be made and the drawings need not be returned to the District Engineer. Additional copies of the specifications alone will be furnished an applicant at the rate of $1.00 per copy. Payments will be made by cash, check, or money order and delivered to the Finance and Accounting Officer, U. S. Army Engineer District, Charleston. Checks and money orders should be made payable to "Treasurer of the United States". (ECI 16-401.2(2))

3. ACKNOWLEDGEMENT OF AMENDMENTS. Bidders are required to acknowledge receipt of all amendments to this invitation on the Bid Form (Standard Form 21) in the space provided, or by separate letter or telegram or by signing and returning one copy of the Standard Form 30, Amendment of Solicitation/Modification of Contract, prior to opening of bids. Failure to acknowledge all amendments may cause rejection of the bid. (ECI 16-401(a)(2)3)

4. MINIMUM ACCEPTANCE PERIOD (1975 MAR). Bids allowing less than the number of calendar days specified in the 'Bid' portion of the SF 19 (or on the reverse of the SF 21 as applicable) for acceptance by the Government will be rejected as nonresponsive. (ASPR 2-201(b)(xii)(B))

5. NOTICE REGARDING BUY AMERICAN ACT (1970 SEP). The Buy American Act (41 U.S.C. 10a-10d) generally requires that only domestic construction material be used in the performance of this contract. Exception from the Buy American Act shall be permitted only in the case of nonavailability of domestic construction materials. A bid or proposal offering nondomestic construction material will not be accepted unless specifically approved by the Government. When a bidder or offeror proposes to furnish nondomestic construction material, his bid or proposal must set forth an itemization of the quantity, unit price, and intended use of each item of such nondomestic construction material. When offering nondomestic construction material pursuant to this paragraph, bids or proposals may also offer, at stated prices, any available comparable domestic construction material, so as to avoid the possibility that failure of a domestic construction material to be acceptable under this paragraph will cause rejection of the entire bid. (ASPR 7-2003.65)

READ THE FOLLOWING IN CONJUNCTION WITH THE INSTRUCTIONS TO BIDDERS STANDARD FORM 22. (ASPR 16-401.2(c)(iii)(2)(A))

6. EVALUATION FACTORS AND AWARD.

a. All extensions of the unit prices shown will be subject to verification by the Government. In case of variation between the unit price and the extension, the unit price will be considered to be the bid.

b. If a bid or modification to a bid based on unit prices is submitted and provides for a lump sum adjustment to the total estimated cost, the application of the lump sum adjustment to each unit price, including lump sum units, in the bid schedule must be stated or if it is not stated, the bidder agrees that the lump sum adjustment shall be applied on a prorata basis to every unit price in the bid schedule.

c. The award will be made as a whole to one bidder. (ASPR 2-201(b)(xvi))

7. AVAILABILITY OF SPECIFICATIONS, STANDARDS AND DESCRIPTIONS (ASPR [illegible]) Specifications, standards and descriptions cited in this solicitation are available as indicated below:

a. Unclassified Federal, Military and Other Specifications and Standards (Excluding Commercial), and Data Item Descriptions. Submit request on DD Form 1425 (Specifications and Standards Requisition) to

Commanding Officer
U. S. Naval Publications and Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120

The Department of Defense Index of Data Item Descriptions (ID-3) may be ordered on the DD Form 1425. The Department of Defense Index of Specifications and Standards (DODISS) may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402. When requesting a specification or standard the request shall indicate the title, number, date and any applicable amendment thereto by number and date. When requesting a data item description, the request shall cite the applicable data item number set forth in the solicitation. When DD Form 1425 is not available, the request may be submitted in letter form, giving the same information as listed above, and the solicitation or contract number involved. Such requests may also be made to the activity by telegram or telephone (Area Code 215, 697-3321) in case of urgency.

b. Commercial Specifications, Standards and Descriptions. These specifications, standards and descriptions are not available from

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Government sources. They may be obtained from the publishers. (ASPR 7-2003.8)

c. Engineer Manuals. Engineer manuals may be obtained from:

Office, Chief of Engineers
Publications Depot
890 South Pickett Street
Alexandria, VA 22304

d. Concrete Research Division (CRD) Publications. CRD publications may be obtained from:

Research Center Library
U. S. Army Corps of Engineers
Waterways Experiment Station
P. O. Box 631
Vicksburg, MS 39180

8. PERFORMANCE OF WORK BY CONTRACTOR. Attention is invited to the requirements of Special Provisions, paragraph "Performance of Work By Contractor". Each bidder shall submit with his bid a description of the work which he will perform with his own organization, the percentage of the total work this represents and the estimated cost thereof.

9. INQUIRIES BY PROSPECTIVE BIDDERS. Bidders are required to forward all questions concerning specifications and drawings to the Government at the earliest possible date; in no case less than 10 days before bid opening date. Telephone calls concerning specifications and drawings should be directed as listed below between the hours of 9 to 11 a.m. and 2 to 3:45 p.m., local time (collect calls will not be accepted). Any information not readily available for the caller will be furnished by Amendment, letter, or on a reverse charge basis at the caller's request. Early receipt of questions will enable the Government to properly evaluate all questions and if required, issue amendment clarifying the Government's intentions. Nothing contained in this paragraph shall be deemed to take precedence over or be in derogation of the clear requirements of Paragraphs 1 and 2 of Standard Form 22, INSTRUCTIONS TO BIDDERS.

Administrative Information:

Address written inquiries	ATTN: SACEC-SS, Charleston, S.C.
Telephone inquiries	Call Area Code 803 577-4171, ext. 204 Mrs. Ida Mellard

Technical Information:

Address written inquiries	ATTN: SACEN-GF, Charleston, S.C.
Telephone inquiries	Call Area Code 803 577-4171, ext. 304 Mr. Clarence Matthews

10. INSPECTION OF SITE. Arrangements for inspecting the site of the work can be made by contacting: (ASPR 2-201(b)(xxxiv))

Chief, Construction and Project Operations Branch - Lawrence J. Kennerty
803-577-4171, ext. 211

READ THE FOLLOWING IN CONJUNCTION WITH THE INSTRUCTIONS TO BIDDERS, STANDARD FORM 22. **(ASPR 16-401.2(c)(iii)(2)(A))**

11. NOTICE OF TOTAL SMALL BUSINESS SET-ASIDE (1972 JUL).

a. Restriction. Offers under this procurement are solicited from small business concerns only and this procurement is to be awarded only to one or more small business concerns. This action is based on a determination by the Contracting Officer, alone or in conjunction with a representative of the Small Business Administration that it is in the interest of maintaining or mobilizing the Nation's full productive capacity, in the interest of war or national defense programs, or in the interest of assuring that a fair proportion of Government procurement is placed with small business concerns. Offers received from firms which are not small business concerns shall be considered non-responsive and shall be rejected.

b. Definition. A "small business concern" is a concern, including its affiliates, which is independently owned and operated, is not dominant in the field of operation in which it is bidding on Government contracts, and can further qualify under the criteria set forth in regulations of the Small Business Administration (Code of Federal Regulations, Title 13, Section 121.3-8). (ASPR 7-2003.2) Also, in order to be eligible for a small business set-aside award on dredging contracts, the firms must perform the dredging of at least 40% of the yardage advertised in the plans and specifications with dredging equipment owned by the bidder or obtained from another small business dredging concern. (ASPR 1-701.3(a)(2)a. and Part 121.3-8(a)(2), Federal Register, Vol. 40, No. 151)

12. MODIFICATIONS PRIOR TO DATE SET FOR OPENING BIDS. The right is reserved, as the interest of the Government may require, to revise or amend the specifications or drawings or both prior to the date set for opening bids. Such revisions and amendments, if any, will be announced by an amendment or amendments to this Invitation for Bids. If the revisions and amendments are of a nature which requires material changes in quantities or prices bid or both, the date set for opening bids may be postponed by such number of days as in the opinion of the issuing officer will enable bidders to revise their bids. In such cases, the amendment will include an announcement of the new date for opening bids. (ASPR 2-201(b)(xxxix))

13. GOVERNMENT'S PRIVILEGE IN MAKING AWARDS. The Government further reserves the right to make award of any or all schedules of any bid, unless the bidder qualifies such bid by specific limitation; also to make award to the bidder whose aggregate bid on any combination of bid schedules is low. For the purpose of this Invitation for Bids, the word "item" as used in paragraph 10(c) of Standard Form 22 shall be considered to mean "schedule". (ASPR 2-201(b)(xl))

READ THE FOLLOWING IN CONJUNCTION WITH THE INSTRUCTIONS TO BIDDERS, STANDARD FORM 22. **(ASPR 16-401.2(c)(iii)(2)(A))**

(Article 7 of Standard Form 22 is deleted in its entirety and the following substituted therefore.)

14. LATE BIDS, MODIFICATIONS OF BIDS OR WITHDRAWAL OF BIDS (1974 SEP).

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 either:

(i) it was sent by registered or certified mail not later than the fifth calendar day prior to the date specified for the 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 earlier); or,

(ii) it was sent by mail (or telegram 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 bid is subject to the same conditions as in a. above except that withdrawal of bids by telegram is authorized. A bid may also be withdrawn in person by a bidder or his authorized representative, provided his identity is made known and he signs a receipt for the bid, but only if the withdrawal is made prior to the exact time set for receipt of bids.

c. The only acceptable evidence to establish:

(i) the date of mailing of a late bid, modification or withdrawal sent either by registered or certified mail is the U. S. Postal Service postmark on the wrapper or on the original receipt from the U. S. Postal Service. If neither postmark shows a legible date, the bid, modification or withdrawal shall be deemed to have been mailed late. (The term "postmark" means a printed, stamped, or otherwise placed impression that is readily identifiable without further action as having been supplied and affixed on the date of mailing by employees of the U. S. Postal Service.)

(ii) the time of receipt at the Government installation is the time/date stamp of such installation on the bid wrapper or other documentary evidence of receipt maintained by the installation.

d. Notwithstanding the above, a late modification of an otherwise successful bid which makes its terms more favorable to the Government will be considered at any time it is received and may be accepted. (ASPR 7-2002.2)

RFAD THE FOLLOWING IN CONJUNCTION WITH THE INSTRUCTIONS TO BIDDERS, STANDARD FORM 22. **(ASPR 16-401.2(c)(iii)(2)(A))**

15. FLOATING PLANT. No bidders will be considered whose floating plant at the time of award does not substantially meet the safety requirements of the Corps of Engineers and the contract and specifications, unless (1) such plant can be made so to conform within a reasonable time after award; and (2) the bidder will stipulate that the award is conditioned upon his making his plant so to comply within a reasonable time after award, all as determined by the Contracting Officer.

16. SAFETY REQUIREMENTS.

a. The bidder should review Clause **55** of the General Provisions entitled, "Accident Prevention", the Corps of Engineers Manual, "General Safety Requirements", EM 385-1-1, dated 1 March 1967, as amended, referred to therein, and the Technical Provisions applicable to safety, to assure himself that he has full knowledge of the personal protective equipment that must be provided workmen, and that he is familiar with the safety standards applicable to machinery and mechanized equipment, ladders and scaffolds, stripping of concrete forms, cleanup and housekeeping and other safety measures for the prevention of accidents during construction.

b. It will be the responsibility of the contractor and all subcontractors to comply with OSHA standards and all changes thereto as well as the Corps of Engineers General Safety Requirements Manual (EM 385-1-1).

17. PRE-AWARD INFORMATION. Each bidder shall, upon request of the Contracting Officer, furnish a statement of whether he is now or ever has been engaged in any work similar to that covered by the specifications herein, the dollar value thereof, the year in which such work was performed, and the manner of its execution, and giving such other information as will tend to show the bidder's ability to prosecute the required work. The "such other information" referred to above shall include, but is not limited to, the following:

a. The name and address of the office or firm under which such similar work was performed.

b. A list of key personnel available for the instant project and their qualifications.

c. A copy of the bidder's latest financial statement, including the name or banks or other financial institutions with which the bidder conducts business. f the financial statement is more than 60 days old, a certificate should be attached stating that the financial condition is substantially the same or, if not the same, the changes that have taken place. Such statement will be treated as confidential.

READ THE FOLLOWING IN CONJUNCTION WITH THE INSTRUCTIONS TO BIDDERS, STANDARD FORM 22. **(ASPR 16-401.2(c)(iii)(2)(A))**

d. A list of present commitments, including the dollar value thereof, and the name of office under which the work is being performed. (ECI 16-401.2(a)(5)5)

18. DISPOSAL OF EXCAVATED MATERIAL. The following owners in the vicinity of the work to be accomplished under this Invitation for Bids are known to desire fill material:

NAME	ADDRESS
NONE	

If any of the areas owned by the above-listed owners are proposed to be utilized by the contractor in the performance of the work, the provision for use of alternate areas in paragraphs 4-14 and 6-3, DISPOSAL OF EXCAVATED MATERIAL, of the specifications will be applicable. (ECI 16-401.2(a)(5)4)

19. SMALL BUSINESS SUBCONTRACTING. When the contract is for $500,000 or less and the contractor agrees to accept Clause 43 of the General Provisions entitled "SMALL BUSINESS SUBCONTRACTING PROGRAM (MAINTENANCE, REPAIR AND CONSTRUCTION (1976 OCT)", the wording under the title in parenthesis which reads "(The following clause is applicable if this contract is in excess of $500,000)" should be deleted, and this clause made applicable to the contract. (ASPR 1-707.3(c))

20. ARITHMETIC DISCREPANCIES.

(a) For the purpose of initial evaluation of bids, the following will be utilized in resolving arithmetic discrepancies found on the face of the bidding schedule as submitted by bidders:

(1) Obviously misplaced decimal points will be corrected;

(2) In case of discrepancy between unit price and extended price, the unit price will govern.

(3) Apparent errors in extension of unit prices will be corrected; and

(4) Apparent errors in addition of lump sum and extended prices will be corrected.

(b) For the purposes of bid evaluation, the Government will proceed on the assumption that the bidder intends his bid to be evaluated on the basis of the unit prices, extensions, and totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids. (ECI 2-201.71)

READ THE FOLLOWING IN CONJUNCTION WITH THE INSTRUCTIONS TO BIDDERS, STANDARD FORM 22. (ASPR 16-401.2(c)(iii)(2)(A))

21. NOTICE OF REQUIREMENT FOR MURRELLS INLET CHANNEL AND JETTY SYSTEM AFFIRMATIVE ACTION PLAN:

a. Each bidder, contractor or subcontractor (hereinafter the contractor) must fully comply with the requirements, terms and conditions of the Murrells Inlet Channel and Jetty System affirmative action plan (hereinafter the MIC & JS plan) including the goals for minority manpower utilization as to each construction trade it intends to use on this construction contract and all other construction work (both Federal and non-Federal) in the MIC & JS plan area during the performance of this contract or subcontract. The plan area is defined as covering Georgetown, Williamsburg, Horry and Marion Counties, South Carolina. The contractor commits itself to the goals for minority manpower utilization contained herein and all other requirements, terms and conditions of these bid conditions by submitting a properly signed bid.

b. The contractor will appoint a company executive to assume the responsibility for the implementation of such requirements, terms and conditions. (See Special Provision SP 1-41 for the MIC & JS Plan.)

c. The State of South Carolina Job Service located in Georgetown, South Carolina, P. O. Box 956 or 1112 Highmarket Street, 29440, phone (803) 546-8581, is available to assist the Contractor in meeting requirements of Equal Employment Opportunity bid conditions and the MIC & JS Affirmative Action Plan.

22. ALTERATIONS IN CONTRACT (1949 JUL). The following alterations have been made in the provisions of this contract:

a. Paragraph 11, NOTICE OF TOTAL SMALL BUSINESS SET-ASIDE (1972 Jul), is deleted in its entirety.

STANDARD FORM 22
OCTOBER 1969 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.401

INSTRUCTIONS TO BIDDERS

(CONSTRUCTION CONTRACT)

1. Explanations to Bidders. Any explanation desired by a bidder regarding the meaning or interpretation of the invitation for bids, drawings, specifications, etc., must be requested in writing and with sufficient time allowed for a reply to reach bidders before the submission of their bids. Any interpretation made will be in the form of an amendment of the invitation for bids, drawings, specifications, etc., and will be furnished to all prospective bidders. Its receipt by the bidder must be acknowledged in the space provided on the Bid Form (Standard Form 21) or by letter or telegram received before the time set for opening of bids. Oral explanations or instructions given before the award of the contract will not be binding.

2. 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.

3. Bidder's Qualifications. Before a 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.

4. Bid Guarantee. Where a bid guarantee is required by the invitation for bids, 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.

A bid guarantee shall be 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, in accordance with Treasury Department regulations, certain bonds or notes of the United States. Bid guarantees, other than bid bonds, will be returned (*a*) to unsuccessful bidders as soon as practicable after the opening of bids, and (*b*) to the successful bidder upon execution of such further contractual documents and bonds as may be required by the bid as accepted.

If the successful bidder, upon acceptance of his bid by the Government within the period specified therein for acceptance (sixty days if no period is specified) fails to execute such further contractual documents, if any, and give such bond(s) as may be required by the terms of the bid as accepted within the time specified (ten days if no period is specified) after receipt of the forms by him, his contract may be terminated for default. In such event he shall be liable for any cost of procuring the work which exceeds the amount of his bid, and the bid guarantee shall be available toward offsetting such difference.

5. Preparation of Bids. (*a*) Bids shall be submitted on the forms furnished, or copies thereof, and must be manually signed. If erasures or other changes appear on the forms, each erasure or change must be initialed by the person signing the bid. Unless specifically authorized in the invitation for bids, telegraphic bids will not be considered.

(*b*) The bid form may provide for submission of a price or prices for one or more items, which may be lump sum bids, alternate prices, scheduled items resulting in a bid on a unit of construction or a combination thereof, etc. Where the bid form explicitly requires that the bidder bid on all items, failure to do so will disqualify the bid. When submission of a price 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.

(*c*) Unless called for, alternate bids will not be considered.

(*d*) Modifications of bids already submitted will be considered if received at the office designated in the invitation for bids by the time set for opening of bids. Telegraphic modifications will be considered but should not reveal the amount of the original or revised bid.

6. Submission of Bids. Bids must be sealed, marked, and addressed as directed in the invitation for bids. Failure to do so may result in a premature opening of, or a failure to open, such bid.

7. Late Bids and Modifications or Withdrawals. (This paragraph applies to all advertised solicitations. In the case of Department of Defense negotiated solic[illegible]tions, it shall also apply to late offers and mod[illegible] (other than the normal revisions of offe[illegible] offerors during the usual conduct o[illegible] such offerors) but not to with[illegible] Unless otherwise provided, this [illegible] not apply to negotiated solicitation[illegible] agencies.)

(*a*) Bids a[illegible] or withdrawals the[illegible] received at th[illegible] ated in the invita[illegible] as after the exa[illegible] set for opening of [illegible] not be considered unless: (1) They are re[illegible] ore award is made, and either (2) they a[illegible] registered mail, or by certified mail for w[illegible] ancial dated post office stamp (postmark) o[illegible] ginal Receipt for Certified Mail has been [illegible] and it is determined by the Government [illegible] e receipt was due solely to delay in the m[illegible] which the bidder was not responsible; or (3) if s[illegible] mitted by mail (or by telegram if authorized), [illegible] determined by the Government that the late receipt was due solely to mishandling by the Government after [illegible] at the Government installation: *Provided,* That [illegible] receipt at such installation is established upon exa[illegible] of an appropriate date or time stamp (if any) [illegible] such installation or of other documentary evidence [illegible] receipt (if readily available) within the control of [illegible] installation or of the post office serving it. However, a modification which makes the terms of the otherwise [illegible] bid more favorable to the Government will [illegible] considered at any time it is received and may thereafter [illegible] epted.

(*b*) Bidders using certified mail are cautioned to obtain a Receipt for Certified Mail showing a legible, dated postmark and to retain such receipt against the chance [illegible] will be required as evidence that a late bid was [illegible] mailed.

(*c*) The time of mailing of late bids submitted by registered or certified mail shall be deemed to be the last minute of the date shown in the postmark on the registered mail receipt or registered mail wrapper or on the Receipt for Certified Mail unless the bidder furnishes evidence from the post office station of mailing which establishes an earlier [illegible] In the case of certif[illegible] mail, the only accep[illegible] is as follows [illegible] re the Recei[illegible] Mail identif[illegible] office stati[illegible] evidence fur[illegible] the bidder [illegible] s that the b[illegible] of that station [illegible] earlier time. [illegible] se the time of mailing [illegible] be deemed to [illegible] st minute of the business day of that sta[illegible] (2) an entry in ink on the Receipt for C[illegible] mail showing the time of mailing an[illegible] the in[illegible] e postal employee receiving the item an[illegible] entry, with appropriate written verificatio[illegible] entry from the post office station of mailing, [illegible] nich case the time of mailing shall be the time show[illegible] in the entry. If the postmark on the original Receipt f[illegible] Certified Mail does not show a date, the bid shall [illegible] be considered.

8. Withdrawal of Bids. Bids may be withdrawn b[illegible] written or telegraphic request received from bidders prior to the time set for opening of bids.

9. Public Opening of Bids. Bids will be publicly opened at the time se[illegible] for opening in the invitation fo[illegible] bids. Their content will be made public for the information of bidders and others interested who may be present either in person or by representativ[illegible]

10. Award of Contract. (*a*) Aw[illegible] contract will be made to that responsible bidder whose bid, conforming to the invitation for bids, is most advantageous to the Government, price and other factors considered.

(*b*) The Government may, when in its interest, reject any or all bids or waive any informality in bids received.

(*c*) The Government may accept any item or combination of items of a bid, unless precluded by the invitation for bids or the bidder includes in his bid a restrictive limitation.

11. Contract and Bonds. The bidder whose bid is accepted will, within the time established in the bid, enter into a written contract with the Government and, if required, furnish performance and payment bonds on Government standard forms in the amounts indicated in the invitation for bids or the specifications.

DELETE (SEE AMENDED CLAUSE 14, PAGE SF 20-6)

CONTINUATION OF STANDARD FORM 22 (INSTRUCTIONS TO BIDDERS)

The following list of actions should be used by bidders to preclude irregularities which have occurred in bids received.

PLEASE CHECK ✓

1. Have amendments to the Invitation been acknowledged in the space provided in the bid form, and on the envelope containing the bid? If not, acknowledgment must be made prior to bid opening. ___

2. Have prices been inserted for all items of the bid schedule? ___

3. Do prices inserted include subcontractors and suppliers quotations, indirect costs, and profit? ___

4. Have all prices and computations been checked? ___

5. Is the bid submitted on the latest Unit Price Schedule? ___

6. Have changes been made to the Unit Price Schedule? ___

7. Are decimal points in prices in proper place? ___

8. Have you checked for transposition of figures in prices inserted on the bid schedule? ___

9. Is the bid dated and signed? If so, is it signed by a person legally authorized to bind the bidder? Is the bidder's address included? ___

10. If the bid is signed by an agent, is legal evidence of his authority to so act included with the bid? ___

11. Is the specified bid bond on Standard Form 24, or other form providing identical protection to the Government, included with the bid? ___

12. Is the bid bond completely and properly executed, with date not prior to date of the related bid, signed by principal and surety, corporate certificates executed, copy of Power of Attorney, seals affixed, all as instructed on reverse of Standard Form 24? ___

13. Has the Plant and Equipment Schedule been completed. Plant should be identified by name or number, the type and power shown, and the capability to perform should be clearly indicated. ___

14. Have the appropriate boxes been checked on Standard Form 19-B? ___

15. Is literature, data, catalogs, etc., specified by the Invitation included with the bid? (If applicable) ___

16. Have requirements of Invitation for Bids paragraph LATE BIDS, MODIFICATIONS OF BIDS OR WITHDRAWAL OF BIDS been met? ___

17. Are preliminary planning diagram and schedule specified by the Invitation included? (If applicable) ___

CAUTION: Bids which are qualified by the bidder may be considered NON-RESPONSIVE!

STANDARD FORM 21
DECEMBER 1965 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.401

BID FORM
(CONSTRUCTION CONTRACT)

REFERENCE
Invitation Number
DACW 60-77-B-0014

Read the Instructions to Bidders (Standard Form 22)
This form to be submitted in

DATE OF INVITATION
14 June 1977

NAME AND LOCATION OF PROJECT
Construction of Channel and Jetty System
Murrells Inlet Navigation Project
Murrells Inlet, S. C.

NAME OF BIDDER *(Type or print)*

(Date)

TO: District Engineer
U. S. Army Engineer District, Charleston
Corps of Engineers
P. O. Box 919
Charleston, SC 29402

In compliance with the above-dated invitation for bids, the undersigned hereby proposes to perform all work for Construction of Channel and Jetty System, Murrells Inlet Navigation Project

in strict accordance with the General Provisions [redacted], specifications, schedules, drawings, and conditions, for consideration of the amounts set forth in the attached Unit Price Schedule (SAN Form 176).

(Continue on other side)

The undersigned agrees that, upon written acceptance of this bid, mailed or otherwise furnished within 30 calendar days ~~[illegible]~~ after the date of opening of bids, he will within 7 calendar days (unless a longer period is allowed) after receipt of the prescribed forms, execute Standard Form 23, Construction Contract, and give performance and payment bonds on Government standard forms with good and sufficient surety. (See paragraph 4 on page SF 20-2 entitled "Minimum Acceptance Period (1975 Mar)".

The undersigned agrees, if awarded the contract, to commence the work within 28 calendar days after the date of receipt of notice to proceed, and to complete the work in accordance with the Special Provision entitled " Commencement, Prosecution and Completion of Work".

RECEIPT OF AMENDMENTS *The undersigned acknowledges receipt of the following amendments of the invitation for bids, drawings, and/or specifications, etc. (Give number and date of each):*

Amendment No. _____ Dated _____ Amendment No. _____ Dated _____

Amendment No. _____ Dated _____ Amendment No. _____ Dated _____

The representations and certifications on the accompanying STANDARD FORM 19-B are made a part of this bid.

ENCLOSED IS BID GUARANTEE, CONSISTING OF _____ IN THE AMOUNT OF _____

NAME OF BIDDER (*Type or print*)	FULL NAME OF ALL PARTNERS (*Type or print*)
BUSINESS ADDRESS (*Type or print*) (*Include "ZIP Code"*)	
BY (*Signature in ink. Type or print name under signature*)	
TITLE (*Type or print*)	

DIRECTIONS FOR SUBMITTING BIDS *Envelopes containing bids, guarantee, etc., must be sealed, marked, and addressed as follows:*

Address bids to:
District Engineer
U. S. Army Engineer District, Charleston
P. O. Box 919
Charleston, SC 29402

Mark in lower left hand corner of sealed envelope: Bid under Invitation Number DACW60-77-B-0014 to be opened 2:00 P.M. local time, at place of Bid Opening, 14 July 1977.

Hand-carried bids will be deposited in Bid Depository Box located in Room 314 until 1:45 P.M., local time. From 1:45 P.M., local time until 2:00 P.M., local time, hand-carried bids will be presented to the Bid Opening Officer in Room 333.

CAUTION—Bids should not be qualified by exceptions to the bidding conditions.

☆ U.S. GOVERNMENT PRINTING OFFICE 1966 O—205-167—(15-F)

INVITATION NUMBER
DACW60-77-B-0014

UNIT PRICE SCHEDULE
(TO BE ATTACHED TO BID FORM)

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
	NORTH JETTY				
1	Armor Stone I	9,000	Ton	_____	_____
2	Armor Stone II	48,200	Ton	_____	_____
3	Core Stone	15,400	Ton	_____	_____
4	Toe Protection Stone*	12,500	Ton	_____	_____
5	Cover Stone	2,500	Ton	_____	_____
6	Foundation Blanket	22,500++	Ton	_____	_____
	SOUTH JETTY				
7	Armor Stone I	8,200	Ton	_____	_____
8	Armor Stone II	73,400	Ton	_____	_____
9	Core Stone	22,300	Ton	_____	_____
10	Toe Protection Stone*	11,800	Ton	_____	_____
11	Foundation Blanket	32,200++	Ton	_____	_____
	CHANNELS & DEPOSITION BASIN				
12	Mobilization & Demobilization of Dredging Plant for Pilot Channel Dredging	1	Job	LUMP SUM	_____
13	Mobilization & Demobilization of Dredging Plant for Final Dredging	1	Job	LUMP SUM	_____
14	Excavation, Unclassified, Entrance Channel	212,300**	CY	_____	_____
15	Excavation, Unclassified, Auxiliary Channel	92,000**	CY	_____	_____
16	Excavation, Unclassified, Deposition Basin	600,000**	CY	_____	_____

* Has same gradation as core stone
** Includes two (2) feet overdepth
++ Based on 2.4 specific gravity (SSG)

INVITATION NUMBER
DACW60-77-B-0014

UNIT PRICE SCHEDULE
(TO BE ATTACHED TO BID FORM)

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
17	Excavation, Unclassified, Inner Channel "A"	227,000**	CY	_____	_____
18	Excavation, Unclassified, Inner Channel "B"				
	a. Beach Disposal	22,000**	CY	_____	_____
	b. Highland Disposal	1,000**	CY	_____	_____
19	Excavation, Unclassified, Pilot Channel	80,000**	CY	_____	_____
20	FISHING WALKWAY	3,320	LF	_____	_____
	GRASSING				
21	Grassing	22	ACRE	_____	_____
22	Erosion Control Fabric	35,500	Sq. Yrd	_____	_____
23	Weir Warning Markers	5	Each	_____	_____
	TOTAL ITEMS 1-23				_____

* Has same gradation as core stone
** Includes two (2) feet overdepth
++ Based on 2.4 specific gravity (SSG)

INVITATION NUMBER
DACW60-77-B-0014

WORK TO BE PERFORMED WITH CONTRACTOR'S OWN ORGANIZATION

(to be attached to bid form)

DESCRIPTION OF WORK	% OF TOTAL WORK	ESTIMATED COST

NOTE: If bidder proposes to perform all of the work with his own organization, write ALL in the description block above.

INVITATION NUMBER
DACW60-77-B-0014

PLANT AND EQUIPMENT SCHEDULE

(to be attached to bid form)

Available Plant To Be Used

*_____

Number	Type	Capacity	Manufacturer	Age & Condition	Location

*_____

Number	Type	Capacity	Manufacturer	Age & Condition	Location

1. In preparing the above tabulation, the bidder shall insert the following information under the appropriate heading, using a separate line for each major item and an additional page if necessary.

a. Number. For dredges, give identifying number and name.

b. Type. Under this heading, give description as follows: For bucket and dipper dredges, show bucket capacity in cubic yards, horsepower of hoist engine, type of power, and number of swings per hour; for pipeline dredges, show inside diameter of discharge pipe, horsepower of pump engine, and type of power.

c. Capacity. Under this heading, state the estimated capacity of the plant in cubic yards per month when working materials similar to those which it is anticipated will be encountered in the performance of work.

2. The following statement will be executed by all bidders: The plant ( ) will, ( ) will not, have the facilities for furnishing the meals required by the "Accomodations and Meals for Inspectors" clause of the contract.

ENG 1619-R
1 May 59

STANDARD FORM 19-B
OCTOBER 1969 EDITION
GENERAL SERVICES ADMINISTRATION
FED PROC REG (41 CFR) 1-16.401

REPRESENTATIONS AND CERTIFICATIONS

(Construction Contract)
(For use with SF 19 and 21)

REFERENCE (*Enter same No.(s) as on SF 19/21*)

NAME AND ADDRESS OF BIDDER (*No., Street, City, State, and ZIP Code*)

DATE OF BID

In negotiated procurements, "bid" and "bidder" shall be construed to mean "offer" and "offeror."

The bidder makes the following representations and certifications as a part of the bid identified above. (*Check appropriate boxes.*)

1. SMALL BUSINESS

He ☐ is, ☐ is not, a small business concern. (*For this purpose, a small business concern is a business concern, including its affiliates, which (a) is independently owned and operated, (b) is not dominant in the field of operation in which it is bidding on Government contracts, and (c) had average annual receipts for the preceding 3 fiscal years not exceeding $7,500,000. For additional information see governing regulations of the Small Business Administration.*)

2. CONTINGENT FEE

(*a*) He ☐ has, ☐ has not, employed or retained any company or person (other than a full-time bona fide employee working solely for the bidder) to s[illegible] e ☐ has, ☐ has not, paid or agreed to pay any company or person (other than [illegible] solely for the bidder) any fee, commission, percent[illegible] furnish information rel[illegible] *ntation, including the term bona fide employee, see Code of Federal Regulations, Title 41, Subpart 1-1.5.*)

DELETE

(SEE CLAUSE 2, SF 19-B CONTINUED)

3. TYPE OF ORGANIZATION

He operates as an ☐ individual, ☐ partnership, ☐ joint venture, ☐ corporation, incorporated in State of .....

4. INDEPENDENT PRICE DETERMINATION

(*a*) By submission of this bid, each bidder certifies, and in the case of a joint bid each party thereto certifies as to his own organization, that in connection with this procurement:

(1) The prices in this bid have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, in the case of a bid, or prior to award, in the case of a proposal, directly or indirectly to any other bidder or to any competitor; and

(3) No attempt has been made or will be made by the bidder to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition.

(*b*) Each person signing this bid certifies that:

(1) He is the person in the bidder's organization responsible within that organization for the decision as to the prices being bid herein and that he has not participated, and will not participate, in any action contrary to (*a*)(1) through (*a*)(3) above; or

(2) (i) He is not the person in the bidder's organization responsible within that organization for the decision as to the prices being bid herein but that he has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (*a*)(1) through (*a*) (3) above, and as their agent does hereby so certify; and (ii) he has not participated, and will not participate, in any action contrary to (*a*)(1) through (*a*)(3) above.

(*c*) This certification is not applicable to a foreign bidder submitting a bid for a contract which requires performance or delivery outside the United States, its possessions, and Puerto Rico.

(*d*) A bid will not be considered for award where (*a*)(1), (*a*)(3), or (*b*) above, has been deleted or modified. Where (*a*)(2) above, has been deleted or modified, the bid will not be considered for award unless the bidder furnishes with the bid a signed statement which sets forth in detail the circumstances of the disclosure and the head of the agency, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

THE FOLLOWING NEED BE CHECKED ONLY IF BID EXCEEDS $10,000 IN AMOUNT.

5. EQUAL OPPORTUNITY

He ☐ has, ☐ has not, participated in a previous contract or subcontract subject to the Equal Opportunity Clause herein, the clause originally contained in Section 301 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114; he ☐ has, ☐ has not, filed all required compliance reports; and representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. (*The above representation need not be submitted in connection with contracts or subcontracts which are exempt from the clause.*)

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 in bids is prescribed in 18 U.S.C. 1001.*

6. PARENT COMPANY AND EMPLOYER IDENTIFICATION NUMBER

Each bidder shall furnish the following information by filling in the appropriate blocks:

(a) Is the bidder owned or controlled by a parent company as described below? ☐ Yes ☐ No *(For the purpose of this bid, a parent company is defined as one which either owns or controls the activities and basic business policies of the bidder. To own another company means the parent company must own at least a majority (more than 50 percent) of the voting rights in that company. To control another company, such ownership is not required; if another company is able to formulate, determine, or veto basic business policy decisions of the bidder, such other company is considered the parent company of the bidder. This control may be exercised through the use of dominant minority voting rights, use of proxy voting, contractual arrangements, or otherwise.)*

(b) If the answer to (a) above is "Yes," bidder shall insert in the space below the name and main office address of the parent company:

NAME OF PARENT COMPANY (No., Street, City, State, and ZIP Code)

(c) Bidder shall insert in the applicable space below, if he has no parent company, his own Employer's Identification Number (E.I. No.) *(Federal Social Security Number used on Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941)*, or, if he has a parent company, the E.I. No. of his parent company.

EMPLOYER IDENTIFICATION NUMBER OF ➤ PARENT COMPANY BIDDER

7. CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to (1) contracts, (2) subcontracts, and (3) agreements with applicants who are themselves performing federally assisted construction contracts, exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause.)

By the submission of this bid, the bidder, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" 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 which 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. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of 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.

REPRESENTATIONS
AND CERTIFICATIONS
(Construction Contract)

Paragraph 1, Small Business, is amended to substitute $9,500,000 for $7,500,000 when the procurement is for dredging and $12,000,000 when the procurement is for construction other than dredging. (Part 121.3-8(a)(2), Federal Register, Vol. 40, No. 151)

Paragraph 2 is deleted in its entirety and the following substituted therefor:

2. CONTINGENT FEE (1974 APR). The Offeror/Quoter represents and certifies as part of his proposal/quotation that: (Check all applicable boxes or blocks)

(a) He ( ) has, ( ) has not, employed or retained any company or person (other than a full-time bona fide employee working solely for the offeror/quoter) to solicit or secure this contract, and (b) he ( ) has, ( ) has not, paid or agreed to pay any company or person (other than a full-time bona fide employee working solely for the offeror/quoter) any fee, commission, percentage, or brokerage fee contingent upon or resulting from the award of this contract; and agrees to furnish information relating to (a) and (b) above, as requested by the Contracting Officer. (For interpretation of the representation, including the term "bona fide employee", see Code of Federal Regulations, Title 41, Subpart 1-1.5.)

If the offeror/quoter, by checking the appropriate box provided therefor, has represented that he has employed or retained a company or person (other than a full-time bona fide employee working solely for the offeror/quoter) to solicit or secure this contract, or that he has paid or agreed to pay any fee, commission, percentage, or brokerage fee to any company or person contingent upon or resulting from the award of this contract, he shall furnish, in duplicate, a complete Standard Form 119, Contractor's Statement of Contingent or Other Fees. If offeror/quoter has previously furnished a completed Standard Form 119 to the office issuing this solicitation, he may accompany his proposal/quotation with a signed statement (a) indicating when such completed form was previously furnished, (b) identifying by number the previous solicitation or contract, if any, in connection with which such form was submitted, and (c) representing that the statement in such form is applicable to this proposal/quotation. (ASPR 7-2002.1)

The following paragraphs are added herewith:

8. I ( ) will, ( ) will not, accept Clause 43 entitled "SMALL BUSINESS SUBCONTRACTING PROGRAM (MAINTENANCE, REPAIR AND CONSTRUCTION (1967 JUN)". (Clause is mandatory when bid price exceeds $500,000.) (ASPR 1-707.3(c))

REPRESENTATIONS
AND CERTIFICATIONS
(Construction Contract)

9. CLEAN AIR AND WATER CERTIFICATION (1975 OCT). (Applicable if the bid or offer exceeds $100,000, or the Contracting Officer has determined that orders under an indefinite quantity contract in any year will exceed $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1)) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or is not otherwise exempt.)

The Bidder or Offeror certifies as follows:

(i) any facility to be utilized in the performance of this proposed contract has ( ), has not ( ), been listed on the Environmental Protection Agency List of Violating Facilities;

(ii) he will promptly notify the Contracting Officer, prior to award, of the receipt of any communication from the Director, Office of Federal Activities, U. S. Environmental Protection Agency, indicating that any facility which he proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and

(iii) he will include substantially this solicitation certification, including this paragraph (iii), in every nonexempt subcontract. (ASPR 7-2003.71)

10. HANDICAPPED. The Offeror certifies with respect to the Employment of Handicapped clause as follows:

1. He ( ) has, ( ) has not, previously been awarded a contract which included the clause. (If affirmative, execute 2.)

2. The time specified for contract performance ( ) exceeded ninety (90) days, ( ) did not exceed ninety (90) days. (If more than ninety (90) days, execute 3.)

3. The amount of the contract was ( ) less than $500,000, ( ) more than $500,000, and he ( ) has, ( ) has not, published his program for the employment of the handicapped. (If more than $500,000, execute 4.)

4. He ( ) has, ( ) has not, submitted the required annual report to the Assistant Secretary of Labor for Employment Standards.

5. He ( ) has, ( ) has not, made a good faith effort to effectuate and carry out his affirmative action program.

6. He will not award subcontracts to persons or concerns that have not published programs and submitted annual reports as required by the clause. (ASPR 2-201(a)(xvii)

STANDARD FORM 19-B (continued)
October 1969 Edition

REPRESENTATIONS
AND CERTIFICATIONS
(Construction Contract)

11. MINORITY BUSINESS ENTERPRISE (1976 OCT)

The offeror represents that he ( ) is, ( ) is not, a minority business enterprise is defined as a "business, at least fifty percent (50%) of which is owned by minority group members." For the purpose of this definition minority group members are Negroes, Spanish speaking American persons, American-Orientals, American Indians, American Eskimos, And American-Aleuts. (ASPR7-2003.74)

SUPERSEDEAS DECISION

STATES: Georgia, North Carolina, South Carolina, Virginia, and Washington, D. C., and in Florida, all counties on the Atlantic coast and the Gulf coast west to the Apalachicola River and all tributary waterways.

DECISION NUMBER: GA77-5035 DATE: Date of Publication

SUPERSEDES DECISION NO. GA77-5005 dated January 4, 1977 in 42 FR 1015, and FL76-5024 dated March 26, 1976 in 41 FR 12856

DESCRIPTION OF WORK: Dredging

	Basic Hourly Rates	Fringe Benefits Payments			
		H & W	Pensions	Vacation	Education and/or Appr. Tr.
HYDRAULIC DREDGES 20" AND OVER:					
Leverman	$7.22	.50	.43	a	
Engineer	7.17	.50	.43	a	
Mate	6.38	.50	.43	a	
Welder	6.61	.50	.43	a	
Derrick Operator	6.88	.50	.43	a	
Spill barge operator	6.72	.50	.43	a	
Spider barge operator	6.72	.50	.43	a	
Tug master	6.32	.50	.43	a	
Carpenter	6.84	.50	.43	a	
Tug mate	6.00	.50	.43	a	
Electrician	7.01	.50	.43	a	
Machinist	6.77	.50	.43	a	
Steward	5.42	.50	.43	a	
Oiler & fireman	5.23	.50	.43	a	
Deckhand & tug deckhand	4.84	.50	.43	a	
Shoreman	4.73	.50	.43	a	
Second cook	4.64	.50	.43	a	
Messman	4.73	.50	.43	a	
HYDRAULIC DREDGES UNDER 20":					
Leverman	6.57	.50	.43	a	
Engineer	6.20	.50	.43	a	
Welder	6.32	.50	.43	a	
Mate	5.54	.50	.43	a	
Oiler & fireman	5.16	.50	.43	a	
Deckhand	4.84	.50	.43	a	
Launchman	5.23	.50	.43	a	
Shoreman	4.73	.50	.43	a	
Spill barge operator	5.70	.50	.43	a	
Spider barge operator	5.70	.50	.43	a	
CLAMSHELL DREDGES:					
Operator	7.11	.50	.43	a	
Engineer	6.38	.50	.43	a	
Welder	6.42	.50	.43	a	
Mate	6.08	.50	.43	a	
Fireman & Oiler	5.23	.50	.43	a	
Deckhand	4.84	.50	.43	a	
Launchman	5.23	.50	.43	a	
Scowman	4.93	.50	.43	a	

	Basic Hourly Rates	Fringe Benefits Payments			
		H & W	Pensions	Vacation	Education and/or Appr. Tr.
DIPPER DREDGES:					
Operator	$7.29	.50	.43	a	
Craneman	6.91	.50	.43	a	
Engineer	7.09	.50	.43	a	
Welder	6.61	.50	.43	a	
Mate	6.38	.50	.43	a	
Fireman & oiler	5.23	.50	.43	a	
Deckhand	4.84	.50	.43	a	
Tug master	6.32	.50	.43	a	
Tug mate	6.00	.50	.43	a	
Scowman	4.93	.50	.43	a	
TUGS (PENDING DIPPER & CLAMSHELL DREDGES):					
Tug master	6.46	.50	.43	a	
Tug mate	6.07	.50	.43	a	
Engineer	6.46	.50	.43	a	
Assistant engineer	5.92	.50	.43	a	
Deckhand	4.76	.50	.43	a	
Cook	4.93	.50	.43	a	
STEWARD DEPARTMENT - ON DIPPER AND CLAMSHELL DREDGES AND ON HYDRAULIC DREDGES 20" AND UNDER:					
Cook	5.16	.50	.43	a	
Mess cook	4.40	.50	.43	a	
Messmen & janitor	4.70	.50	.43	a	
DRILLBOATS:					
Driller	7.17	.50	.43	a	
Blaster	7.17	.50	.43	a	
Operator engineer	7.17	.50	.43	a	
Helper	5.23	.50	.43	a	

FOOTNOTE:

PAID HOLIDAYS: A-New Year's Day; B-Memorial Day; C-Independence Day; D-Labor Day; E-Thanksgiving Day; F-Christmas Day.

a. Six paid holidays, A through F, plus vacation contribution of 7% of straight time pay.

SUPERSEDEAS DECISION

STATE: South Carolina COUNTY: Statewide
DECISION NO.: 75SC-1079 DATE: Date of Publication
Supersedes Decision No.: AR-157 dated February 16, 1973 in 38 FR 4619
DESCRIPTION OF WORK: Water and Sewer Construction; and Heavy Construction

	Basic Hourly Rates	Fringe Benefits Payments			
		H & W	Pensions	Vacation	App. Tr.
Bricklayers	5.25				
Carpenters	4.20				
Cement masons	3.96				
Ironworkers:					
Reinforcing	3.95				
Structural	4.76				
Laborers:					
Laborers	2.68				
Pipelayers	3.36				
Manhole builders	3.92				
Millwrights	4.76				
Painters	4.76				
Pipefitters	4.76				
POWER EQUIPMENT OPERATORS:					
Air drill operators	3.50				
Bulldozers	3.90				
Backhoe operators	4.04				
Concrete pump	4.76				
Cranes & dragline	4.65				
Equipment mechanics	3.82				
Front end loader	3.57				
Motor grader	4.00				
Oiler	2.86				
Paving machine	3.60				
Rollers operators	3.00				
Tractors	2.68				
Trenching machine	4.15				
Truck drivers	2.73				
Welders	4.67				

STANDARD FORM 23
JANUARY 1961 EDITION
GENERAL SERVICES ADMINISTRATION
FED PROC REG (41 CFR) 1-16.401

CONSTRUCTION CONTRACT

(See instructions on reverse)

CONTRACT NO

DATE OF CONTRACT

NAME AND ADDRESS OF CONTRACTOR

CHECK APPROPRIATE BOX

- [ ] Individual
- [ ] Partnership
- [ ] Joint Venture
- [ ] Corporation, incorporated in the State of

DEPARTMENT OR AGENCY

CONTRACT FOR *(Work to be performed)*

PLACE

CONTRACT PRICE *(Express in words and figures)*

ADMINISTRATIVE DATA *(Optional)*

The United States of America (hereinafter called the Government), represented by the Contracting Officer executing this contract, and the individual, partnership, joint venture, or corporation named above (hereinafter called the Contractor), mutually agree to perform this contract in strict accordance with the General Provisions [redacted] and the following designated specifications, schedules, drawings, and conditions:

WORK SHALL BE STARTED

WORK SHALL BE COMPLETED

Alterations. The following alterations were made in this contract before it was signed by the parties hereto:

In witness whereof, the parties hereto have executed this contract as of the date entered on the first page hereof.

THE UNITED STATES OF AMERICA

By _____

_____
(Official title)

CONTRACTOR

_____
(Name of Contractor)

By _____
(Signature)

_____
(Title)

INSTRUCTIONS

1. The full name and business address of the Contractor must be inserted in the space provided on the face of the form. The Contractor shall sign in the space provided above with his usual signature and typewrite or print his name under the signature.

2. An officer of a corporation, a member of a partnership, or an agent signing for the Contractor shall place his signature and title after the word "By" under the name of the Contractor. A contract executed by an attorney or agent on behalf of the Contractor shall be accompanied by two authenticated copies of his power of attorney or other evidence of his authority to act on behalf of the Contractor.

U.S. GOVERNMENT PRINTING OFFICE 1960 OF—572728—46

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GENERAL PROVISIONS
(Construction Contract)
Issued By: Department of the Army, Corps of Engineers

(General Provisions 1 through 31 and 32 through 40 are those prescribed by the General Services Administration in Standard Form 23 A, April 1975 edition and Standard Form 19-A, November 1972 edition, respectively, as amended pursuant to the latest revisions of the Armed Services Procurement Regulation and Engineer Contract Instructions, ER 1180-1-1.)

1.1 DEFINITIONS

(The following clause is applicable if the procurement instrument identification number is prefixed by the letters "DACW")

(a) The term "head of the agency" or "Secretary" as used herein means the Secretary of the Army; and the term "his duly authorized representative" means the Chief of Engineers, Department of the Army, or an individual or board designated by him.

(b) The term "Contracting Officer" as used herein means the person executing this contract on behalf of the Government and includes a duly appointed successor or authorized representative. (ASPR 7-602.1 & ECI 7-070)

1.2 DEFINITIONS (1964 JUN)

(The following clause is applicable if the procurement instrument identification number is prefixed by the letters "DACA")

(a) The term "head of the agency" or "Secretary" as used herein means the Secretary, the Under Secretary, any Assistant Secretary, or any other head or assistant head of the executive or military department or other Federal agency; and the term "his duly authorized representative" means any person or persons or board (other than the Contracting Officer) authorized to act for the head of the agency or the Secretary.

(b) The term "Contracting Officer" as used herein means the person executing this contract on behalf of the Government and includes a duly appointed successor or authorized representative. (ASPR 7-602.1)

2. SPECIFICATIONS AND DRAWINGS (1964 JUN)

The Contractor shall keep on the work a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy either in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at his own risk and expense. The Contracting Officer shall furnish from time to time such detail drawings and other information as he may consider necessary, unless otherwise provided. (ASPR 7-602.2)

3. CHANGES (1968 FEB)

(a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make any change in the work within the general scope of the contract, including but not limited to changes:

(i) in the specifications (including drawings and designs);

(ii) in the method or manner of performance of the work,

(iii) in the Government furnished facilities, equipment, materials, services, or site; or

(iv) directing acceleration in the performance of the work.

(b) Any other written order or an oral order (which terms as used in this paragraph (b) shall include direction, instruction, interpretation or determination) from the Contracting Officer, which causes any such change, shall be treated as a change order under this clause, *provided* that the Contractor gives the Contracting Officer written notice stating the date, circumstances, and source of the order and that the Contractor regards the order as a change order.

(c) Except as herein provided, no order, statement, or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment hereunder.

(d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this contract, whether or not changed by any order, an equitable adjustment shall be made and the contract modified in writing accordingly: *Provided, however,* That except for claims based on defective specifications, no claim for any change under (b) above shall be allowed for any costs incurred more than 20 days before the Contractor gives written notice as therein required: *And provided further,* That in the case of defective specifications for which the Government is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with such defective specifications.

(e) If the Contractor intends to assert a claim for an equitable adjustment under this clause, he must, within 30 days after receipt of a written change order under (a) above or the furnishing of a written notice under (b) above, submit to the Contracting Officer a written statement setting forth the general nature and monetary extent of such claim, unless this period is extended by the Government. The statement of claim hereunder may be included in the notice under (b) above.

(f) No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract. (ASPR 7-602.3)

4. DIFFERING SITE CONDITIONS (1968 FEB)

(a) The Contractor shall promptly, and before such conditions are disturbed, notify the Contracting Officer in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this contract. The Contracting Officer shall promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under this

contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.

(b) No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in (a) above, *provided*, however, the time prescribed therefor may be extended by the Government.

(c) No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract. (ASPR 7-602.4)

5. TERMINATION FOR DEFAULT - DAMAGES FOR DELAY - TIME EXTENSIONS (1969 AUG)

(a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within such time, the Government may, by written notice to the Contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the Government may take over the work and prosecute the same to completion, by contract or otherwise, and may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefor. Whether or not the Contractor's right to proceed with the work is terminated, he and his sureties shall be liable for any damage to the Government resulting from his refusal or failure to complete the work within the specified time.

(b) If fixed and agreed liquidated damages are provided in the contract and if the Government so terminates the Contractor's right to proceed, the resulting damage will consist of such 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 fixed and agreed liquidated damages are provided in the contract and if the Government does not so terminate the Contractor's right to proceed, the resulting damage will consist of such liquidated damages until the work is completed or accepted.

(d) The Contractor's right to proceed shall not be so terminated nor the Contractor charged with resulting damage if:

(1) The delay in the completion of the work arises from causes other than normal weather beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, acts of the public enemy, acts of the Government in either its sovereign or contractual capacity, acts of another contractor in the performance of a contract with the Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from causes other than normal weather beyond the control and without the fault or negligence of both the Contractor and such subcontractors or suppliers, and

(2) The Contractor, within 10 days from the beginning of any such delay (unless the Contracting Officer grants a further period of time before the date of final payment under the contract), notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in his judgment, the findings of fact justify such an extension, and his findings of fact shall be final and conclusive on the parties, subject only to appeal as provided in the "Disputes" clause of this contract.

(e) If, after notice of termination of the Contractor's right to proceed under the provisions of this clause, it is determined for any reason that the Contractor was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of the parties shall, if the contract contains a clause providing for termination for convenience of the Government, be the same as if the notice of termination had been issued pursuant to such clause. If, in the foregoing circumstances, this contract does not contain a clause providing for termination for convenience of the Government, the contract shall be equitably adjusted to compensate for such termination and the contract modified accordingly; failure to agree to any such adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes".

(f) The rights and remedies of the Government provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

(g) As used in paragraph (d)(1) of this clause, the term "subcontractors or suppliers" means subcontractors or suppliers at any tier. (ASPR 7-602.5)

6. DISPUTES (1964 JUN)

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the head of the agency involved. The decision of the head of the agency or his duly authorized representative for the determination of such appeals shall be final and conclusive. This provision shall not be pleaded in any suit involving a question of fact arising under this contract as limiting judicial review of any such decision to cases where fraud by such official or his representative or board is alleged. *Provided, however*, that any such decision shall be final and conclusive unless the same is fraudulent or capricious or arbitrary or so grossly erroneous as necessarily to imply bad faith or is not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of his appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" clause does not preclude consideration of questions of law in connection with decisions provided for in paragraph (a) above. Nothing in this contract, however, shall be construed as making final the decision of any administrative official, representative, or board on a question of law. (ASPR 7-602.6(a))

7. PAYMENTS TO CONTRACTOR (1976 MAR)

(a) The Government will pay the contract price as hereinafter provided.

(b) The Government will make progress payments monthly as the work proceeds, or at more frequent intervals as determined by the Contracting Officer, on estimates approved by the Contracting Officer. If requested by the Contracting Officer, the Contractor shall furnish a breakdown of the total contract price showing the amount included therein for each principal category of the work, in

such detail as requested, to provide a basis for determining progress payments. In the preparation of estimates the Contracting Officer, at his discretion, may authorize material delivered on the site and preparatory work done to be taken into consideration. Material delivered to the Contractor at locations other than the site may also be taken into consideration (1) if such consideration is specifically authorized by the contract and (2) if the Contractor furnishes satisfactory evidence that he has acquired title to such material and that it will be utilized on the work covered by this contract.

(c) In making such progress payments, there shall be retained 10 percent of the estimated amount until final completion and acceptance of the contract work. However, if the Contracting Officer finds that satisfactory progress was achieved during any period for which a progress payment is to be made, he may authorize such payment to be made in full without retention of a percentage. Also, whenever the work is substantially complete, the Contracting Officer shall retain an amount he considers adequate for the protection of the Government, and, at his discretion, may release to the Contractor all or a portion of any excess amount. Furthermore, on completion and acceptance of each separate building, public work, or other division of the contract, on which the price is stated separately in the contract, payment may be made therefor without retention of a percentage.

(d) All material and work covered by progress payments made shall thereupon become the sole property of the Government, but this provision shall not be construed as relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work, or as waiving the right of the Government to require the fulfillment of all of the terms of the contract.

(e) Upon completion and acceptance of all work, the amount due the Contractor under this contract shall be paid upon the presentation of a properly executed voucher and after the Contractor shall have furnished the Government with a release of all claims against the Government arising by virtue of this contract, other than claims in stated amounts as may be specifically excepted by the Contractor from the operation of the release. If the Contractor's claim to amounts payable under the contract has been assigned under the Assignment of Claims Act of 1940, as amended (31 U.S.C. 203, 41 U.S.C. 15), a release may also be required of the assignee. (ASPR 7-602.7)

8. ASSIGNMENT OF CLAIMS (1976 OCT)

(a) Pursuant to the provisions of the Assignment of Claims Act of 1940, as amended (31 U.S.C. 203, 41 U.S.C. 15), if this contract provides for payments aggregating $1,000 or more, claims for moneys due or to become due the Contractor from the Government under this contract may be assigned to a bank, trust company, or other financing institution, including any Federal lending agency, and may thereafter be further assigned and reassigned to any such institution. Any such assignment or reassignment shall cover all amounts payable under this contract and not already paid, and shall not be made to more than one party, except that any such assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in such financing. Unless otherwise provided in this contract, payments to assignee of any moneys due or to become due under this contract shall not, to the extent provided in said Act, as amended, be subject to reduction or setoff. (The preceding sentence applies only if this contract is made in time of war or national emergency as defined in said Act and is with the Department of Defense, the General Services Administration, the Energy Research and Development Administration, the National Aeronautics and Space Administration, the Federal Aviation Administration, or any other department or agency of the United States designated by the President pursuant to Clause 4 of the proviso of section 1 of the Assignment of Claims Act of 1940, as amended by the Act of May 15, 1951, 65 Stat. 41.)

(b) In no event shall copies of this contract or of any plans, specifications, or other similar documents relating to work under this contract, if marked "Top Secret," "Secret," or "Confidential," be furnished to any assignee of any claim arising under this contract or to any other person not entitled to receive the same. However, a copy of any part or all of this contract so marked may be furnished, or any information contained therein may be disclosed, to such assignee upon the prior written authorization of the Contracting Officer. (ASPR 7-602.8)

9. MATERIAL AND WORKMANSHIP (1964 JUN)

(a) Unless otherwise specifically provided in this contract, all equipment, material, and articles incorporated in the work covered by this contract are to be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in this contract, reference to any equipment, material, article, or patented process, by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and the Contractor may, at his option, use any equipment, material, article, or process which, in the judgment of the Contracting Officer, is equal to that named. The Contractor shall furnish to the Contracting Officer for his approval the name of the manufacturer, the model number, and other identifying data and information respecting the performance, capacity, nature, and rating of the machinery and mechanical and other equipment which the Contractor contemplates incorporating in the work. When required by this contract or when called for by the Contracting Officer, the Contractor shall furnish the Contracting Officer for approval full information concerning the material or articles which he contemplates incorporating in the work. When so directed, samples shall be submitted for approval at the Contractor's expense, with all shipping charges prepaid. Machinery, equipment, material, and articles installed or used without required approval shall be at the risk of subsequent rejection.

(b) All work under this contract shall be performed in a skillful and workmanlike manner. The Contracting Officer may, in writing, require the Contractor to remove from the work any employee the Contracting Officer deems incompetent, careless, or otherwise objectionable. (ASPR 7-602.9)

10. INSPECTION AND ACCEPTANCE (1976 OCT)

(a) All work (which term includes but is not restricted to materials, workmanship, and manufacture and fabrication of components) shall be subject to inspection and test by the Government at all reasonable times and at all places prior to acceptance. Any such inspection and test is for the sole benefit of the Government and shall not relieve the Contractor of the responsibility of providing quality control measures to assure that the work strictly complies with the contract requirements. No inspection or test by the Government shall be construed as constituting or implying acceptance. Inspection or test shall not relieve the Contractor of responsibility for damage to or loss of

the material prior to acceptance, nor in any way affect the continuing rights of the Government after acceptance of the completed work under the terms of paragraph (f) of this clause, except as hereinabove provided.

(b) The Contractor shall, without charge, replace any material or correct any workmanship found by the Government not to conform to the contract requirements, unless in the public interest the Government consents to accept such material or workmanship with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(c) If the Contractor does not promptly replace rejected material or correct rejected workmanship, the Government (1) may, by contract or otherwise, replace such material or correct such workmanship and charge the cost thereof to the Contractor, or (2) may terminate the Contractor's right to proceed in accordance with the clause of this contract entitled "Termination for Default - Damages for Delay - Time Extensions."

(d) The Contractor shall furnish promptly, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspection and test as may be required by the Contracting Officer. All inspection and test by the Government shall be performed in such manner as not unnecessarily to delay the work. Special, full size, and performance tests shall be performed as described in this contract. The Government reserves the right to charge to the Contractor any additional cost of inspection or test when material or workmanship is not ready at the time specified by the Contractor for inspection or test or when reinspection or retest is necessitated by prior rejection.

(e) Should it be considered necessary or advisable by the Government at any time before acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the Contractor shall, on request, promptly furnish all necessary facilities, labor and material. If such work is found to be defective or nonconforming in any material respect, due to the fault of the Contractor or his subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, an equitable adjustment shall be made in the contract price to compensate the Contractor for the additional services involved in such examination and reconstruction and, if completion of the work has been delayed thereby, he shall, in addition, be granted a suitable extension of time.

(f) Unless otherwise provided in this contract, acceptance by the Government shall be made as promptly as practicable after completion and inspection of all work required by this contract, or that portion of the work that the Contracting Officer determines can be accepted separately. Acceptance shall be final and conclusive except as regards latent defects, fraud, or such gross mistakes as may amount to fraud or as regards the Government's rights under any warranty or guarantee. (ASPR 7-602.11)

11. SUPERINTENDENCE BY CONTRACTOR (1976 OCT)

The Contractor, at all times during performance and until the work is completed and accepted, shall give his personal superintendence to the work or have on the work a competent superintendent, satisfactory to the Contracting Officer and with authority to act for the Contractor. (ASPR 7-602.12)

12. PERMITS AND RESPONSIBILITIES (1964 JUN)

The Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal, State, and municipal laws, codes, and regulations, in connection with the prosecution of the work. He shall be similarly responsible for all damages to persons or property that occur as a result of his fault or negligence. He shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. He shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire construction work, except for any completed unit of construction thereof which theretofore may have been accepted. (ASPR 7-602.13)

13. CONDITIONS AFFECTING THE WORK (1964 JUN)

The Contractor shall be responsible for having taken steps 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. Any failure by the Contractor to do so will not relieve him from responsibility for successfully performing the work without additional expense to the Government. The Government assumes no responsibility for any understanding or representations concerning conditions made by any of its officers or agents prior to the execution of this contract, unless such understanding or representations by the Government are expressly stated in the contract. (ASPR 7-602.14)

14. OTHER CONTRACTS (1964 JUN)

The Government may undertake or award other contracts for additional work, and the Contractor shall fully cooperate with such other contractors and Government employees and carefully fit his own work to such additional work as may be directed by the Contracting Officer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor or by Government employees. (ASPR 7-602.15)

15. SHOP DRAWINGS (1976 OCT)

(a) The term *"shop drawings"* includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract.

(b) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with contract requirements and shall indicate his approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate his approval or disapproval of the shop drawings and if not approved as submitted shall indicate his reasons therefor. Any work done prior to such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (c) below.

(c) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Contracting Officer approves any such variation(s), he shall issue an appropriate contract

modification, except that, if the variation is minor and does not involve a change in price or in time of performance, a modification need not be issued.

(d) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated herein) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated herein) of all shop drawings will be retained by the Contracting Officer and one set will be returned to the Contractor. (ASPR 7-602.54(a))

16. USE AND POSSESSION PRIOR TO COMPLETION (1976 OCT)

The Government shall have the right to take possession of or use any completed or partially completed part of the work. Prior to such possession or use, the Contracting Officer shall furnish the Contractor an itemized list of work remaining to be performed or corrected on such portions of the project as are to be possessed or used by the Government, *provided* that failure to list any item of work shall not relieve the Contractor of responsibility for compliance with the terms of the contract. Such possession or use shall not be deemed an acceptance of any work under the contract. While the Government has such possession or use, the Contractor, notwithstanding the provisions of the clause of this contract entitled "Permits and Responsibilities," shall be relieved of the responsibility for the loss or damage to the work resulting from the Government's possession or use. If such prior possession or use by the Government delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment in the contract price or the time of completion will be made and the contract shall be modified in writing accordingly. (ASPR 7-602.39)

17. SUSPENSION OF WORK (1968 FEB)

(a) The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as he may determine to be appropriate for the convenience of the Government.

(b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted by an act of the Contracting Officer in the administration of this contract, or by his failure to act within the time specified in this contract (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent (1) that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor or (2) for which an equitable adjustment is provided for or excluded under any other provision of this contract.

(c) No claim under this clause shall be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order), and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay, or interruption, but not later than the date of final payment under the contract. (ASPR 7-602.46)

18. TERMINATION FOR CONVENIENCE OF THE GOVERNMENT–CONSTRUCTION (1974 APR)

(a) The performance of work under this contract may be terminated by the Government in accordance with this clause in whole, or from time to time in part, whenever the Contracting Officer shall determine that such termination is in the best interest of the Government. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated, and the date upon which such termination becomes effective.

(b) After receipt of a Notice of Termination, and except as otherwise directed by the Contracting Officer, the Contractor shall:

(i) stop work under the contract on the date and to the extent specified in the Notice of Termination,

(ii) place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the work under the contract as is not terminated;

(iii) terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination;

(iv) assign to the Government, in the manner, at the times, and to the extent directed by the Contracting Officer, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;

(v) settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the Contracting Officer, to the extent he may require, which approval or ratification shall be final for all the purposes of this clause;

(vi) transfer title and deliver to the Government, in the manner, at the times, and to the extent, if any, directed by the Contracting Officer, (A) the fabricated or unfabricated parts, work in process, completed work supplies, and other material produced as a part of, or acquired in connection with the performance of, the work terminated by the Notice of Termination, and (B) the completed or partially completed plans, drawings, information, and other property which, if the contract had been completed, would have been required to be furnished to the Government;

(vii) use his best efforts to sell, in the manner, at the times, to the extent, and at the price or prices directed or authorized by the Contracting Officer, any property of the types referred to in (vi) above; *provided*, however, that the Contractor (A) shall not be required to extend credit to any purchaser, and (B) may acquire any such property under the conditions prescribed by and at a

price or prices approved by the Contracting Officer, and *provided further* that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to the price or cost of the work covered by this contract or paid in such other manner as the Contracting Officer may direct;

(viii) complete performance of such part of the work as shall not have been terminated by the Notice of Termination; and

(ix) take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

At any time after expiration of the plant clearance period, as defined in Section VIII, Armed Services Procurement Regulation, as it may be amended from time to time, the Contractor may submit to the Contracting Officer a list, certified as to quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of items the disposition of which has been directed or authorized by the Contracting Officer, and may request the Government to remove such items or enter into a storage agreement covering them. Not later than fifteen (15) days thereafter, the Government will accept title to such items and remove them or enter into a storage agreement covering the same; *provided*, that the list submitted shall be subject to verification by the Contracting Officer upon removal of the items, or if the items are stored, within forty-five (45) days from the date of submission of the list, and any necessary adjustment to correct the list as submitted shall be made prior to final settlement.

(c) After receipt of a Notice of Termination, the Contractor shall submit to the Contracting Officer his termination claim, in the form and with certification prescribed by the Contracting Officer. Such claim shall be submitted promptly but in no event later than one year from the effective date of termination, unless one or more extensions in writing are granted by the Contracting Officer, upon request of the Contractor made in writing within such one year period or authorized extension thereof. However, if the Contracting Officer determines that the facts justify such action, he may receive and act upon any such termination claim at any time after such one year period or any extension thereof. Upon failure of the Contractor to submit his termination claim within the time allowed, the Contracting Officer may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

(d) Subject to the provisions of paragraph (c), the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the total or partial termination of work pursuant to this clause, which amount or amounts may include a reasonable allowance for profit on work done; *provided*, that such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. The contract shall be amended accordingly, and the Contractor shall be paid the agreed amount. Nothing in paragraph (e) of this clause, prescribing the amount to be paid to the Contractor in the event of failure of the Contractor and the Contracting Oficer to agree upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, shall be deemed to limit, restrict, or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to the Contractor pursuant to this paragraph (d).

(e) In the event of the failure of the Contractor and the Contracting Officer to agree, as provided in paragraph (d), upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, the Contracting Officer shall pay to the Contractor the amounts determined by the Contracting Officer as follows, but without duplication of any amounts agreed upon in accordance with paragraph (d):

(i) with respect to all contract work performed prior to the effective date of the Notice of Termination, the total (without duplication of any items) of-

(A) the cost of such work,

(B) the cost of settling and paying claims arising out of the termination of work under subcontracts or orders as provided in paragraph (b)(v) above, exclusive of the amounts paid or payable on account of supplies or materials delivered or services furnished by the subcontractor prior to the effective date of the Notice of Termination of Work under this contract, which amounts shall be included in the cost on account of which payment is made under (A) above; and

(C) a sum, as profit on (A) above, determined by the Contracting Officer pursuant to 8-303 of the Armed Services Procurement Regulation, in effect as of the date of execution of this contract, to be fair and reasonable; *provided*, however, that if it appears that the Contractor would have sustained a loss on the entire contract had it been completed, no profit shall be included or allowed under this subdivision (C) and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss; and

(ii) the reasonable cost of the preservation and protection of property incurred pursuant to paragraph (b)(ix); and any other reasonable cost incidental to termination of work under this contract, including expense incidental to the determination of the amount due to the Contractor as the result of the termination of work under this contract.

The total sum to be paid to the Contractor under (i) above shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. Except for normal spoilage, and except to the extent that the Government shall have otherwise expressly assumed the

risk of loss, there shall be excluded from the amounts payable to the Contractor under (i) above, the fair value, as determined by the Contracting Officer, of property which is destroyed, lost, stolen, or damaged so as to become undeliverable to the Government, or to a buyer pursuant to paragraph (b)(vii).

(f) Costs claimed, agreed to, or determined pursuant to (c), (d), (e), and (i) hereof shall be in accordance with Section XV of the Armed Services Procurement Regulation as in effect on the date of this contract.

(g) The Contractor shall have the right of appeal, under the clause of this contract entitled "Disputes", from any determination made by the Contracting Officer under paragraph (c), (e), or (i) hereof, except that if the Contractor has failed to submit his claim within the time provided in paragraph (c) or (i) hereof, and has failed to request extension of such time, he shall have no such right of appeal. In any case where the Contracting Officer has made a determination of the amount due under paragraph (c), (e) or (i) hereof, the Government shall pay to the Contractor the following: (i) if there is no right of appeal hereunder or if no timely appeal has been taken, the amount so determined by the Contracting Officer, or (ii) if an appeal has been taken, the amount finally determined on such appeal.

(h) In arriving at the amount due the Contractor under this clause there shall be deducted (i) all unliquidated advance or other payments on account theretofore made to the Contractor, applicable to the terminated portion of this contract, (ii) any claim which the Government may have against the Contractor in connection with this contract, and (iii) the agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the Contractor or sold, pursuant to the provisions of this clause, and not otherwise recovered by or credited to the Government.

(i) If the termination hereunder be partial, the Contractor may file with the Contracting Officer a claim for an equitable adjustment of the price or prices specified in the contract relating to the continued portion of the contract (the portion not terminated by the Notice of Termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices. Any claim by the Contractor for an equitable adjustment under this clause must be asserted within ninety (90) days from the effective date of the termination notice, unless an extension is granted in writing by the Contracting Officer.

(j) The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments and payments on account against costs incurred by the Contractor in connection with the terminated portion of this contract whenever in the opinion of the Contracting Officer the aggregate of such payments shall be within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this clause, such excess shall be payable by the Contractor to the Government upon demand, together with interest computed at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97 for the Renegotiation Board, for the period from the date such excess payment is received by the Contractor to the date on which such excess is repaid to the Government; *provided*, however, that no interest shall be charged with respect to any such excess payment attributable to a reduction in the Contractor's claim by reason of retention or other disposition of termination inventory until ten days after the date of such retention or disposition, or such later date as determined by the Contracting Officer by reason of the circumstances.

(k) Unless otherwise provided for in this contract, or by applicable statute, the Contractor shall - from the effective date of termination until the expiration of three years after final settlement under this contract - preserve and make available to the Government at all reasonable times at the office of the Contractor but without direct charge to the Government, all his books, records, documents and other evidence bearing on the costs and expenses of the Contractor under this contract and relating to the work terminated hereunder, or, to the extent approved by the Contracting Officer, photographs, microphotographs, or other authentic reproductions thereof. (ASPR 7-602.29(a))

19. PAYMENT OF INTEREST ON CONTRACTORS' CLAIMS (1976 JUL)

(a) If an appeal is filed by the Contractor from a final decision of the Contracting Officer under the "Disputes" clause of this contract, denying a claim arising under the contract, simple interest on the amount of the claim finally determined owed by the Government shall be payable to the Contractor. Such interest shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41; 85 STAT 97, from the date the Contractor furnishes to the Contracting Officer his written appeal under the "Disputes" clause of this contract, to the date of (i) a final judgment by a court of competent jurisdiction, or (ii) mailing to the Contractor of a supplemental agreement for execution either confirming completed negotiations between the parties or carrying out a decision of a board of contract appeals.

(b) Notwithstanding (a) above, (i) interest shall be applied only from the date payment was due, if such date is later than the filing of appeal; and (ii) interest shall not be paid for any period of time that the Contracting Officer determines the Contractor has unduly delayed in pursuing his remedies before a board of contract appeals or a court of competent jurisdiction. (ASPR 7-104.82)

20. PRICING OF ADJUSTMENTS (1970 JUL)

When costs are a factor in any determination of a contract price adjustment pursuant to the "Changes" clause or any other provision of this contract, such costs shall be in accordance with Section XV of the Armed Services Procurement Regulation as in effect on the date of this contract. (ASPR 7-103.26)

21. PATENT INDEMNITY (1964 JUN)

Except as otherwise provided, the Contractor agrees to indemnify the Government and its officers, agents, and employees against liability, including costs and expenses, for infringement upon any Letters Patent of the United States (except Letters Patent issued upon an application which is now or may hereafter be, for reasons of national security, ordered by the Government to be kept secret or otherwise withheld from issue) arising out of the performance of this contract or out of the use or disposal by or for the account of the Government of supplies furnished or construction work performed hereunder. (ASPR 7-602.16(a))

22. ADDITIONAL BOND SECURITY (1976 OCT)

If any surety upon any bond furnished in connection with this contract becomes unacceptable to the Government, or if any such surety fails to furnish reports as to his financial condition from time to time as requested by the Government, or if the contract price is increased to such an extent that the penal sum of any bond becomes

inadequate in the opinion of the Contracting Officer, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the Government and of persons supplying labor or materials in the prosecution of the work contemplated by this contract. (ASPR 7-602.17)

23. EXAMINATION OF RECORDS BY COMPTROLLER GENERAL (1975 JUN)

(a) This clause is applicable if the amount of this contract exceeds $10,000 and was entered into by means of negotiation, including small business restricted advertising but is not applicable if this contract was entered into by means of formal advertising.

(b) The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract or such lesser time specified in either Appendix M of the Armed Services Procurement Regulation or the Federal Procurement Regulations Part 1-20, as appropriate, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

(c) The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract or such lesser time specified in either Appendix M of the Armed Services Procurement Regulation or the Federal Procurement Regulations Part 1-20, as appropriate, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this clause excludes (i) purchase orders not exceeding $10,000 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

(d) The periods of access and examination described in (b) and (c) above for records which relate to (i) appeals under the "Disputes" clause of this contract, (ii) litigation or the settlement of claims arising out of the performance of this contract, or (iii) costs and expenses of this contract as to which exception has been taken by the Comptroller General or any of his duly authorized representatives, shall continue until such appeals, litigation, claims or exceptions have been disposed of. (ASPR 7-104.15)

24. BUY AMERICAN ACT (1966 OCT)

(a) *Agreement.* In accordance with the Buy American Act (41 U.S.C. 10a-10d), the Contractor agrees that only domestic construction material will be used (by the Contractor, subcontractors, materialmen, and suppliers) in the performance of this contract, except for nondomestic construction material listed in the "Nondomestic Construction Materials" clause, if any, of this contract.

(b) *Domestic construction material.* "Construction material" means any article, material, or supply brought to the construction site for incorporation in the building or work 'An unmanufactured construction material is a "domestic construction material" if it has been mined or produced in the United States. A manufactured construction material is a "domestic construction material" if it has been manufactured in the United States and if the cost of its components which have been mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. "Component" means any article, material, or supply directly incorporated in a construction material.

(c) *Domestic component.* A component shall be considered to have been "mined, produced, or manufactured in the United States" (regardless of its source in fact) if the article, material, or supply in which it is incorporated was manufactured in the United States and the component is of a class or kind determined by the Government to be not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality. (ASPR 7-602.20)

25. EQUAL OPPORTUNITY (1976 JUL)

(The following clause is not applicable if this contract is exempt under ASPR 12-805. Exemptions include contracts and subcontracts not exceeding $10,000, and work under contracts and subcontracts which is to be performed outside the United States by employees who were not recruited within the United States. The requirements of paragraph (3) of the clause shall be satisfied whenever the prime contractor or subcontractor posts copies of the notification prescribed by or pursuant to paragraph (1) of the clause (ASPR 12-804(e)(2).)

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination, rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Equal Opportunity clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice to be provided by the agency Contracting Officer, advising the labor union or workers' representative of the contractor's commitments under this Equal Opportunity clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, and by the rules, regulations, and orders of the Secretary of Labor or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

(6) In the event of the Contractor's noncompliance with the Equal Opportunity clause of this contract or with any of the said rules, regulations, or orders, this contract

may be canceled, terminated or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, or by rules, regulations, or orders of the Secretary of Labor, or as otherwise provided by law.

(7) The Contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: *Provided*, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States. (ASPR 7-103.18(a))

26. COVENANT AGAINST CONTINGENT FEES (1958 JAN)

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage or contingent fee. (ASPR 7-103.20)

27. OFFICIALS NOT TO BENEFIT (1949 JUL)

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit. (ASPR 7-103.19)

28. CONVICT LABOR (1975 OCT)

In connection with the performance of work under this contract the Contractor agrees not to employ any person undergoing sentence of imprisonment except as provided by Public Law 89-176, September 10, 1965 (18 U.S.C. 4082(c)(2)) and Executive Order 11755, December 29, 1973. (ASPR 7-104.17)

29. UTILIZATION OF SMALL BUSINESS CONCERNS (1958 JAN)

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract. (ASPR 7-104.14(a))

30. UTILIZATION OF MINORITY BUSINESS ENTERPRISES (1971 NOV)

(a) It is the policy of the Government that Minority Business Enterprises shall have the maximum practicable opportunity to participate in the performance of Government contracts.

(b) The Contractor agrees to use his best efforts to carry out this policy in the award of his subcontracts to the fullest extent consistent with the efficient performance of this contract. As used in this contract, the term "minority business enterprise" means a business, at least 50 percent of which is owned by minority group members or, in case of publicly owned businesses, at least 51 percent of the stock of which is owned by minority group members. For the purposes of this definition, minority group members are Negroes, Spanish-speaking American persons, American Orientals, American Indians, American Eskimos, and American Aleuts. Contractors may rely on written representations by subcontractors regarding their status as minority business enterprises in lieu of an independent investigation. (ASPR 7-104.36(a))

31. FEDERAL, STATE, AND LOCAL TAXES (1971 NOV)

(a) Except as may be otherwise provided in this contract, the contract price includes all applicable Federal, State, and local taxes and duties.

(b) Nevertheless, with respect to any Federal excise tax or duty on the transactions or property covered by this contract, if a future court decision, written ruling, or regulation takes effect after the contract date, and

(1) results in the Contractor being required to pay or bear the burden of any such Federal excise tax or duty or increase in the rate thereof which would not otherwise have been payable on such transactions or property, the contract price shall be increased by the amount of such tax or duty or rate increase, *provided* the Contractor warrants in writing that no amount for such newly imposed Federal excise tax or duty or rate increase was included in the contract price as a contingency reserve or otherwise; or

(2) results in the Contractor not being required to pay or bear the burden of, or in his obtaining a refund or drawback of, any such Federal excise tax or duty which would otherwise have been payable on such transactions or property or which was the basis of an increase in the contract price, the contract price shall be decreased by the amount of the relief, refund, or drawback or that amount shall be paid to the Government, as directed by the Contracting Officer. The contract price shall be similarly decreased if the Contractor, through his fault or negligence or his failure to follow instructions of the Contracting Officer, is required to pay or bear the burden of, or does not obtain a refund or drawback of, any such Federal excise tax or duty.

(c) Paragraph (b) above shall not be applicable to social security taxes or to any other employment tax.

(d) No adjustment of less than $100 shall be made in the contract price pursuant to paragraph (b) above.

(e) As used in paragraph (b) above, the term "contract date" means the date set for bid opening, or if this is a negotiated contract, the contract date. As to additional supplies or services procured by modification to this contract, the term "contract date" means the date of such modification.

(f) Unless there does not exist any reasonable basis to estimate relevant costs to the Government upon the

request of the Contractor shall, without further liability, furnish evidence appropriate to establish exemption from any Federal, State, or local tax, *provided* that, evidence appropriate to establish exemption from any Federal excise tax or duty which may give rise to either an increase or decrease in the contract price will be furnished only at the discretion of the Government.

(g) The Contractor shall promptly notify the Contracting Officer of matters which will result in either an increase or decrease in the contract price and shall take action with respect thereto as directed by the Contracting Officer. (ASPR 7-103.10(a))

32. DAVIS-BACON ACT (40 U.S.C. 276a-276a-7)

(a) All mechanics and laborers, including apprentices and trainees, employed or working directly upon the site of the work shall be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Copeland Regulations, 29 CFR Part 3), the full amounts due at time of payment computed at wage rates not less than the aggregate of the basic hourly rates and the rates of payments, contributions, or costs for any fringe benefits contained in the wage determination decision of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor or subcontractor and such laborers and mechanics. A copy of such wage determination decision shall be kept posted by the Contractor at the site of the work in a prominent place where it can be easily seen by the workers.

(b) The Contractor may discharge his obligation under this clause to workers in any classification for which the wage determination decision contains:

(1) Only a basic hourly rate of pay, by making payment at not less than such basic hourly rate, except as otherwise provided in the Copeland Regulations. (29 CFR Part 3); or

(2) Both a basic hourly rate of pay and fringe benefits payments, by making payment in cash, by irrevocably making contributions pursuant to a fund, plan, or program for, and/or by assuming an enforceable commitment to bear the cost of, bona fide fringe benefits contemplated by the Davis-Bacon Act, or by any combination thereof. Contributions made, or costs assumed, on other than a weekly basis shall be considered as having been constructively made or assumed during a weekly period to the extent that they apply to such period. Where a fringe benefit is expressed in a wage determination in any manner other than as an hourly rate and the Contractor pays a cash equivalent or provides an alternative fringe benefit, he shall furnish information with his payrolls showing how he determined that the cost incurred to make the cash payment or to provide the alternative fringe benefit is equal to the cost of the wage determination fringe benefit. In any case where the Contractor provides a fringe benefit different from any contained in the wage determination, he shall similarly show how he arrived at the hourly rate shown therefor. In the event of disagreement between or among the interested parties as to an equivalent of any fringe benefit, the Contracting Officer shall submit the question, together with his recommendation, to the Secretary of Labor for final determination.

(c) The assumption of an enforceable commitment to bear the cost of fringe benefits, or the provision of any fringe benefits not expressly listed in section 1(b)(2) of the Davis-Bacon Act or in the wage determination decision forming a part of the contract, may be considered as payment of wages only with the approval of the Secretary of Labor pursuant to a written request by the Contractor. The Secretary of Labor may require the Contractor to set aside assets, in a separate account, to meet his obligations under any unfunded plan or program.

(d) The Contracting Officer shall require that any class of laborers or mechanics, including apprentices and trainees, which is not listed in the wage determination decision and which is to be employed under the contract shall be classified or reclassified conformably to the wage determination decision, and shall report the action taken to the Secretary of Labor. If the interested parties cannot agree on the proper classification or reclassification of a particular class of laborers or mechanics to be used, the Contracting Officer shall submit the question, together with his recommendation, to the Secretary of Labor for final determination. Apprentices and trainees may be added under this clause only where they are employed pursuant to an apprenticeship or trainee program meeting the requirements of the Apprentices and Trainees clause below.

(e) In the event it is found by the Contracting Officer that any laborer or mechanic, including apprentices and trainees, employed by the Contractor or any subcontractor directly on the site of the work covered by this contract has been or is being paid at a rate of wages less than the rate of wages required by paragraph (a) of this clause, the Contracting Officer may (1) by written notice to the Government Prime Contractor terminate his right to proceed with the work, or such part of the work as to which there has been a failure to pay said required wages, and (2) prosecute the work to completion by contract or otherwise, whereupon such Contractor and Subcontractor and his sureties shall be liable to the Government for any excess costs occasioned the Government thereby.

(f) Paragraphs (a) through (e) of the clause shall apply to this contract to the extent that it is (1) a prime contract with the Government subject to the Davis-Bacon Act or (2) a subcontract also subject to the Davis-Bacon Act under such prime contract.

33. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT - OVERTIME COMPENSATION (40 U.S.C. 327-333)

This contract is subject to the Contract Work Hours and Safety Standards Act and to the applicable rules, regulations, and interpretations of the Secretary of Labor.

(a) The Contractor shall not require or permit any laborer or mechanic, including apprentices, trainees, watchmen, and guards, in any workweek in which he is employed on any work under this contract to work in excess of 8 hours in any calendar day or in excess of 40 hours in such workweek on work subject to the provisions of the Contract Work Hours and Safety Standards Act unless such laborer or mechanic, including apprentices, trainees, watchmen, and guards, receives compensation at a rate not less than 1½ times his basic rate of pay for all such hours worked in excess of 8 hours in any calendar day or in excess of 40 hours in such workweek, whichever is the greater number of overtime hours. The "basic rate of pay," as used in this clause, shall be the amount paid per hour exclusive of the Contractor's contribution or cost for fringe benefits, and any cash payment made in lieu of providing fringe benefits, or the basic hourly rate contained in the wage determination, whichever is greater.

(b) In the event of any violation of the provisions of paragraph (a), the Contractor shall be liable to any affected employee for any amounts due, and to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including an apprentice, trainee, watchman, or

guard, employed in violation of the provisions of paragraph (a) in the sum of $10 for each calendar day on which such employee was required or permitted to be employed on such work in excess of 8 hours or in excess of the standard workweek of 40 hours without payment of the overtime wages required by paragraph (a)

34. APPRENTICES AND TRAINEES

(a) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training, or with the State Apprenticeship Agency recognized by the Bureau, or if the person is employed in his first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or the State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeyman in any craft classification employed on this contract shall not be greater than the ratio permitted to the contractor as to his entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not a trainee as defined in subparagraph (b) of this clause or is not registered or otherwise employed as stated above, shall be paid the wage rate determined by the Secretary of Labor for the classification of work he actually performed. The contractor or subcontractor will be required to furnish to the contracting officer or a representative of the Wage Hour Division of the U.S. Department of Labor written evidence of the registration of his program and apprentices as well as the appropriate ratios and wage rates (expressed in percentages of the journeyman hourly rates), for the area of construction prior to using any apprentices on the contract work. The wage paid apprentices shall be not less than the appropriate percentage of the journeyman's rate contained in the applicable wage determination.

(b) Trainees will be permitted to work at less than the predetermined rate for the work performed when they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification, by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training. The ratio of trainees to journeymen employed on this contract shall not be greater than permitted under the plan approved by the Bureau of Apprenticeship and Training. Every trainee must be paid at not less than the rate specified in the approved program for his level of progress. Any employee listed on the payroll at a trainee rate who is not registered and not participating in a training plan approved by the Bureau of Apprenticeship and Training shall be paid not less than the wage rate determined by the Secretary of Labor for the classification of work he actually performed. The contractor or subcontractor will be required to furnish the contracting officer or representative of the Wage-Hour Division of the U.S. Department of Labor written evidence of the certification of his program, the registration of the trainees, and the ratios and wage rates prescribed in that program. In the event the Bureau of Apprenticeship and Training withdraws the approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(c) The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of this contract

35. PAYROLLS AND BASIC RECORDS

(a) The Contractor shall maintain payrolls and basic records relating thereto during the course of the work and shall preserve them for a period of three (3) years thereafter for all laborers and mechanics, including apprentices, trainees, watchmen, and guards working at the site of the work. Such records shall contain the name and address of each such employee, his correct classification, rate of pay (including rates of contributions for, or costs assumed to provide, fringe benefits), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Contractor has obtained approval from the Secretary of Labor as provided in paragraph (c) of the clause entitled "Davis Bacon Act," he shall maintain records which show the commitment, its approval, written communication of the plan or program to the laborers or mechanics affected, and the costs anticipated or incurred under the plan or program.

(b) The Contractor shall submit weekly a copy of all payrolls to the Contracting Officer. The Government Prime Contractor shall be responsible for the submission of copies of payrolls of all subcontractors. The copy shall be accompanied by a statement signed by the Contractor indicating that the payrolls are correct and complete, that the wage rates contained therein are not less than those determined by the Secretary of Labor, and that the classifications set forth for each laborer or mechanic, including apprentices and trainees, conform with the work he performed. Submission of the "Weekly Statement of Compliance" required under this contract and the Copeland Regulations of the Secretary of Labor (29 CFR Part 3) shall satisfy the requirement for submission of the above statement. The Contractor shall submit also a copy of any approval by the Secretary of Labor with respect to fringe benefits which is required by paragraph (c) of the clause entitled "Davis Bacon Act."

(c) The Contractor shall make the records required under this clause available for inspection by authorized representatives of the Contracting Officer and the Department of Labor, and shall permit such representatives to interview employees during working hours on the job.

36. COMPLIANCE WITH COPELAND REGULATIONS

The Contractor shall comply with the Copeland Regulations of the Secretary of Labor (29 CFR Part 3) which are incorporated herein by reference.

37. WITHHOLDING OF FUNDS

(a) The Contracting Officer may withhold or cause to be withheld from the Government Prime Contractor so much of the accrued payments or advances as may be considered necessary (1) to pay laborers and mechanics, including apprentices, trainees, watchmen, and guards employed by the Contractor or any subcontractor on the work the full amount of wages required by the contract, and (2) to satisfy any liability of any Contractor and Subcontractor for liquidated damages under paragraph (b) of the clause entitled "Contract Work Hours and Safety Standards Act-Overtime Compensation."

(b) If any Contractor or subcontractor fails to pay any laborer, mechanic, apprentice, trainee, watchman, or guard employed or working on the site of work, all or part of the wages required by the contract, the Contracting Officer may, after written notice to the Government Prime

Contractor, take such action as may be necessary to cause suspension of any further payments or advances until such violations have ceased.

38. SUBCONTRACTS (1972 FEB)

The Contractor agrees to insert the clauses hereof entitled "Davis Bacon Act," "Contract Work Hours and Safety Standards Act-Overtime Compensation," "Apprentices and Trainees," "Payrolls and Basic Records," "Compliance with Copeland Regulations," "Withholding of Funds," "Subcontracts," and "Contract Termination Debarment" in all subcontracts. The term "Contractor" as used in such clauses in any subcontract shall be deemed to refer to the subcontractor except in the phrase "Government Prime Contractor." (ASPR 7-602.23(a)(vii)

39. CONTRACT TERMINATION-DEBARMENT (1972 APR)

A breach of the clauses hereof entitled "Davis-Bacon Act," "Contract Work Hours and Safety Standards Act-Overtime Compensation," "Apprentices and Trainees," "Payrolls and Basic Records," "Compliance with Copeland Regulations," "Withholding of Funds," and "Subcontracts" may be grounds for termination of the contract, and for debarment as provided in 29 CFR 5.6 (ASPR 7-602.23(a)(viii)

40. DISPUTES CONCERNING LABOR STANDARDS (1965 JAN)

Disputes arising out of the labor standards provisions of this contract shall be subject to the Disputes clause except to the extent such disputes involve the meaning of classifications or wage rates contained in the wage determination decision of the Secretary of Labor or the applicability of the labor provisions of this contract which questions shall be referred to the Secretary of Labor in accordance with the procedures of the Department of Labor. (ASPR 7-603.26)

41. CONTRACTOR INSPECTION SYSTEM (1964 NOV)

The Contractor shall (i) maintain an adequate inspection system and perform such inspections as will assure that the work performed under the contract conforms to contract requirements, and (ii) maintain and make available to the Government adequate records of such inspections. (ASPR 7-602.10(a))

42. GRATUITIES (1952 MAR)

(a) The Government may, by written notice to the Contractor, terminate the right of the Contractor to proceed under this contract if it is found, after notice and hearing, by the Secretary or his duly authorized representative, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the Government with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing of such contract; *provided*, that the existence of the facts upon which the Secretary or his duly authorized representative makes such findings shall be in issue and may be reviewed in any competent court.

(b) In the event this contract is terminated as provided in paragraph (a) hereof, the Government shall be entitled (i) to pursue the same remedies against the Contractor as it could pursue in the event of a breach of the contract by the Contractor, and (ii) as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the Secretary or his duly authorized representative) which shall be not less than three nor more than ten times the costs incurred by the Contractor in providing any such gratuities to any such officer or employee.

(c) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract. (ASPR 7-104.16)

43. SMALL BUSINESS SUBCONTRACTING PROGRAM (MAINTENANCE, REPAIR AND CONSTRUCTION) (1976 OCT)

(The following clause is applicable if this contract is in excess of $500,000)

(a) The Contractor agrees to establish and conduct a small business subcontracting program which will enable small business concerns to be considered fairly as subcontractors, including suppliers, under this contract. In this connection, the Contractor shall designate an individual to (i) maintain liaison with the Government on small business matters, and (ii) administer the Contractor's Small Business Subcontracting Program.

(b) The Contractor shall submit DD Form 1140-1 each quarter in accordance with the instructions provided on the form, except that where the Contractor submits the report on a corporate basis rather than a plant basis, he may submit his reports to the Department having the responsibility for the Small Business Subcontracting Program at the corporate headquarters. The reporting requirements of this subparagraph (b) do not apply to small business contractors, small business subcontractors, or educational and nonprofit institutions.

(c) The Contractor further agrees (i) to insert the "Utilization of Small Business Concerns" clause in subcontracts which offer substantial subcontracting opportunities, and (ii) to insert in each such subcontract exceeding $500,000 a clause conforming substantially to the language of this clause except that subcontractors shall submit DD Form 1140-1 direct to the Government addressees prescribed on the Form. The Contractor will notify the Contracting Officer of the name and address of each subcontractor that will be required to submit a report on DD Form 1140-1. (ASPR 7-602.26(b))

44. RENEGOTIATION (1959 OCT)

(a) To the extent required by law, this contract is subject to the Renegotiation Act of 1951 (50 U.S.C. App. 1211, et seq.), as amended, and to any subsequent act of Congress providing for the renegotiation of contracts. Nothing contained in this clause shall impose any renegotiation obligation with respect to this contract or any subcontract hereunder which is not imposed by an act of Congress heretofore or hereafter enacted. Subject to the foregoing this contract shall be deemed to contain all the provisions required by section 104 of the Renegotiation Act of 1951, and by any such other act, without subsequent contract amendment specifically incorporating such provisions.

(b) The Contractor agrees to insert the provisions of this clause, including this paragraph (b), in all subcontracts, as that term is defined in section 103g of the Renegotiation Act of 1951, as amended. (ASPR 7-103.13(a))

45. NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (1965 JAN)

(The provisions of this clause shall be applicable only

if the amount of this contract exceeds $10,000.)

(a) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

(b) In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed hereunder, the Contractor shall furnish to the Government, when requested by the Contracting Officer, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the Contractor has agreed to indemnify the Government.

(c) This clause shall be included in all subcontracts. (ASPR 7-103.23)

46. AUTHORIZATION AND CONSENT (1964 MAR)

The Government hereby gives its authorization and consent (without prejudice to any rights of indemnification) for all use and manufacture, in the performance of this contract or any part hereof or any amendment hereto or any subcontract hereunder (including any lower-tier subcontract), of any invention described in and covered by a patent of the United States (i) embodied in the structure or composition of any article the delivery of which is accepted by the Government under this contract, or (ii) utilized in the machinery, tools, or methods the use of which necessarily results from compliance by the Contractor or the using subcontractor with (a) specifications or written provisions now or hereafter forming a part of this contract, or (b) specific written instructions given by the Contracting Officer directing the manner of performance. The entire liability to the Government for infringement of a patent of the United States shall be determined solely by the provisions of the indemnity clauses, if any, included in this contract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent hereinabove granted. (ASPR 7-103.22)

47. COMPOSITION OF CONTRACTOR (1965 JAN)

If the Contractor hereunder is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder. (ASPR 7-602.32)

48. SITE INVESTIGATION (1965 JAN)

The Contractor acknowledges that he has investigated and satisfied himself as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Government, as well as from information presented by the drawings and specifications made a part of this contract. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Government assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Government. (ASPR 7-602.33)

49. PROTECTION OF EXISTING VEGETATION, STRUCTURES, UTILITIES, AND IMPROVEMENTS (1965 JAN)

(a) The Contractor will preserve and protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site of work which is not to be removed and which does not unreasonably interfere with the construction work. Care will be taken in removing trees authorized for removal to avoid damage to vegetation to remain in place. Any limbs or branches of trees broken during such operations or by the careless operation of equipment, or by workmen, shall be trimmed with a clean cut and painted with an approved tree pruning compound as directed by the Contracting Officer.

(b) The Contractor will protect from damage all existing improvements or utilities at or near the site of the work, the location of which is made known to him, and will repair or restore any damage to such facilities resulting from failure to comply with the requirements of this contract or the failure to exercise reasonable care in the performance of the work. If the Contractor fails or refuses to repair any such damage promptly, the Contracting Officer may have the necessary work performed and charge the cost thereof to the Contractor. (ASPR 7-602.34)

50. OPERATIONS AND STORAGE AREAS (1965 JAN)

(a) All operations of the Contractor (including storage of materials) upon Government premises shall be confined to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by his operations.

(b) Temporary buildings (storage sheds, shops, offices, etc.) may be erected by the Contractor only with the approval of the Contracting Officer, and shall be built with labor and materials furnished by the Contractor without expense to the Government. Such temporary buildings and utilities shall remain the property of the Contractor and shall be removed by him at his expense upon the completion of the work. With the written consent of the Contracting Officer, such buildings and utilities may be abandoned and need not be removed.

(c) The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways or construct and use such temporary roadways as may be authorized by the Contracting Officer. Where materials are transported in the prosecution of the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State or local law or regulation. When it is necessary to cross curbings or sidewalks, protection against damage shall be provided by the Contractor and any damaged roads, curbings, or sidewalks shall be repaired by, or at the expense of the Contractor. (ASPR 7-602.35)

51. MODIFICATION PROPOSALS – PRICE BREAKDOWN (1968 APR)

The Contractor, in connection with any proposal he makes for a contract modification, shall furnish a price breakdown, itemized as required by the Contracting

Officer. Unless otherwise directed, the breakdown shall be in sufficient detail to permit an analysis of all material, labor, equipment, subcontract, and overhead costs, as well as profit, and shall cover all work involved in the modification, whether such work was deleted, added or changed. Any amount claimed for subcontracts shall be supported by a similar price breakdown. In addition, if the proposal includes a time extension, a justification therefor shall also be furnished. The proposal, together with the price breakdown and time extension justification, shall be furnished by the date specified by the Contracting Officer. (ASPR 7-602.36)

52. SUBCONTRACTORS (1972 FEB)

Within seven days after the award of any subcontract either by himself or a subcontractor, the Contractor shall deliver to the Contracting Officer a statement setting forth the name and address of the subcontractor and a summary description of the work subcontracted. The Contractor shall at the same time furnish a statement signed by the subcontractor acknowledging the inclusion in his subcontract of the clauses of this contract entitled "Equal Opportunity," "Davis-Bacon Act," "Contract Work Hours and Safety Standards Act — Overtime Compensation," "Apprentices and Trainees," "Payrolls and Basic Records," "Compliance with Copeland Regulations," "Withholding of Funds," "Subcontracts" and "Contract Termination — Debarment." Nothing contained in this contract shall create any contractual relation between the subcontractor and the Government. (ASPR 7-602.37)

53. CLEANING UP (1965 JAN)

The Contractor shall at all times keep the construction area, including storage areas used by him, free from accumulations of waste material or rubbish and prior to completion of the work remove any rubbish from the premises and all tools, scaffolding, equipment, and materials not the property of the Government. Upon completion of the construction the Contractor shall leave the work and premises in a clean, neat and workmanlike condition satisfactory to the Contracting Officer. (ASPR 7-602.40)

54. ADDITIONAL DEFINITIONS (1965 JAN)

(a) Wherever in the specifications or upon the drawings the words "directed," "required," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the "direction," "requirement," "ordered," "designation," or "prescription," of the Contracting Officer is intended and similarly the words "approved," "acceptable," "satisfactory" or words of like import shall mean "approved by" or "acceptable to," or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.

(b) Where "as shown," "as indicated," "as detailed," or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provided complete in place," that is "furnished and installed." (ASPR 7-602.41)

55. ACCIDENT PREVENTION (1967 JUN)

(a) In order to provide safety controls for protection to the life and health of employees and other persons, for prevention of damage to property, materials, supplies, and equipment; and for avoidance of work interruptions in the performance of this contract, the Contractor shall comply with all pertinent provisions of Corps of Engineers Manual, EM 385-1-1, dated 1 March 1967, entitled "General Safety Requirements", as amended, and will also take or cause to be taken such additional measures as the Contracting Officer may determine to be reasonably necessary for the purpose.

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

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

(d) Compliance with the provisions of this article by subcontractors will be the responsibility of the Contractor.

(e) Prior to commencement of the work the Contractor will:

(1) submit in writing his proposals for effectuating this provision for accident prevention;

(2) meet in conference with representatives of the Contracting Officer to discuss and develop mutual understandings relative to administration of the overall safety program. (ASPR 7-602.42(a) & (b))

56. GOVERNMENT INSPECTORS (1965 JAN)

The work will be conducted under the general direction of the Contracting Officer and is subject to inspection by his appointed inspectors to insure strict compliance with the terms of the contract. No inspector is authorized to change any provision of the specifications without written authorization of the Contracting Officer, nor shall the presence or absence of an inspector relieve the Contractor from any requirements of the contract. (ASPR 7-602.43)

57. RIGHTS IN SHOP DRAWINGS (1966 APR)

(Applicable to all contracts calling for the delivery of shop drawings)

(a) Shop drawings for construction means drawings, submitted to the Government by the Construction Contractor, subcontractor or any lower tier subcontractor pursuant to a construction contract, showing in detail (i) the proposed fabrication and assembly of structural elements and (ii) the installation (i.e., form, fit and attachment details) of materials or equipment. The Government may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(b) This clause, including this paragraph (b), shall be included in all subcontracts hereunder at any tier. (ASPR 7-602.47)

58. MINORITY BUSINESS ENTERPRISES SUBCONTRACTING PROGRAM (1971 NOV)

(The following clause is applicable if this contract is in excess of $500,000)

(a) The Contractor agrees to establish and conduct

a program which will enable minority business enterprises (as defined in the clause, entitled, "Utilization of Minority Business Enterprises") to be considered fairly as subcontractors and suppliers under this contract. In this connection, the Contractor shall:

(1) Designate a liaison officer who will administer the Contractor's "Minority Business Enterprises Program."

(2) Provide adequate and timely consideration of the potentialities of known minority business enterprises in all "make-or-buy" decisions.

(3) Assure that known minority business enterprises will have an equitable opportunity to compete for subcontracts, particularly by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of minority business enterprises.

(4) Maintain records showing (i) procedures which have been adopted to comply with the policies set forth in this clause, including the establishment of a source list of minority business enterprises, (ii) awards to minority business enterprises on the source list, and (iii) specific efforts to identify and award contracts to minority business enterprises.

(5) Include the "Utilization of Minority Business Enterprises" clause in subcontracts which offer substantial minority business enterprise subcontracting opportunities.

(6) Cooperate with the Contracting Officer in any studies and surveys of the Contractor's minority business enterprises procedures and practices that the Contracting Officer may from time to time conduct.

(7) Submit periodic reports of subcontracting to known minority business enterprises with respect to the records referred to in subparagraph (4) above, in such form and manner and at such time (not more often than quarterly) as the Contracting Officer may prescribe.

(b) The Contractor further agrees to insert, in any subcontract hereunder which may exceed $500,000 provisions which shall conform substantially to the language of this clause, including this paragraph (b), and to notify the Contracting Officer of the names of such subcontractors. (ASPR 7-104.36(b))

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59. AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (1976 JUL)

(This clause is applicable pursuant to 41 C.F.R. 60-250, if this contract is for $10,000 or more.)

(a) The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era in regard to any position for which the employee or applicant for employment is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified disabled veterans and veterans of the Vietnam era without discrimination based upon their disability or veterans status in all employment practices such as the following: employment upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

(b) The contractor agrees that all suitable employment openings of the contractor which exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract and including those occurring at an establishment of the contractor other than the one wherein the contract is being performed but excluding those of independently operated corporate affiliates, shall be listed at an appropriate local office of the State employment service system wherein the opening occurs. The contractor further agrees to provide such reports to such local office regarding employment openings and hires as may be required.

State and local government agencies holding Federal contracts of $10,000 or more shall also list all their suitable openings with the appropriate office of the State employment service, but are not required to provide those reports set forth in paragraphs (d) and (e).

(c) Listing of employment openings with the employment service system pursuant to this clause shall be made at least concurrently with the use of any other recruitment source or effort and shall involve the normal obligations which attach to the placing of a bona fide job order, including the acceptance of referrals of veterans and nonveterans. The listing of employment openings does not require the hiring of any particular job applicant or from any particular group of job applicants, and nothing herein is intended to relieve the contractor from any requirements in Executive Orders or regulations regarding nondiscrimination in employment.

(d) The reports required by paragraph (b) of this clause shall include, but not be limited to, periodic reports which shall be filed at least quarterly with the appropriate local office or, where the contractor has more than one hiring location in a State, with the central office of that State employment service. Such reports shall indicate for each hiring location (1) the number of individuals hired during the reporting period, (2) the number of nondisabled veterans of the Vietnam era hired, (3) the number of disabled veterans of the Vietnam era hired, and (4) the total number of disabled veterans hired. The reports should include covered veterans hired for on-the-job training under 38 U.S.C. 1787. The contractor shall submit a report within 30 days after the end of each reporting period wherein any performance is made on this contract identifying data for each hiring location. The contractor shall maintain at each hiring location copies of the reports submitted until the expiration of one year after final payment under the contract, during which time these reports and related documentation shall be made available, upon request, for examination by any authorized representatives of the contracting officer or of the Secretary of Labor. Documentation would include personnel records respecting job openings, recruitment and placement.

(e) Whenever the contractor becomes contractually bound to the listing provisions of this clause, it shall advise the employment service system in each State where it has establishments of the name and location of each hiring location in the State. As long as the contractor is contractually bound to these provisions and has so advised the State system, there is no need to advise the State system of subsequent contracts. The contractor may advise the State system when it is no longer bound by this contract clause.

(f) This clause does not apply to the listing of employment openings which occur and are filled outside of the 50 States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

(g) The provisions of paragraphs (b), (c), (d) and (e) of this clause do not apply to openings which the contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement. This exclusion does not apply to a particular opening once an employer decides to consider applicants outside of his own organization or employer-union arrangement for that opening.

(h) As used in this clause: (1) "All suitable employment openings" includes, but is not limited to, openings which occur in the following job categories: production and nonproduction; plant and office; laborers and mechanics, supervisory and nonsupervisory; technical; and executive, administrative, and professional openings as are compensated on a salary basis of less than $25,000 per year. This term includes full-time employment, temporary employment of more than 3 days' duration, and part-time employment. It does not include openings which the contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement nor openings in an educational institution which are restricted to students of that institution. Under the most compelling circumstances an employment opening may not be suitable for listing, including such situations where the needs of the Government cannot reasonably be otherwise supplied, where listing would be contrary to national security, or where the requirement of listing would otherwise not be for the best interest of the Government.

(2) "Appropriate office of the State employment service system" means the local office of the Federal-State national system of public employment offices with assigned responsibility for serving the area where the employment opening is to be filled, including the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

(3) "Openings which the contractor proposes to

fill from within his own organization" means employment openings for which no consideration will be given to persons outside the contractor's organization (including any affiliates, subsidiaries, and the parent companies) and includes any openings which the contractor proposes to fill from regularly established "recall" lists.

(4) "Openings which the contractor proposes to fill pursuant to a customary and traditional employer-union hiring arrangement" means employment openings which the contractor proposes to fill from union halls, which is part of the customary and traditional hiring relationship which exists between the contractor and representatives of his employees.

(i) The contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Vietnam Veterans Readjustment Act, hereinafter referred to as the "Act" (38 U.S.C. 2012).

(j) In the event of the contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

(k) The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, Office of Federal Contract Compliance Programs, provided by or through the contracting officer. Such notice shall state the contractor's obligation under the law to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era for employment, and the rights of applicants and employees.

(l) The contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the contractor is bound by the terms of the Vietnam Era Veterans Readjustment Assistance Act, and is committed to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam Era.

(m) The contractor will include the provisions of this clause in every subcontract or purchase order of $10,000 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to the Act, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance. (ASPR 7-103.27)

60. VALUE ENGINEERING INCENTIVE (1974 APR)

(a) Application. This clause applies to a Contractor developed and documented Value Engineering Change Proposal (VECP) which

(i) requires a change to this contract to implement the VECP, and

(ii) reduces the contract price without impairing essential function or characteristics, provided that it is not based solely on a change in deliverable end item quantities.

(b) Documentation. As a minimum, the following information shall be submitted by the contractor with each VECP:

(i) a description of the difference between the existing contract requirement and the proposed change, and the comparative advantages and disadvantages of each, justification where function or characteristics of a work item is being altered, and the effect of the change on the performance of the end item,

(ii) an analysis and itemization of the requirements of the contract which must be changed if the VECP is accepted and a recommendation as to how to make each such change (e.g., a suggested specification revision),

(iii) a separate detailed cost estimate for both the existing contract requirement and the proposed change to provide an estimate of the reduction in costs, if any, that will result from acceptance of the VECP, taking into account the costs of development and implementation by the Contractor (including any amount attributable to subcontracts in accordance with paragraph (f) below);

(iv) a prediction of any effects the proposed change would have on related costs to the Military Department such as Government furnished property costs, and costs of maintenance and operation;

(v) a statement of the time by which a change order adopting the VECP must be issued so as to obtain the maximum cost reduction during the remainder of this contract, noting any effect on the contract completion time or delivery schedule; and

(vi) identification of any previous submission of the VECP, including the dates submitted, the agencies involved, the numbers of the Government contracts involved, and the previous actions by the Government, if known.

(c) Submission. To expedite a determination, VECPs shall be submitted to the Resident Engineer at the worksite with a copy to the Contracting Officer. Proposals shall be processed expeditiously; however, the Government shall not be liable for any delay in acting upon any proposal submitted pursuant to this clause. The Contractor has the right to withdraw, in whole or in part, any VECP at any time prior to acceptance by the Government.

(d) Acceptance. The Contracting Officer may accept, in whole or in part, by contract modification any VECP submitted pursuant to this clause. The Contracting Officer may accept the VECP even though an agreement on price reduction has not been reached, by issuing the Contractor a notice to proceed with the change. Until a notice to proceed is issued or a contract modification applies a VECP to this contract, the Contractor shall remain obligated to perform in accordance with this contract. Contract modifications made pursuant to this clause will so state. The decision of the Contracting Officer as to the acceptance of any VECP under this contract shall be final and shall not be subject to the "Disputes" clause of this contract.

(e) Sharing. If a VECP submitted by the Contractor pursuant to this clause is accepted, the contract price shall be adjusted without regard to profit in accordance with the following provisions:

(i) Definition:

(A) Instant contract savings to the Contractor (ICS) are the estimated reduction in the Contractor's cost

of performance resulting from the acceptance of the VECP. The proposed cost reduction includes estimated allowable Contractor development and implementation costs (CC). The Contractor's development and implementation costs include any subcontractor development and implementation costs (see (f) below). For purposes of this clause, Contractor development costs are those costs incurred after the Contractor has identified a specific VE project and prior to acceptance and implementation by the Government.

(B) Government Costs (GC) are those DOD costs which directly result from development and implementation of the VECP, such as test and evaluation of the VECP.

(ii) Calculations and Actions.
Multiply ICS by 45% and GC by 55%. Add these two results, e.g., (.45 ICS + .55 GC) and subtract from the contract price.

(f) Subcontracts. The Contractor shall include appropriate VE arrangements in any subcontract of $50,000 or greater, and may include such arrangements in contracts of lesser value. To compute any adjustment in the contract price under paragraph (e) above, the Contractor's cost of development and implementation of a VECP which is accepted under this contract shall include any development and implementation costs of a subcontractor, and any VE incentive payments to a subcontractor, which clearly pertain to such VECP. However, no such payment or accrual to a subcontractor will be permitted, either as a part of the Contractor's development or implementation costs or otherwise, to reduce the Government's share.

(g) Data. The Contractor may restrict the Government's right to use any sheet of a VECP or of the supporting data, submitted pursuant to this clause, in accordance with the terms of the following legend if it is marked on such sheet:

> "This data furnished pursuant to the Value Engineering Incentive clause of contract _____ shall not be disclosed outside the Government, or duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a VECP submitted under said clause. This restriction does not limit the Government's right to use information contained in this data if it is or has been obtained, or is otherwise available, from the Contractor or from another source, without limitations. If such a VECP is accepted by the Government under said contract after the use of this data in such an evaluation, the Government shall have the right to duplicate, use, and disclose any data reasonably necessary to the full utilization of such VECP as accepted, in any manner and for any purpose whatsoever, and have others so do."

In the event of acceptance of a VECP, the Contractor hereby grants to the Government all rights to use, duplicate or disclose, in whole or in part, in any manner and for any purpose whatsoever, and to have or permit others to do so, any data reasonably necessary to fully utilize such VECP. (ASPR 7-602.5(i))

61. AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS (1976 MAY)

(a) The contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

(b) The contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

(c) In the event of the contractor's noncompliance with the requirements of this clause, action for noncompliance may be taken in accordance with the rules, regulations and relevant orders of the Secretary of Labor issued pursuant to the Act.

(d) The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, provided by or through the contracting officer. Such notices shall state the contractor's obligation under the law to take affirmative action to employ and advance in employment qualified handicapped employees and applicants for employment, and the rights of applicants and employees.

(e) The contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the contractor is bound by the terms of section 503 of the Rehabilitation Act of 1973, and is committed to take affirmative action to employ and advance in employment physically and mentally handicapped individuals.

(f) The contractor will include the provisions of this clause in every subcontract or purchase order of $2,500 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to section 503 of the Act, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance. (ASPR 7-103.28)

62. CLEAN AIR AND WATER (1975 OCT)

(Applicable only if the contract exceeds $100,000, or the contracting officer has determined that orders under an indefinite quantity contract in any one year will exceed $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1)) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or the contract is not otherwise exempt.)

(a) The Contractor agrees as follows:

(i) To comply with all the requirements of section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Public Law 91-604) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251, as amended by Public Law 92-500), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract;

(ii) That no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from such listing,

(iii) To use his best efforts to comply with clean air standards and clean water standards at the facilities in which the contract is being performed; and

(iv) To insert the substance of the provisions of this clause in any nonexempt subcontract, including this paragraph (iv).

(b) The terms used in this clause have the following meanings.

(i) The term *"Air Act"* means the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Public Law 91-604)

(ii) The term *"Water Act"* means Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Public Law 92-500).

(iii) The term *"clean air standards"* means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted pursuant to the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110(d) of the Clean Air Act (42 U.S.C. 1857c-5(d), an approved implementation procedure or plan under section 111(c) or section 111(d), respectively, of the Air Act (42 U.S.C. 1857c-6(c) or (d)), or an approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. 1857c-7(d)).

(iv) The term *"clean water standards"* means any enforceable limitation, control, condition, prohibition, standard or other requirement which is promulgated pursuant to the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C. 1342), or by a local government to ensure compliance with pretreatment regulations as required by section 307 of the Water Act (33 U.S.C. 1317).

(v) The term *"compliance"* means compliance with clean air or water standards. Compliance shall also mean compliance with a schedule or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency or an air or water pollution control agency in accordance with the requirement of the Air Act or Water Act and regulations issued pursuant thereto.

(vi) The term *"facility"* means any building, plant, installation, structure, mine, vessel or other floating craft, location, or site of operations, owned, leased, or supervised by a contractor, subcontractor, to be utilized in the performance of a contract or subcontract. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location or site shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are colocated in one geographical area.

(vii) The term *"nonexempt contract or subcontract"* means a contract or subcontract of more than $100,000 which is not otherwise exempted pursuant to the EPA regulations implementing the Air Act and Water Act (40 CFR 15.5), as further implemented in ASPR 1-2302.4 or in FPR 1-1.2302-4 (whichever is applicable) and the procedures of the Department awarding the contract. (ASPR 7-103.29)

63. NOTICE TO THE GOVERNMENT OF LABOR DISPUTES (1958 SEP)

(a) Whenever the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Contracting Officer.

(b) The Contractor agrees to insert the substance of this clause, including this paragraph (b), in any subcontract hereunder as to which a labor dispute may delay the timely performance of this contract; except that each such subcontract shall provide that in the event its timely performance is delayed or threatened by delay by any actual or potential labor dispute, the subcontractor shall immediately notify his next higher tier subcontractor, or the prime contractor, as the case may be, of all relevant information with respect to such dispute. (ASPR 7-104.4)

64. CONTRACT PRICES – BIDDING SCHEDULE (1968 APR)

(The following clause is applicable to contracts containing unit prices)

Payment for the various items listed in the Bidding Schedule shall constitute full compensation for furnishing all plant, labor, equipment, appliances, and materials, and for performing all operations required to complete the work in conformity with the drawings and specifications. All costs for work not specifically mentioned in the Bidding Schedule shall be included in the contract prices for the items listed. (ASPR 7-603.5)

65. PRIORITIES, ALLOCATIONS, AND ALLOTMENTS (1975 OCT)

(The following clause is applicable to rateable contracts)

The Contractor shall follow the provisions of DMS Reg. 1 or DPS Reg. 1 and all other applicable regulations and orders of the Bureau of Domestic Commerce in obtaining controlled materials and other products and materials needed to fill this order. (ASPR 7-104.18)

66. PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA – PRICE ADJUSTMENT (1970 JAN)

(The following clause is applicable if this contract is in excess of $100,000)

(a) This clause shall become operative only with respect to any modification of this contract which involves aggregate increases and/or decreases in costs plus applicable profits in excess of $100,000 unless the modification is priced on the basis of adequate competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation. The right to price reduction under this clause is limited to defects in data relating to such modification.

(b) If any price, including profit, or fee, negotiated

in connection with any price adjustment under this contract was increased by any significant sums because

(i) the Contractor furnished cost or pricing data which was not complete, accurate and current as certified in the Contractor's Certificate of Current Cost or Pricing Data;

(ii) a subcontractor, pursuant to the clause of this contract entitled "Subcontractor Cost or Pricing Data" or "Subcontractor Cost or Pricing Data — Price Adjustments" or any subcontract clause therein required, furnished cost or pricing data which was not complete, accurate and current as certified in the subcontractor's Certificate of Current Cost or Pricing Data;

(iii) a subcontractor or prospective subcontractor furnished cost or pricing data which was required to be complete, accurate and current and to be submitted to support a subcontract cost estimate furnished by the Contractor but which was not complete, accurate and current as of the date certified in the Contractor's Certificate of Current Cost or Pricing Data; or

(iv) the Contractor or a subcontractor or prospective subcontractor furnished any data, not within (i), (ii) or (iii) above, which was not accurate, as submitted;

the price shall be reduced accordingly and the contract shall be modified in writing as may be necessary to reflect such reduction. However, any reduction in the contract price due to defective subcontract data of a prospective subcontractor, when the subcontract was not subsequently awarded to such subcontractor, will be limited to the amount (plus applicable overhead and profit markup) by which the actual subcontract, or actual cost to the Contractor if there was no subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor, *provided* the actual subcontract price was not affected by defective cost or pricing data.

Note: Since the contract is subject to reduction under this clause by reason of defective cost or pricing data submitted in connection with certain subcontracts, it is expected that the contractor may wish to include a clause in each such subcontract requiring the subcontractor to appropriately indemnify the contractor. However, the inclusion of such a clause and the terms thereof are matters for negotiation and agreement between the contractor and the subcontractor, *provided* that they are consistent with ASPR 23-203 relating to Disputes provisions in subcontracts. It is also expected that any subcontractor subject to such indemnification will generally require substantially similar indemnification for defective cost or pricing data required to be submitted by his lower tier subcontractors. (ASPR 7-104.29(b))

67. INTEREST (1972 MAY)

Notwithstanding any other provision of this contract, unless paid within thirty (30) days, all amounts that become payable by the Contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code) shall bear interest from the date due until paid and shall be subject to adjustments as provided by Part 6 of Appendix E of the Armed Services Procurement Regulation, as in effect on the date of this contract. The interest rate per annum shall be the interest rate in effect which has been established by the Secretary of the Treasury pursuant to Public Law 92-41; 85 STAT 97 for the Renegotiation Board, as of the date the amount becomes due as herein provided. Amounts shall be due upon the earliest one of (i) the date fixed pursuant to this contract; (ii) the date of the first written demand for payment, consistent with this contract, including demand consequent upon default termination; (iii) the date of transmittal by the Government to the Contractor of a proposed supplemental agreement to confirm completed negotiations fixing the amount; or (iv) if this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of refund payable in connection with a pricing proposal or in connection with a negotiated pricing agreement not confirmed by contract supplement. (ASPR 7-104.39)

68. AUDIT BY DEPARTMENT OF DEFENSE (1975 JUN)

(The following clause is applicable unless this contract was entered into by formal advertising and is not in excess of $100,000)

(a) *General.* The Contracting Officer or his representatives shall have the audit and inspection rights described in the applicable paragraphs (b), (c) and (d) below.

(b) *Examination of Costs.* If this is a cost reimbursement type, incentive, time and materials, labor hour, or price redeterminable contract, or any combination thereof, the Contractor shall maintain, and the Contracting Officer or his representatives shall have the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of this contract. Such right of examination shall include inspection at all reasonable times of the Contractor's plants, or such parts thereof, as may be engaged in the performance of this contract.

(c) *Cost or Pricing Data.* If the Contractor submitted cost or pricing data in connection with the pricing of this contract or any change or modification thereto, unless such pricing was based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation, the Contracting Officer or his representatives who are employees of the United States Government shall have the right to examine all books, records, documents and other data of the Contractor related to the negotiation, pricing or performance of such contract, change or modification, for the purpose of evaluating the accuracy, completeness and currency of the cost or pricing data submitted. Additionally, in the case of pricing any change or modification exceeding $100,000 to formally advertised contracts, the Comptroller General of the United States or his representatives who are employees of the United States Government shall have such rights. The right of examination shall extend to all documents necessary to permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used therein.

(d) *Reports.* If the Contractor is required to furnish Cost Information Reports (CIR) or Contract Fund Status Reports (CFSR), the Contracting Officer or his representatives shall have the right to examine books, records, documents, and supporting materials, for the purpose of evaluating (i) the effectiveness of the Contractor's policies and procedures to produce data compatible with the objectives of these reports, and (ii) the data reported.

(e) *Availability.* The materials described in (b), (c) and (d) above shall be made available at the office of the Contractor, at all reasonable times, for inspection, audit, or reproduction, until the expiration of three years

from the date of final payment under this contract or such lesser time specified in Appendix M of the Armed Services Procurement Regulation and for such longer period, if any, as is required by applicable statute, or by other clauses of this contract, or by (1) and (2) below.

(1) If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for a period of three years from the date of any resulting final settlement.

(2) Records which relate to appeals under the "Disputes" clause of this contract, or litigation or the settlement of claims arising out of the performance of this contract, shall be made available until such appeals, litigation or claims have been disposed of.

(f) The Contractor shall insert a clause containing all the provisions of this clause, including this paragraph (f), in all subcontracts exceeding $10,000 hereunder, except altered as necessary for proper identification of the contracting parties and the Contracting Officer under the Government prime contract. (ASPR 7-104.41(a))

69. SUBCONTRACTOR COST OR PRICING DATA—PRICE ADJUSTMENTS (1970 JAN)

The following clause is applicable if this contract is in excess of $100,000.

(a) Paragraphs (b) and (c) of this clause shall become operative only with respect to any modification made pursuant to one or more provisions of this contract which involves aggregate increases and/or decreases in costs plus applicable profits expected to exceed $100,000. The requirements of this clause shall be limited to such modifications.

(b) The Contractor shall require subcontractors to submit cost or pricing data under the following circumstances: (i) prior to the award of any subcontract the amount of which is expected to exceed $100,000, (ii) prior to the pricing of any subcontract modification which involves aggregate increases and/or decreases in costs plus applicable profits expected to exceed $100,000, except where the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public or prices set by law or regulation.

(c) The Contractor shall require subcontractors to certify that to the best of their knowledge and belief the cost and pricing data submitted under (b) above is accurate, complete, and current as of the date of agreement on the negotiated price of the subcontract or subcontract change or modification.

(d) The Contractor shall insert the substance of this clause including this paragraph (d) in each subcontract which exceeds $100,000. (ASPR 7-104.42(b))

70.1 GOVERNMENT FURNISHED PROPERTY (SHORT FORM) (1964 NOV)

The following clause is applicable when Government property having an acquisition cost of $25,000 or less is furnished to or acquired by the Contractor.

(a) The Government shall deliver to the Contractor for use only in connection with this contract, the property described in the schedule or specifications (hereinafter referred to as "Government furnished property") at the times and locations stated therein. If the Government furnished property, suitable for its intended use, is not so delivered to the Contractor, the Contracting Officer shall, upon timely written request made by the Contractor, and if the facts warrant such action, equitably adjust any affected provision of this contract pursuant to the provisions of the "Changes" clause hereof.

(b) Title to Government furnished property shall remain in the Government. The Contractor shall maintain adequate property control records of Government furnished property in accordance with sound industrial practice.

(c) Unless otherwise provided in this contract, the Contractor, upon delivery to him of any Government furnished property, assumes the risk of, and shall be responsible for, any loss thereof or damage thereto, except for reasonable wear and tear, and except to the extent that such property is consumed in the performance of this contract.

(d) The Contractor shall, upon completion of this contract, prepare for shipment, deliver f.o.b. origin, or dispose of all Government furnished property not consumed in the performance of this contract or not theretofore delivered to the Government as may be directed or authorized by the Contracting Officer. The proceeds of any such disposal shall be credited to the contract price or paid in such other manner as the Contracting Officer may direct. (ASPR 7-104.24(f))

70.2 GOVERNMENT PROPERTY (FIXED PRICE) (1968 SEP)

The following clause is applicable when Government Property having an acquisition cost in excess of $25,000 is furnished to or acquired by the Contractor.

(a) *Government Furnished Property.* The Government shall deliver to the Contractor for use in connection with and under the terms of this contract the property described as Government furnished property in the Schedule or specifications, together with such related data and information as the Contractor may request and as may reasonably be required for the intended use of such property (hereinafter referred to as "Government furnished property"). The delivery or performance dates for the supplies or services to be furnished by the Contractor under this contract are based upon the expectation that Government furnished property suitable for use (except for such property furnished "as is") will be delivered to the Contractor at the times stated in the Schedule or, if not so stated, in sufficient time to enable the Contractor to meet such delivery or performance dates. In the event that Government furnished property is not delivered to the Contractor by such time or times, the Contracting Officer shall, upon timely written request made by the Contractor, make a determination of the delay, if any, occasioned the Contractor thereby, and shall equitably adjust the delivery or performance dates or the contract price, or both, and any other contractual provision affected by any such delay in accordance with the procedures provided for in the clause of this contract entitled "Changes." Except for Government furnished property furnished "as is," in the event the Government furnished property is received by the Contractor in a condition not suitable for the intended use, the Contractor shall, upon receipt thereof, notify the Contracting Officer of such fact and, as directed by the Contracting Officer, either (i) return such property at the Government's expense or otherwise dispose of the property or (ii) effect repairs or modifications. Upon the completion of (i) or (ii) above, the Contracting Officer upon written request of the Contractor shall equitably adjust the delivery or performance dates or the contract price, or both, and any other contractual provision affected by the rejection or disposition, or the repair or modification, in accordance with the procedures provided for in the clause of this contract entitled "Changes." The foregoing provisions for adjustment are exclusive and the Government shall not be liable to suit for breach of contract by reason of any delay in delivery of Government furnished property or delivery of such property in a condition not suitable for its

intended use.

(b) *Changes in Government-furnished Property*

(1) By notice in writing, the Contracting Officer may (i) decrease the property provided or to be provided by the Government under this contract, or (ii) substitute other Government-owned property for property to be provided by the Government, or to be acquired by the Contractor for the Government, under this contract. The Contractor shall promptly take such action as the Contracting Officer may direct with respect to the removal and shipping of property covered by such notice.

(2) In the event of any decrease in or substitution of property pursuant to subparagraph (1) above, or any withdrawal of authority to use property provided under any other contract or lease, which property the Government had agreed in the Schedule to make available for the performance of this contract, the Contracting Officer, upon the written request of the Contractor (or, if the substitution of property causes a decrease in the cost of performance, on his own initiative), shall equitably adjust such contractual provisions as may be affected by the decrease, substitution, or withdrawal, in accordance with the procedures provided for in the "Changes" clause of this contract.

(c) *Title.* Title to all property furnished by the Government shall remain in the Government. In order to define the obligations of the parties under this clause, title to each item of facilities, special test equipment, and special tooling (other than that subject to a "Special Tooling" clause) acquired by the Contractor for the Government pursuant to this contract shall pass to and vest in the Government when its use in the performance of this contract commences, or upon payment therefor by the Government, whichever is earlier, whether or not title previously vested. All Government furnished property, together with all property acquired by the Contractor title to which vests in the Government under this paragraph, is subject to the provisions of this clause and is hereinafter collectively referred to as "Government property." Title to Government property shall not be affected by the incorporation or attachment thereof to any property not owned by the Government, nor shall such Government property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

(d) *Property Administration.* The Contractor shall comply with the provisions of Appendix B, Armed Services Procurement Regulation, as in effect on the date of the contract, which is hereby incorporated by reference and made a part of this contract. Material to be furnished by the Government shall be ordered or returned by the Contractor, when required, in accordance with the "Manual for Military Standard Requisitioning and Issue Procedure (MILSTRIP) for Defense Contractors" (Appendix H, Armed Services Procurement Regulation) as in effect on the date of this contract, which Manual is hereby incorporated by reference and made a part of this contract.

(e) *Use of Government Property.* The Government property shall, unless otherwise provided herein or approved by the Contracting Officer, be used only for the performance of this contract.

(f) *Utilization, Maintenance and Repair of Government Property.* The Contractor shall maintain and administer, in accordance with sound industrial practice, and in accordance with applicable provisions of Appendix B, a program for the utilization, maintenance, repair, protection, and preservation of Government property until disposed of by the Contractor in accordance with this clause. In the event that any damage occurs to Government property the risk of which has been assumed by the Government under this contract, the Government shall replace such items or the Contractor shall make such repair of the property as the Government directs, *provided*, however, that if the Contractor cannot effect such repair within the time required, the Contractor shall dispose of such property in the manner directed by the Contracting Officer. The contract price includes no compensation to the Contractor for the performance of any repair or replacement for which the Government is responsible, and an equitable adjustment will be made in any contractual provisions affected by such repair or replacement of Government property made at the direction of the Government in accordance with the procedures provided for in the "Changes" clause of this contract. Any repair or replacement for which the Contractor is responsible under the provisions of this contract shall be accomplished by the Contractor at his own expense.

(g) *Risk of Loss.* Unless otherwise provided in this contract, the Contractor assumes the risk of, and shall be responsible for, any loss of or damage to Government property provided under this contract upon its delivery to him or upon passage of title thereto to the Government as provided in paragraph (c) hereof, except for reasonable wear and tear and except to the extent that such property is consumed in the performance of this contract.

(h) *Access.* The Government, and any persons designated by it, shall at all reasonable times have access to the premises wherein any Government property is located for the purpose of inspecting the Government property.

(i) *Final Accounting and Disposition of Government Property.* Upon the completion of this contract, or at such earlier dates as may be fixed by the Contracting Officer, the Contractor shall submit, in a form acceptable to the Contracting Officer, inventory schedules covering all items of Government property not consumed in the performance of this contract (including any resulting scrap) or not theretofore delivered to the Government, and shall prepare for shipment, deliver f.o.b. origin, or dispose of the Government property, as may be directed or authorized by the Contracting Officer. The net proceeds of any such disposal shall be credited to the contract price or shall be paid in such other manner as the Contracting Officer may direct.

(j) *Restoration of Contractor's Premises and Abandonment.* Unless otherwise provided herein, the Government

i) may abandon any Government property in place, and thereupon all obligations of the Government regarding such abandoned property shall cease, and

ii) has no obligation to the Contractor with regard to restoration or rehabilitation of the Contractor's premises, neither in case of abandonment (paragraph (j)(i) above), disposition on completion of need or of the contract (paragraph (i) above), nor otherwise, except for restoration or rehabilitation costs which are properly included in an equitable adjustment under paragraph (b) above.

(k) *Communications.* All communications issued pursuant to this clause shall be in writing or in accordance with the "Manual for Military Standard Requisitioning and Issue Procedure (MILSTRIP) for Defense Contractors" (Appendix H, Armed Services Procurement Regulation). (ASPR 7-104.24(a))

71. VARIATIONS IN ESTIMATED QUANTITIES (1968 APR)

(The following clause is not applicable to bid items listed in the "Variations in Estimated Quantities—Subdivided Items" clause, and also is not applicable to contracts for dredging work which contain the "Variations in Estimated Quantities—Dredging" clause.)

Where the quantity of a pay item in this contract is an estimated quantity and where the actual quantity of such pay item varies more than fifteen percent (15%) above or below the estimated quantity stated in this contract, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above one hundred fifteen percent (115%) or below eighty-five percent (85%) of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Contracting Officer shall, upon receipt of a written request for an extension of time within ten (10) days from the beginning of such delay, or within such further period of time which may be granted by the Contracting Officer prior to the date of final settlement of the contract, ascertain the facts and make such adjustment for extending the completion date as in his judgment the findings justify. (ASPR 7-603.27)

72. PROGRESS CHARTS AND REQUIREMENTS FOR OVERTIME WORK (1965 JAN)

(a) The Contractor shall within 5 days or within such time as determined by the Contracting Officer, after date of commencement of work, prepare and submit to the Contracting Officer for approval a practicable schedule, showing the order in which the Contractor proposes to carry on the work, the date on which he will start the several salient features (including procurement of materials, plant and equipment) and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress at such intervals as directed by the Contracting Officer, and shall immediately deliver to the Contracting Officer three copies thereof. If the Contractor fails to submit a progress schedule within the time herein prescribed, the Contracting Officer may withhold approval of progress payment estimates until such time as the Contractor submits the required progress schedule.

(b) If, in the opinion of the Contracting Officer, the Contractor falls behind the progress schedule, the Contractor shall take such steps as may be necessary to improve his progress and the Contracting Officer may require him to increase the number of shifts, or overtime operations, days of work, or the amount of construction plant, or all of them, and to submit for approval such supplementary schedule or schedules in chart form as may be deemed necessary to demonstrate the manner in which the agreed rate of progress will be regained, all without additional cost to the Government.

(c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this provision shall be grounds for determination by the Contracting Officer that the Contractor is not prosecuting the work with such diligence as will insure completion within the time specified. Upon such determination the Contracting Officer may terminate the Contractor's right to proceed with the work or any separable part thereof, in accordance with the clause of the contract entitled "Termination for Default—Damages for Delay—Time Extensions." (ASPR 7-603.48)

73. ENVIRONMENTAL LITIGATION (1974 NOV)(OCE)

(a) If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the "Suspension of Work" clause of this contract. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

(b) The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment. (ECI 7-671.10)

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PART I

SPECIAL PROVISIONS

1-1. STATEMENT OF WORK:

(1) Work to be Done. The work consists of furnishing all plant, labor, materials, and equipment, and performing all work in strict accordance with these specifications and schedules and drawings forming parts thereof for Construction of Channel and Jetty System - Murrells Inlet, South Carolina.

(2) Location. The site of the work is located in the northern section of Georgetown County, South Carolina, about 19 miles northeast of the City of Georgetown and 13 miles southwest of the City of Myrtle Beach, South Carolina. The inlet is situated between Garden City Beach and Murrells Inlet, South Carolina.

(3) Payment. Payment for each Lump Sum Item shall include the applicable work shown on the drawings and specified in the applicable section of these specifications.

1-2. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK.

(1) Period of Work. The Contractor will be required to commence work under this contract within twenty-eight (28) calendar days after the date of receipt by him of Notice to Proceed, to prosecute said work diligently, and to complete the entire work ready for use, in accordance with the following schedule, time being reckoned from the date of receipt of Notice to Proceed:

All work ---------- 750 Calendar Days

The time stated for completion shall include final clean-up of the premises.

(2) Plan of Operation. Before initiation of construction, the Contractor shall submit to the Contracting Officer (for approval) a "Plan of Operation" that shows how the Contractor intends to construct the project. This plan will have as a minimum the sequence of items of work to be performed under this contract and the method by which the Contractor proposes to construct each item of work.

1-3. LIQUIDATED DAMAGES. In case of failure on the part of the Contractor to complete the work within the time fixed in the contract or any extensions thereof, the Contractor shall pay to the Government as liquidated damages, pursuant to the clause of this contract entitled "Time Extensions", the sum of $240 for each day of delay until the work is completed or accepted.

1-4. LAYOUT OF WORK AND SURVEYS. The Contractor shall lay out his work from the Government-established base lines and bench marks indicated on the drawings and shall be responsible for all measurements in connection therewith. The Contractor shall furnish, at his own expense, all stakes, templates, platforms, equipment, tools and material and labor as may be required in laying out any part of the work from the base lines and bench marks established by the Government. The Contractor will be held responsible for the execution of the work to such lines and grades as may be established or indicated by the Contracting Officer. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through his negligence prior to their authorized removal, they may be replaced by the Contracting Officer at his discretion. The expense of replacement will be deducted from any amounts due or to become due the Contractor.

1-5. CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS. Ten sets of contract drawings, maps, and specifications will be furnished the Contractor without charge. Additional sets will be furnished on request at the cost of reproduction.

1-5.1 The work shall conform to the following contract drawings and maps, all of which form a part of these specifications and are available in the office of the Corps of Engineers, Charleston District, Federal Building, 334 Meeting Street, Charleston, South Carolina.

Sheet (Drawing) No.	Dated	Description	Project Depth	Date of Survey
1-10	Nov 1976	Murrells Inlet, S.C. Channel & Jetty System	8 & 10 Feet	Aug 1976

1-5.2 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.

1-5.3 The Contractor shall check all drawings furnished him immediately upon 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.

1-6. PHYSICAL DATA. Information and data furnished or referred to below are furnished for the Contractor's information. However, it is expressly understood that the Government will not be responsible for any interpretation or conclusion drawn therefrom by the Contractor.

1-6.1 Subsurface Investigation. Locations of jet probings, auger, splitspoon, and certain core borings are shown on the plans, and logs of these borings are included in Appendix "A" of these specifications.

1-6.2 Climatology. All information concerning climate was based on data collected by the U. S. Weather Service from Georgetown, South Carolina, and the USAFETAC (Myrtle Beach Air Force Base).

(1) Climate. Murrells Inlet, South Carolina has a temperate climate with an annual mean temperature of 66 degrees and seasonal mean temperatures of 50 degrees in winter, 65 degrees in spring, 80 degrees in summer, and 67 degrees in autumn. The growing season averages 260 days in length, from an average date of last killing frost of the year in February to a first killing frost (of autumn) in mid-November.

(2) Temperature variations. The lowest recorded temperature at nearby Georgetown, South Carolina is 10 degrees and the highest 104 degrees. The minimum temperature drops to 32 degrees or lower about 31 days a year, but the winter minimum averages 39 degrees. The maximum temperature reaches 90 degrees or higher about 65 days per year. Summer temperatures are moderated by afternoon thunder showers which average 37 a year.

(3) Precipitation. The normal rainfall averages 47 inches per year. Snow is a rarity but a trace does occur on an average of once a year. The character of the rain during the warm half of the year, excluding tropical disturbances is mostly of a showery nature, while during the colder half of the year, it is usually of a steady nature connected with the fall from overrunning moist air. Murrells Inlet, being on the seacoast, usually feels the fringe effects of one or more hurricanes during the late summer and fall seasons. June to November comprises the hurricane season. The rain fall averages are affected by the downpours that have developed due to the proximity of hurricanes. This is the rainiest time of the year, with 37 percent of the annual rainfall occurring during this season. The last major damaging hurricane to hit the coast was Hurricane Hazel in 1954. There were no casualties; however, property damage was very extensive.

(4) Tide data. The area is subject to severe natural wave action and exposed to severe storm action. The mean tidal range is 4.5 feet, and the normal spring range is 5.3 feet. The working season lasts throughout the year.

(5) Wind. Wind directions, velocities and duration are presented in graphic form in the drawings. Data for 28 years of record are presented in tabular form in Appendix "B".

1-6.3 Transportation Facilities:

(1) Rail Facilities. Seaboard Coastline provides rail facilities to Georgetown and to Myrtle Beach, South Carolina; however, rail facilities are not available from either city to Murrells Inlet. Seaboard Coastline is better able to accommodate storage of materials in Georgetown, South Carolina.

(2) Highway Facilities. U.S. Highway 17 is the only major route between Myrtle Beach and Georgetown, South Carolina that also passes through Murrells Inlet. Also, I-95 provides access to Murrells Inlet from Florence, South Carolina via U.S. Routes 501 and 301. The site is accessible via paved roads. The paved roads through Huntington Beach State Park ends approximately one mile from the project site. One section of this road runs atop an earth dike that is constructed across marshland. This dike may require upgrading if the Contractor hauls stone through the Park. A bridge crossing a tidal creek is located on State Highway 51 (leading into Garden City Beach). This bridge is rated H-10. Other roads (through Surfside Beach) also provide paved access to the site without crossing any bridges.

(3) Waterway Transportation. The site is accessible via the Atlantic Ocean from Georgetown, South Carolina. Material may be transported to Georgetown by rail and then shipped on a barge via the Atlantic Ocean to the site. However, there are no harboring facilities at the site and a barge may or may not be able to negotiate the inlet to seek refuge. There is no direct access from the Atlantic Intracoastal Waterway (AIWW) to Murrells Inlet; however, Georgetown, South Carolina is accessible via AIWW.

1-6.4 Selection of Access. The Contractor will be responsible for selecting and determining the suitability of haul routes and access routes. The Contractor will also be responsible for obtaining proper authority or permits necessary for the use of existing state and local routes as haul roads or access routes and harbor facilities.

1-6.5 Boat Traffic. Boat traffic in the work area consists primarily of charter boats and privately-owned pleasure craft that can usually be accommodated by existing depths. The inlet and adjacent creeks are expected to be heavily travelled by boat traffic during construction.

1-6.6 Obstruction of Channel. The Government will not undertake to keep the channel free from vessels or other obstructions, except to the extent of such regulations, if any, as may be prescribed by the Secretary of the Army in accordance with the provisions of Section 7 of

the River and Harbor Act approved 8 August 1917. The Contractor will be required to conduct the work in such manner as to obstruct navigation as little as possible, and in case the Contractor's plant so obstructs the channel as to make difficult or endanger the passage of vessels, said plant shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage. Upon the completion of the work the Contractor shall promptly remove his plant, including ranges, buoys, piles, and other marks placed by him under the contract in navigable waters or on shore.

1-7. PERFORMANCE. The Contractor shall perform on-the-site, and with his own organization, work equivalent to at least fifty percent (50%) of the total amount of work to be performed under the contract. If, during the progress of the work hereunder, the Contractor requests a reduction of such percentage, and the Contracting Officer determines that it would be to the Government's advantage, the percentage of work required to be performed by the Contractor may be reduced, provided written approval of such reduction is obtained by the Contractor from the Contracting Officer. The successful bidder must furnish the Contracting Officer, within 30 calendar days after award, a list of the items he will perform with his own forces and the estimated cost of these items unless this list was submitted with his bid.

1-8. INSPECTION. The work will be conducted under the general direction of the Contracting Officer and shall be subject to inspection by his appointed inspectors to insure strict compliance with the terms of the contract. (See Paragraph 3-9, "Contractor Quality Control".) The inspectors will direct the maintenance of the gages, ranges, location markers, and limits markers in proper order and position, but the presence of the inspector shall not relieve the Contractor of responsibility for the proper execution of the work in accordance with the specifications. The Contractor will be required:

(1) To furnish, on the request of the Contracting Officer or any inspector, the use of such boats, boatmen, laborers, and material forming a part of the ordinary and usual equipment and crew of the dredging plant as may be reasonably necessary in inspecting and supervising the work. However, the Contractor will not be required to furnish such facilities for the surveys, prescribed in "Final Examination and Acceptance" (paragraph 1-19).

(2) To furnish, on the request of the Contracting Officer or any inspector, suitable transportation from all points on shore designated by the Contracting Officer to and from the various pieces of plant, and to and from the disposal areas. Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due, or to become due, the Contractor. When the Contractor elects to work on Sundays, holidays, or nights, notice of his intention to do so shall be given to

the Contracting Officer within a reasonable period of time in advance thereof. Adequate lighting for thorough inspection of night operations will be provided by the Contractor at his expense.

1-9. PAYMENTS. Payments will be made as provided in Article 7 of the General Provisions of this specification entitled "Payments to Contractor". Unless otherwise authorized in writing by the Contracting Officer, the items of work for which payment will be made shall be limited to those listed in the contract.

1-9.1 Payment for Lump Sum and Unit Price Items shall include the applicable work shown on the drawings and specified in the applicable section of these specifications.

1-10. PAYMENTS FOR MOBILIZATION AND DEMOBILIZATION. Payment for the cost of mobilization and demobilization is included in this contract.

1-10.1 All costs connected with the mobilization and demobilization of all of the Contractor's dredging plant and equipment will be paid for at the contract lump sum price for this item. Sixty percent (60%) of the lump sum price will be paid to the Contractor upon completion of his mobilization at the work site. The remaining forty percent (40%) will be included in the final payment for work under this contract.

1-10.2 In the event the Contracting Officer considers that the amount in this item (60%) which represents mobilization does not bear a reasonable relation to the cost of the work in this contract, the Contracting Officer may require the Contractor to produce cost data to justify this portion of the bid. Failure to justify such price to the satisfaction of the Contracting Officer will result in payment of the actual mobilization costs as determined by the Contracting Officer at the completion of mobilization and payment of the remainder of this item in the final payment under this contract.

1-10.3 The inlet and ocean bottom is subject to severe change due to weather and tidal conditions. Any bidders considering mobilization by way of the Atlantic Ocean should investigate the accessibility and contact this office and local authorities for latest channel information. Bidders will be responsible for determining accessibility of all plant if considering mobilization by land.

1-11. CONTRACTOR-PREPARED NETWORK ANALYSIS SYSTEM (1968 APR)

1-11.1 The progress chart to be prepared by the Contractor pursuant to the General Provision entitled "Progress Charts and Requirements for Overtime Work" shall consist of a network analysis system as described below. In preparing this system the scheduling of construction is the responsibility of the Contractor. The requirement for the

system is included to assure adequate planning and execution of the work and to assist the Contracting Officer in appraising the reasonableness of the proposed schedule and evaluating progress of the work.

1-11.2 An example of one of the numerous acceptable types of network analysis systems is shown in Appendix I of Corps of Engineer's Regulation ER 1-1-11 entitled "Network Analysis System," single copies of which are available to bona fide bidders on request. Other systems which are designed to serve the same purpose and employ the same basic principles as are illustrated in Appendix I will be accepted subject to the approval of the Contracting Officer.

1-11.3 The system shall consist of diagrams and accompanying mathematical analyses. The diagrams shall show elements of the project in detail and the entire project in summary.

1-11.3.1 Diagrams shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned by the Contractor. The basic concept of a network analysis diagram will be followed to show how the start of a given activity is dependent on the completion of preceding activities and its completion restricts the start of following activities.

1-11.3.2 Detailed network activities shown on a detailed diagram shall include, in addition to construction activities, the submittal and approval of samples of materials and shop drawings, the procurement of critical materials and equipment, fabrication of special material and equipment and their installation and testing. All activities of the Government that affect progress, and contract required dates for completion of all or parts of the work will be shown. The detail of information shall be such that duration times of activities will range from three (3) to thirty (30) days with not over two percent (2%) of the activities exceeding these limits. The selection and number of activities shall be subject to the Contracting Officer's approval. Detailed networks need not be time scaled but shall be drafted to show a continuous flow from left to right with no arrows from right to left. The following information shall be shown on the diagrams for each activity; preceding and following event numbers, description of the activity, cost, and activity duration.

1-11.3.3 The mathematical analysis of the network diagram shall include a tabulation of each activity shown on the detailed network diagrams. The following information will be furnished as a minimum for each activity:

(a) Preceding and following event numbers.

(b) Activity description.

(c) Estimated duration of activities (the best estimate available at time of computation)

(d) Earliest start date (by calendar date).

(e) Earliest finish date (by calendar date).

(f) Scheduled or actual start date (by calendar date).

(g) Scheduled or actual finish date (by calendar date).

(h) Latest start date (by calendar date).

(i) Latest finish date (by calendar date).

(j) Slack or float.

(k) Monetary value of activity.

(l) Percentage complete.

1-11.3.4 The program or means used in making the mathematical computation shall be capable of compiling the total value of completed and partially completed activities.

1-11.3.5 The analysis shall list the activities in sorts or groups as follows:

(a) By the preceding event number from lowest to highest and then in the order of the following event number.

(b) By the amount of slack, then in order of preceding event number.

(c) In order of earliest allowable start dates.

(d) In order of latest allowable start dates.

1-11.4 Submission and approval of the system shall be as follows: The complete network analysis consisting of the detailed network mathematical analysis and network diagrams shall be submitted within thirty (30) calendar days after receipt of Notice to Proceed.

1-11.5 The Contractor shall participate in a review and evaluation of the proposed network diagrams and analysis by the Contracting Officer. Any revisions necessary as a result of this review shall be resubmitted for approval of the Contracting Officer within ten (10) calendar days after the conference. The approved schedule shall then be the schedule to be used by the Contractor for planning, organizing and directing the work, and for reporting progress. If the Contractor thereafter desires to make changes in his method of operating and scheduling he shall notify the Contracting Officer in writing stating the

reasons for the change. If the Contracting Officer considers these changes to be of a major nature he may require the Contractor to revise and submit for approval, without additional cost to the Government, all or the affected portion of the detailed diagrams and mathematical analysis to show the effect on the entire project. A change may be considered of a major nature if the time estimated to be required or actually used for an activity or the logic of sequence of activities is varied from the original plan to a degree that there is a reasonable doubt as to the effect on the contract completion date or dates. Changes which affect activities with adequate slack time shall be considered as minor changes, except that an accumulation of minor changes may be considered a major change when their cumulative effect might affect the contract completion date.

1-11.6 The Contractor shall submit at intervals of thirty (30) calendar days a report of the actual construction progress by updating the mathematical analyses. Revisions causing changes in the detailed network shall be noted on the detailed network furnished.

1-11.7 The progress reports shall show the activities or portion of activities completed during the reporting period and their total value as basis for the Contractor's periodic request for payment. Payment made pursuant to the General Provision entitled "Payments to Contractor" will be based on the total value of such activities completed or partically completed after verification by the Contracting Officer. The report will state the percentage of the work actually completed and scheduled as of the report date and the progress along the critical path in terms of days ahead or behind the allowable dates. If the project is behind schedule, progress along other paths with negative slack shall also be reported. The Contractor shall also submit a narrative report with the updated analysis which shall include but not be limited to a description of the problem areas, current and anticipated, delaying factors and their impact, and an explanation of corrective actions taken or proposed.

1-11.8 Sheet size of diagrams shall be 30 by 42 inches. Each updated copy shall show a date of the latest revision.

1-11.9 Initial submittal and complete revisions shall be submitted in six (6) copies.

1-11.10 Periodic reports shall be submitted in four (4) copies.

1-11.11 Float or slack is defined as the amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any of the activities in the NAS schedule. Float or slack is not time for the exclusive use of or benefit of either the Government or the Contractor. Extensions of time for performance required under the contract General Provisions entitled "CHANGES," "DIFFERING SITE CONDITIONS," "TERMINATION FOR DEFAULT-DAMAGES FOR DELAYING TIME EXTENSIONS," OR "SUSPENSION OF WORK" will

be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total float or slack along the channels involved at the time Notice to Proceed was used for the change.

1-12. VARIATIONS IN ESTIMATED QUANTITIES. Where the quantity of a pay item in this contract is an estimated quantity and where the actual quantity of such pay item varies more than fifteen percent (15%) above or below the estimated quantity stated in this contract, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variations above one hundred fifteen percent (115%) or below eighty-five percent (85%) of the estimated quantity. The above variation in dredged quantities will be calculated on the quantity of material removed above the project depth and side slopes only and will not be made on the material in the areas classified as allowable "overdepth". (ECI 7-672.9)

1-13. PLANT. The Contractor agrees to keep on the job sufficient plant to meet the requirements of the work. The plant shall be in satisfactory operating condition and capable of safely and efficiently performing the work as set forth in the specifications and the plant shall be subject to inspection by the Contracting Officer at all times. It is understood that award of this contract shall not be construed as a guarantee by the United States that the plant listed in Plant and Equipment Schedule, ENG Form 1619-R (General Provisions, SF 21-5), is adequate for performance of the work.

1-13.1 All scows must be kept in good condition, the coamings repaired, and the pockets provided with proper doors or appliances to prevent leakage of material.

1-13.2 No reduction in the capacity of the plant employed on the work shall be made except by written permission of the Contracting Officer. The measure of the "capacity of the plant" shall be its actual performance on the work to which these specifications apply.

1-13.3 Floating pipelines used as a walkway shall be equipped with walkways and guardrails. The walkway shall be securely anchored to the pipeline and a guardrail equivalent in strength to a wood rail 2 inches X 4 inches shall be provided on at least one side of the walkway and shall be secured to uprights at intervals of not more than 8 feet, and of not less than 36 nor more than 42 inches in height above the walkway. Floating pipelines not used as a walkway shall be barricaded to positively prevent personnel access.

1-14. TIME EXTENSIONS. Notwithstanding any other provisions of this contract, it is mutually understood that the time extensions for changes in the work will depend upon the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The change order granting the time extension may provide

that the contract completion date will be extended only for those specific elements so delayed and that the remaining contract completion dates for all other portions of the work will not be altered and may further provide for an equitable readjustment of liquidated damages pursuant to the new completion schedule.

1-15. SHOALING. If, before the contract is completed, shoaling occurs in any section previously accepted, including shoaling in the finished channel because of the natural lowering of the side slopes, re-dredging at contract price, within the limit of available funds, may be done if agreeable to both the Contractor and the Contracting Officer.

1-16. MISPLACED MATERIAL. Should the Contractor, during the progress of the work, lose, dump, throw overboard, sink, or misplace any material, plant, machinery, or appliance which in the opinion of the Contracting Officer may be dangerous to or obstruct navigation, the Contractor shall immediately recover and remove same. The Contractor shall give immediate notice, with description and location of such obstructions, to the Contracting Officer or inspector and when required, shall mark or buoy such obstructions until the same are moved. Should he refuse, neglect, or delay compliance with the above requirement, such obstructions may be removed by the Contracting Officer and the cost of such removal may be deducted from any money due or to become due the Contractor or may be recovered under his bond. The liability of the Contractor for the removal of a vessel wrecked or sunk without fault or negligence shall be limited to that provided in Sections 15, 19, and 20 of the River and Harbor Act of March 3, 1899.

1-17. WARRANTY OF CONSTRUCTION:

(1) In addition to any other warranties set out elsewhere in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect of equipment, material or design furnished, or workmanship performed by the Contractor or any of his subcontractors or suppliers at any tier. Such warranty shall continue for a period of one year from the date of final acceptance of the work, but with respect to any part of the work which the Government takes possession of prior to final acceptance, such warranty shall continue for a period of one year from the date the Government takes possession. Under this warranty, the Contractor shall remedy at his own expense any such failure to conform or any such defect. In addition, the Contractor shall remedy at his own expense any damage to Government owned or controlled real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements or any such defect of equipment, material, workmanship or design. The Contractor shall also restore any work damaged in fulfilling the terms of this clause. The Contractor's warranty with respect to work repaired or replaced hereunder will run for one year from the date of such repair or replacement.

(2) The Government shall notify the Contractor in writing within a reasonable period of time after the discovery of any failure, defect or damage.

(3) Should the Contractor fail to remedy any failure, defect or damage described in (1) above within a reasonable period of time after receipt of notice thereof, the Government shall have the right to replace, repair or otherwise remedy such failure, defect or damage at the Contractor's expense.

(4) In addition to the other rights and remedies provided by this clause, all subcontractors', manufacturers', and suppliers' warranties expressed or implied, respecting any work materials shall, at the direction of the Government, be enforced by the Contractor for the benefit of the Government. In such case if the Contractor's warranty under (1) above has expired, any suit directed by the Government to enforce a subcontractor's, manufacturer's or supplier's warranty shall be at the expense of the Government. The Contractor shall obtain any warranties which the subcontractors, manufacturers or suppliers would give in normal commercial practice.

(5) The Contractor shall require any such warranties to be executed in writing to the Government.

(6) Notwithstanding any other provision of this clause, unless such a defect is caused by the negligence of the Contractor or his subcontractors or suppliers at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage which results from any such defect in Government furnished material or design.

(7) The warranty specified herein shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistake or fraud.

1-18. DAMAGE TO WORK. The responsibility for damage to any part of the permanent work shall be as set forth in General Provision 12 entitled "Permits and Responsibilities". However, if in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood, earthquake, hurricane, or tornado which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of work, the Contractor will make repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum price as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such work, an equitable adjustment, pursuant to General Provision 3 entitled "Changes" will be made as full compensation for the repairs of that part of the permanent work for which there are no applicable contract unit or lump sum prices. Except as herein provided, damage to all work (including temporary construction), utilities, materials, equipment and plant shall be repaired to the satisfaction of the Contracting Officer at the Contractor's expense, regardless of the cause of such damage.

1-19. FINAL EXAMINATION AND ACCEPTANCE. Soundings (for dredging operations) will be taken within 14 days (weather permitting) after the completion of the acceptance section as listed in paragraph 1-19.1 or any section thereof as in the opinion of the Contracting Officer will not be subject to damage by further operations under the contract. Such work will be thoroughly examined at the cost and expense of the Government by sounding or by sweeping, or both, as determined by the Contracting Officer. Should any shoals, lumps, or other lack of contract depth be disclosed by this examination, the Contractor will be required to remove same by dragging the bottom or by dredging at the contract rate for dredging; but if the bottom is soft and the shoal areas are small and form no material obstruction to navigation, the removal of such shoal may be waived at the discretion of the Contracting Officer. The Contractor or his authorized representative will be notified when soundings and/or sweepings are to be made and will be permitted to accompany the survey party. When the area is found to be in a satisfactory condition, it will be accepted finally. Should more than two sounding or sweeping operations by the Government over an area be necessary by reason of work for the removal of shoals disclosed at a prior sounding or sweeping, the cost of such third and any subsequent sounding or sweeping operations will be charged against the Contractor at the rate of $800.00 per day for each day in which the Government plant is engaged in sounding or sweeping and/or is enroute to or from the site or held at or near the said site for such operations.

1-19.1 Final acceptance of the whole or a part of the work and the deductions or corrections of deductions made thereon will not be reopened after having once been made, except on evidence of collusion, fraud, or obvious error, and the acceptance of a completed section shall not change the time of payment of the retained percentages of the whole or any part of the work.

ACCEPTANCE SECTIONS

SECTION	STATIONS
1	10+00 - 38+98
2	3+00 - 10+16*
3	38+98 - 45+00
4	45+00 - 64+39
5	64+39 -196+29
6	Deposition Basin

* Stations along Auxiliary Channel

1-20. EQUIPMENT OWNERSHIP EXPENSE SCHEDULE. Allowable ownership expense for construction plant and equipment in sound workable condition owned and furnished by the Contractor for work requiring adjustments in the contract price under any price adjustment provision of this contract shall be based on the "Contractor's Equipment Ownership Expense Schedule"

Sixth Edition, 1966, as published by the Associated General Contractors of America, Inc., except that (1) the average use per year shall be 6 months, and (2) the depreciation schedules for dredges and attendant plant and equipment shall be based on the straightline method utilizing the useful life periods listed below:

ITEM OF PLANT	DEPRECIATION PERIOD IN YEARS (SEE NOTE 1)
Hydraulic Dredge, including Hydraulic Dredges used as Boosters	30
Bucket Dredge	30
Barges:	
Fuel	20
Water	20
Equipment or Work	20
Derrick	20
Anchor	20
Booster & Barge	20
Drill Boat or Barge	20
Mooring Barge	20
Tugs	20
Tenders	20
Launches	12
Shore Pipeline	3
Floating Line:	
Pontoons	15
Pipeline and Joints	10
Crane-barge	5
Trucks	5
Bulldozers	5
Draglines	5

NOTE 1: To arrive at annual rate of depreciation in percentage, divide total years of depreciation into 100 percent.

NOTE 2: The AGC provision for an additional charge of 50 percent of the single shift rate for each additional shift of 8 hours is applicable only to the percentages stated in the column of the AGC manual entitled "Overhauling, Major Repairs, Painting."

1-21. AUTHORIZED REPRESENTATIVE OF THE CONTRACTING OFFICER. The authorized representative of the Contracting Officer, when designated by the Contracting Officer to act as his authorized representative, will, in that capacity, issue instructions and interpretations.

1-22. ACCOMMODATIONS FOR INSPECTORS. The Contractor shall furnish a suitable separate office, on site, to the inspectors at a location approved by the Contracting Officer.

1-23. Omitted.
1-24. Omitted.

1-25. TESTING. All tests required under the "TECHNICAL PROVISIONS" sections will be performed by and at the expense of the Contractor (unless otherwise specified; see paragraph 3-3.3 and 8-9.1). All instruments and personnel required for these tests shall be furnished by the Contractor.

1-26. IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY. The Government will furnish to the Contractor the following property to be incorporated or installed in the work or used in its performance. Such property will be furnished f.o.b. railroad cars at the place specified in paragraph 1-6, "PHYSICAL DATA," or f.o.b. truck at the project site and the Contractor will be required to accept delivery when made, paying any demurrage or detention charges incurred, and unloading and transporting the property to the job site at his own expense. All such property will be installed or incorporated into the work at the expense of the Contractor, unless otherwise indicated herein. The Contractor shall verify the quantity and condition of such Government-furnished property when delivered to him, acknowledge receipt thereof in writing to the Contracting Officer, and in case of damage to or shortage of such property, he shall within 24 hours report in writing such damage or shortage to the Contracting Officer.

INVENTORY OF GOVERNMENT-FURNISHED PROPERTY

Item No.	Quantity	Description
1	10	Weir warning signs

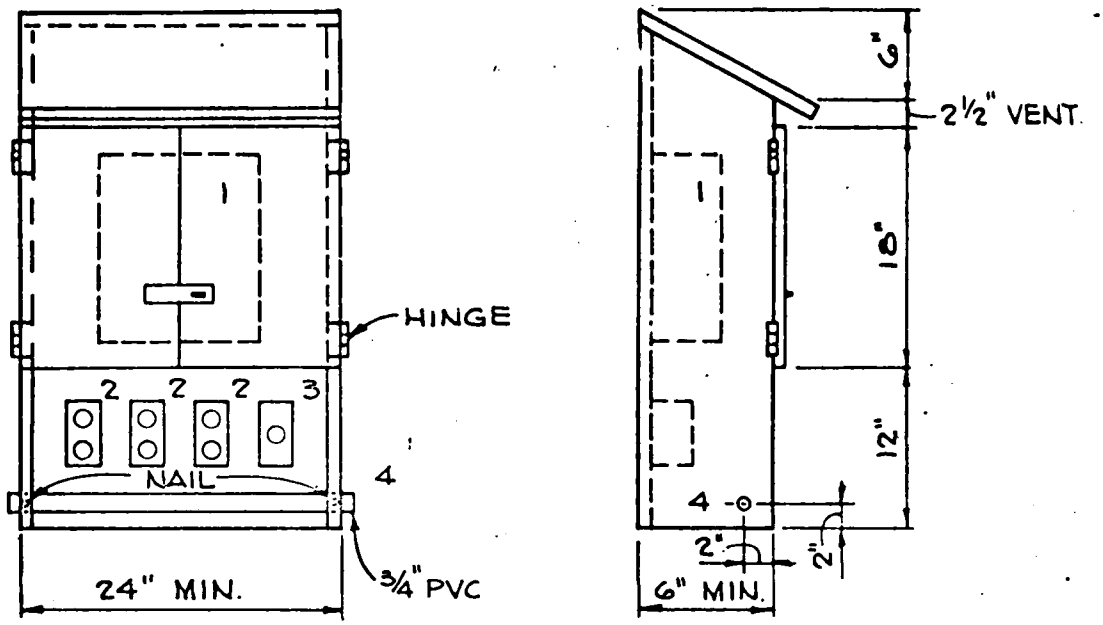
The Property Administrator, U. S. Army Corps of Engineers, 334 Meeting Street, Charleston, South Carolina 29402, is designated as the Officer to maintain the necessary property records in connection with this contract.

1-27. AVAILABILITY AND USE OF UTILITY SERVICES.

(1) The Contractor shall be responsible for installing and maintaining all utility services required for completion of this contract at no expense to the Government.

(2) All temporary electrical service on the project, and within all temporary and permanent structures shall be installed and maintained in compliance with the provisions of EM 385-1-1, Corps of Engineers Safety Requirements, and APPENDIX "M" of South Atlantic Division Regulations 385-1-1, Electrical Service Requirements for Construction and Maintenance Operations. Copies of these publications are available for inspection in the District Office by prospective bidders and will be furnished to the successful bidder. Attached Figure 1 gives the minimum requirements for temporary electrical service equipment to be used on jobs requiring electrical power at 115/230 volts single phase with a power demand not in excess of about 10 KW. Component sizes, ratings and quantities shall be varied to load conditions.

MINIMUM STANDARD FOR TEMPORARY ELECTRICAL SERVICE



(DIMENSIONS ARE APPROXIMATE)

A. GENERAL CONSTRUCTION OF THE INCLOSURE FOR TEMPORARY SERVICE SHALL CONSIST OF NOT LESS THAN 1/2 INCH PLYWOOD OF EXTERIOR GRADE.

B. ITEM 1 NEMA 1 CIRCUIT BREAKER TYPE PANELBOARD. THIS PANELBOARD SHALL CONSIST OF 1 TWO POLE 60 AMP MAIN CIRCUIT BREAKER.4* ONE POLE 20 AMP BRANCH CIRCUIT BREAKERS, AND 1* TWO POLE 20 AMP BRANCH CIRCUIT BREAKER. BREAKERS SHALL MEET FEDERAL SPECIFICATIONS STANDARDS FOR CLASS IA BREAKERS AND SHALL BE OF PLUG-IN TYPE. (*NUMBER OF BREAKERS TO BE ADJUSTED TO SUIT JOB REQUIREMENTS).

C. ITEM 2 SHALL BE DUPLEX GROUNDING TYPE CONVENIENCE OUTLETS IN STANDARD UTILITY TYPE OUTLET BOXES WITH METAL COVERS. CONNECTIONS TO THE BRANCH CIRCUIT BREAKERS SHALL BE BY GROUNDED 2 CONDUCTOR #12 NMC CABLE.

D. ITEM 3* SHALL BE A SINGLE 3 CONDUCTOR GROUNDING TYPE OUTLET RATED FOR 250 VOLT SERVICE. CONNECTIONS FROM THIS OUTLET TO THE 2 POLE BREAKER SHALL BE BY 2 CONDUCTOR GROUNDED TYPE NMC CABLE. (*IF REQUIRED).

E. ITEM 4 IS 3/4 INCH PVC AND IS USED TO SUPPORT EXTENSION CORDS.

F. THE PANELBOARD SHALL BE GROUNDED BY #6 WIRE CONNECTED TO A 3/4 INCH BY 8 FOOT LONG GROUND ROD.

G. SERVICE TO THE PANEL SHALL CONSIST OF 3 CONDUCTOR #6 MINIMUM SERVICE ENTRANCE CABLE. THIS CABLE MAY ENTER EITHER THE TOP OR THE SIDE OF THE WOODEN INCLOSURE WITH THE OPENING BETWEEN THE CABLE AND THE WOOD SEALER WITH ELECTRICAL PUTTY OR SOME SIMILAR ACCEPTABLE SEALING COMPOUND.

FIGURE 1

1-28. WORK IN QUARANTINED AREA. The work called for by this contract involves activities in counties quarantined by the Department of Agriculture to prevent the spread of certain plant pests which may be present in the soil. The Contractor agrees that all construction equipment and tools to be moved from such counties shall be thoroughly cleaned of all soil residues at the construction site with water under pressure and that hand tools shall be thoroughly cleaned by brushing or other means to remove all soil. In addition, if this contract involves the identification, shipping, storage, testing, or disposal of soils from such a quarantined area, the Contractor agrees to comply with the provision of ER 1110-1-5 and attachments, a copy of which will be made available by the Contracting Officer upon request. The Contractor agrees to assure compliance with this obligation by all subcontractors.

1-29. CLEANING OF CONSTRUCTION EQUIPMENT:

(1) Since the job site is under regulation by domestic plant quarantines, construction equipment and tools to be moved from the site shall be thoroughly cleaned of all soil residues at the construction site with water under a minimum pressure of 150 p.s.i. Hand tools may be thoroughly cleaned by brushing or other means to remove all soil.

(2) The following Plant Pest Control Division Office may be contacted for further information or assistance:

Pee Dee Experiment Station
P. O. Box 271
Florence, S. C. 29501
ATTN: Mr. D. C. Weeks
Telephone A/C 803-662-1987

1-30. DIVING OPERATIONS. General. All diving activities involving the use of surface-supplied diving gear or self-contained underwater breathing apparatus (scuba) shall be performed in compliance with DivR 385-1-6, with NAVSHIPS 250-538 (TM 55-375), EM 385-1-1, and as specified herein. All diving operations shall be accomplished by qualified commercial divers. Diving shall be limited to those operations which are essential to accomplish the missions assigned. The head diver of the Contractor diving crew shall be responsible for the safe execution of the diving operation. If at any time he considers that conditions are not safe, he shall stop the dive. The Contracting Officer's Diving Inspector shall be present when the dive is made, and if at any time he considers that the operation has become unsafe either by poor handling or inadequate equipment, or for any other reason he shall cease the operation. Any diving operations stopped by any of the above actions will not be resumed until the unsafe acts or conditions have been corrected and all persons concerned are in agreement that it is safe to proceed.

1-30.1 Qualifications and duties of personnel required by divers:

(1) Contract Divers:

(a) Head Diver. He shall be a person fully experienced in every phase of diving operations and underwater working conditions which are likely to be encountered. He shall be responsible for the condition of all gear, air supply, and equipment used on the job, and shall be personally responsible for the safety and safe conduct of the operation. If, for any reason, the Head Diver feels that conditions are not safe, he shall halt the operations; the Head Diver shall be a qualified diver. Certified record of past experience will be submitted to the Contracting Office.

(b) Diver and Stand-by Divers. All divers, including stand-by, in order to be qualified will submit a certified record of past diving experience showing qualifications to the Contracting Officer. Depth qualification of commercial divers must be equal to or greater than the depth of the job to be performed, but in no case less than 60 feet. A current annual medical examination will be submitted to the Contracting Officer.

(c) Tender. The Tender for surface supplied and scuba diving operations shall be well trained in required signals, tending of lifelines, air lines, and communications equipment. The Tender for surface supplied divers must keep the lifeline and/or air line in his hands at all times, and will perform no other duties. When a lifeline is used for scuba dives, the tender will keep it in his hands at all times and perform no other duties. If a lifeline is not used, the tender will perform other duties as assigned.

1-30.2 Other Requirements.

(1) At least one member of the surface crew (Head Diver, Stand-by Diver, or Tender) shall submit proof of holding a current certificate in first aid, issued by the American Red Cross or U. S. Bureau of Mines, or an equivalent certification.

(2) Diving equipment shall be supplied as follows:

(a) The minimum equipment for a scuba diver to participate in an operation is:

1. Inflatable life vest

2. Swim fins

3. Face mask

4. Self-contained underwater breathing apparatus

(Note: Other items such as: belt and knife, wrist watch, depth gage, exposure suit, weight belt, and wrist compass are not mandatory; however, each diver should consider the diving conditions and include the items needed that would make the dive more successful.)

(b) Divers using surface supplied breathing apparatus shall have an adequate normal air supply and an emergency air supply. Compressors used in diving operations must be independent of any other operation.

(c) All tending lines, phones, and lights required for the job will be available at the site of the work.

(d) A diving craft of ample size to support the diving operation shall be on the scene of all dives. It shall be the responsibility of the contractor to obtain an adequate craft before commencement of a dive. The type of craft to be used for any diving assignment will depend upon the location of the dive, number of personnel aboard, weather, etc. The craft shall be equipped with adequate first aid supplies and a ladder or diving platform to assist the divers when entering and leaving the water.

(e) Stand-by Divers: Stand-by Divers will be required for surface supplied dives only. Stand-by Divers may be either surface supplied or scuba divers. The Stand-by Diver shall be completely suited up prior to the dive. A hard hat diver may then take off helmet and weight belt only. A scuba diver may take off tank and belt. Prior to the dive, a safety line shall be available for the Stand-by Scuba Diver.

(3) Communications shall be supplied for all surface-supplied dives as follows:

(a) All surface-supplied divers, including Stand-by Divers, shall be equipped with phones. Jerking on air or tending lines for signalling to divers will not be permitted except if failure of phones or other emergencies occur.

(b) All phones shall permit two-way conversation between the diver, his tender and any other diver, any other tender and Head Diver. All communications equipment shall be tested and approved by the Contracting Officer prior to the initial dive.

(4) Communications for Scuba Divers: Two-way communications similar to requirements in paragraph (3) above will be required for all scuba dives.

1-30.3 Minimum diving crews: Minimum diving crews shall be as stated below; however, work or conditions may be such as to require a larger crew. Where scuba diving is mentioned, it shall be understood to mean diving with self-contained underwater breathing apparatus. All other diving systems shall be known as surface-supplied diving, where air or mixed gases are supplied from a surface station.

(1) Scuba. The buddy pair system will be used for all scuba dives except when the diver is equipped with telephone communications and a lifeline. A tender will be available to perform the duties

as prescribed in Paragraph 1-30.1(c) above. Divers swimming or working as "buddies" must remain in sight of each other at all times and be prepared to render assistance to each other as required. Under conditions of extreme low visibility, a "buddy line" will be used at all times. The "buddy line" will be a short length of line approximately six feet in length with a snap hook at each end. Where decompression is not required and the depth is less than 33 feet, the minimum number of personnel shall consist of the two divers, the Contracting Officer's representative, and the Tender for a total of four personnel for each diving mission.

(2) Surface-supplied. When the dive does not require decompression and the depth is less than 33 feet, the minimum number of personnel will be the Diver, Stand-by Diver, two Tenders (one to tend diving lines and one to tend air compressor), and Contracting Officer's representative, for a total of five. The Stand-by Diver will not be required if two or more submerged divers are receiving air and are tended from the same station, are in direct communication with each other on the same intercom system, and each diver has sufficient length of air supply hose to reach the other in the event of an emergency. Each member of this group of divers will be considered an effective Stand-by Diver for the other members.

1-30.4 Approval of diving operations. The Contractor shall furnish the Contracting Officer all information required in the above paragraphs including names, medical examination, and qualifications of all divers to be employed in the diving operations no later than three days prior to commencement of work.

1-31. VALUE ENGINEERING. The GENERAL PROVISION entitled "VALUE ENGINEERING INCENTIVE" limits the Contractor's sharing of savings to the instant contract only and by omission of subparagraphs (f) and (j) from the GENERAL PROVISION, excludes any entitlement to a share of collateral and future acquisition savings that may result from any Value Engineering change proposal accepted by the Government under this contract.

1-32. BENCH MARKS: (See General Plan for Location by Coordinates)

Name	Description	Elevation in Feet Above MLW
M-30	Standard USCE bronze disc set in top of 4½"x4½" conc. mon. near fence in Inlet Harbor Subdivision	12.20
M-31	Standard USCE bronze disc set in top of 4½"x4½" conc. mon. near fence in Inlet Harbor	16.51
M-32	Standard USCE Bronze disc set in top of 4½"x4½" conc. mon. near inlet on Huntington Beach State Park	16.20

Name	Description	Elevation in Feet Above MLW
M-33	Standard USCE Bronze disc set in top of $4\frac{1}{2}$"x$4\frac{1}{2}$" conc. mon. on ocean front in Huntington Beach State Park	16.70

1-33. FUNDS AVAILABLE FOR PAYMENTS TO THE CONTRACTOR. Such work as may be done under this contract in excess of the amount for which funds are available for payment as herein set forth will be continued from funds hereafter appropriated and allotted for this work by Congress, and the State of South Carolina, Department of Parks, Recreation and Tourism, and Georgetown County Commissioners, hereafter designated as the "Local Sponsors".

1-33.1 From funds heretofore appropriated by the Public Works for Water and Power Development and Energy Research Appropriation Act for FY 77, the sum of $600,000 is available for payments to the contractor for work performed under this contract through 30 September 1977.

1-33.2 If at any time it becomes apparent to the Contracting Officer that the balance of this allocation is in excess of the amount required to meet all payments due and to become due the contractor because of work performed and to be performed pursuant to his approved progress schedule, the right is reserved after due notice to the Contractor to reduce said allocation by the amount of such excess.

1-33.3 If the rate of progress of the work is such that it becomes apparent to the Contracting Officer that the balance of this allocation and any allocation for this and any subsequent fiscal year during the period of this contract is less than that required to meet all payments due and to become due the Contractor because of work performed under this contract, the Contracting Officer may provide additional funds for such payments if there be funds available for such purpose. The Contractor will be notified in writing of any additional funds so made available. However, it is distinctly understood and agreed that the amount of funds stated in 1-33.1 above is the maximum amount which it is certain will be available during the current fiscal year. The Government is in no case liable for payments to the Contractor beyond this amount or such additional amount as may subsequently be made available by the Contracting Officer pursuant to this paragraph.

1-33.4 It is expected that, during subsequent fiscal years over the period of this contract, Congress will make additional appropriations for expenditure on work under this contract. The Contracting Officer will notify the Contractor of any additional allocation of funds to this contract when such funds become available. It is understood and agreed that the Government is in no case liable for damages in connection with this contract on account of delay in payments to the Contractor due to lack of available funds. Should it become apparent to the Contracting

Officer that the available funds will be exhausted before additional funds can be made available, the Contracting Officer will give at least 30 days written notice to the Contractor that the work may be suspended. If the Contractor so elects, after receipt of such notice, he may continue work under the conditions and restrictions under the specifications, so long as there are funds for inspection and superintendence, with the understanding, however, that no payment will be made for such work unless additional funds shall become available in sufficient amount. When funds again become available the Contractor will be notified accordingly. Should work be thus suspended, additional time for completion will be allowed equal to the period during which work is necessarily so suspended, as determined by the dates specified in the above-mentioned notices.

1-33.5 So long as funds are available, payments will be made monthly in accordance with the General Provisions clause of the contract entitled "PAYMENTS TO CONTRACTOR". The unit prices or lump-sum price or prices stated in the contract will be used in determining the amount to be paid for work performed by the Contractor.

1-33.6 The procedure above described will be repeated as often as may be necessary on account of the exhaustion of available funds and the necessity of awaiting the appropriation of additional funds by Congress.

1-33.7 Should Congress fail to provide additional funds the contract may be terminated and considered to be completed, at the option of the Contractor, without prejudice to him or liability to the Government, at any time subsequent to 30 days after payments are discontinued, or at any time subsequent to 30 days after the passage of the Act which would have but did not carry an appropriation for continuing the work or after the adjournment of the Congress which failed to make the necessary appropriations. However, if the funds cited in the contract are enough to extend the work beyond the end of the fiscal year and no new funds are allocated to this contract for the ensuing fiscal year, the Contractor must first exhaust all the cited funds and thereafter he may, at his option, exercise the rights provided in this paragraph any time after payments are discontinued.

1-33.8 The progress schedule prepared in accordance with the paragraph 72 of the General Provisions entitled "PROGRESS CHARTS AND REQUIREMENTS FOR OVERTIME WORK" shall be consistent with the amount of funds stated in paragraph 1-33.1 above as being currently available for the period of time from the date of contract award to the end of the fiscal year in which the contract was awarded. Any portion of the progress schedule that applies to a fiscal year for which funds are not currently available will be prepared on the basis of a rate of progress that the Contractor considers to be practicable for completion of the work within the time provided by the contract. The progress schedule shall be revised each time the Contractor is notified that additional funds are made available and shall be consistent with the amount of

additional funds so made available. The approval of a progress schedule is not a funding action and shall in no event be considered as making funds available or as obligating the Government to make funds available.

1-33.9 If the Contractor intends to perform any work at a rate of progress greater than that shown in his approved progress schedule, he shall submit to the Contracting Officer, for information only, an additional progress schedule that reflects his intended rate of progress. The Contracting Officer will take no action to approve or disapprove such an additional progress schedule. The receipt by the Contracting Officer of an additional progress schedule shall in no event be considered as making funds available or as obligating the Government to make funds available.

1-34 SAND DUNE PROTECTION. The Contractor shall protect all existing dunes adjacent to work area and access easements from damage. No material is to be borrowed from dunes for use in any manner. The Contractor will be allowed to alter the dunes, only in those places designated as beach access from existing roadways.

1-35 SUBCONTRACTS: Prior to entering into any subcontract for work to be performed at the site of the project, the Contractor shall give the Contracting Officer notice, in writing, of the prospective subcontractor together with his qualifications. If the Contracting Officer does not object to this subcontractor, in writing, within 5 days (Saturdays, Sundays, and Federal holidays excluded) after notification, award may be made by the Contractor. The Contracting Officer may, where he deems it appropriate, waive or reduce his 5-day period. If the Contracting Officer does object, award will not be made and the Contractor will furnish the name of another proposed subcontractor under the same terms as above. Provided, however, that nothing set forth herein shall preclude the Contractor from performing the said work with his own forces. Determinations of the Contracting Officer under this clause shall be final and conclusive. Nothing provided in this clause shall be construed as creating privity of contract between the United States and the subcontractor. Nothing contained in this clause shall be construed to limit or diminish any rights or remedies which the Government may have against the Contractor arising out of this contract, nor to relieve the Contractor of any responsibility for performanace of this contract because of any action taken by the Contracting Officer or the failure to act by the Contracting Officer. The provisions of this clause shall not apply to subcontractors under contract prior to the time of award.

1-36 INTERFERENCES. The Contractor shall coordinate the work of the different trades, in order that interferences between items of work will be avoided. In addition, the attention of the Contractor is directed to the fact that during the life of this contract, other Contractors may be performing work for the Government at the site of the work. This situation may arise during maintenance dredging of the existing channels (paragraph 1-22). All work shall be

performed in accordance with a plan of operation submitted by the Contractor and approved by the Contracting Officer prior to commencement of work (paragraph 1-2(2). In order that all work may be accomplished with the least inconvenience to all concerned, the Contractor shall cooperate with other Contractors on the site and shall make every effort to ensure the orderly prosecution of work with the least amount of delay. In case of dispute regarding work operations and/or the use of areas, resolution will be made by the Contracting Officer, and his decision shall be final.

1-37 STANDARD REFERENCES: Wherever reference is made to Federal specifications, manuals, or industry standards, the Contractor shall comply with the requirements set out in the edition specified in this contract, or, if not specified, the latest edition or revision thereof, as well as the latest amendment or supplement thereto, in effect on this date of the Invitation for Bids on this project, except as modified by, as otherwise provided in, or as limited to type, class or grade, by the specifications of this contract.

1-38 CUTTING OF TREES. The Contractor shall not deface, injure, or destroy any trees or shrubs within any access or pipeline/drainage easements, haul routes, or permanent work except as specified in paragraph 9-6.

1-39 FINAL CLEAN-UP. Final clean-up shall include the removal of all of the Contractor's plant and equipment either for disposal or reuse. Plant and/or equipment to be disposed of shall only be disposed of in a manner and at locations approved by the Contracting Officer. Unless otherwise approved in writing by the Contracting Officer, the Contractor will not be permitted to abandon any equipment, trash, etc., in the work area, pipeline access areas, water areas, or other areas adjacent to the work site.

1-40 RESTORATION OF DAMAGES. Under this contract the area of work including haul routes, access roads, dredge pipeline routes, easement areas, beach areas including sand dunes and other areas used by the Contractor outside of the new construction shall be restored by the Contractor. All restoration work shall be completed by completion date of this contract except as may be directed for earlier completion by the Contracting Officer. All respective areas shall be restored to a condition as near equal as possible to that existing at the time of initiation of this contract. Payment for restoration work shall be included in contract bid prices for those items which most approximately tend to contribute to damages requiring the restoration need. No additional payment will be made either for restoration of or as other compensation for any damages by the Contractor unless authorized in advance by the Contracting Officer.

1-41. MORRELLS INLET CHANNEL AND JETTY SYSTEM AFFIRMATIVE ACTION PLAN (MIC & JS PLAN)

1-41.1 Part I GOALS FOR MINORITY UTILIZATION

(a) The following goals for minority manpower utilization shall express the Contractor's commitment to the percentage of minority work-hours to be worked in each specified craft on all work performed by the Contractor in the MIC & JS Plan area during the performance of this contract. "Minority" is defined as including Blacks, Spanish-surnamed Americans, Orientals, and American Indians and includes both minority men and all women. For all trades the following goals and timetables shall be applicable:

	Goals for Minority Utilization
Until 31 December 1977	20% - 25%
From 1 January 1978 to 31 December 1978	25% - 30%
From 1 January 1979 to 31 December 1979	30% - 35%

(b) The goals for minority manpower utilization above are expressed in terms of work-hours of training and employment as a proportion of the total work-hours to be worked by the Contractor's aggregate work force in that trade on all projects (both Federal and non-Federal) in the MIC & JC Plan area during the performance of its contract or subcontract (i.e. the period beginning with the first day of work on the Federal or Federally-assisted construction contract and ending with the last day of work).

(c) The work-hours of minority work must be substantially uniform throughout the length of the contract in each trade, and minorities should be employed evenly on each of a Contractor's projects. Nevertheless, failure of a Contractor to employ minorities evenly on each of its projects shall not constitute noncompliance provided the percentage of minority work-hours employed by the Contractor in its aggregate work force in the MIC & JS Plan area meets or exceeds its commitment to the goals for minority manpower utilization in the MIC & JS Plan and the Contractor has not violated the equal opportunity clause of the contract in the assignment of minorities to its projects. The transfer of minority employees from employer-to-employer or from project-to-project for the purpose of meeting the Contractor's goal shall be a violation of the MIC & JS Plan. Otherwise, the Contractor shall be deemed to be in compliance with the requirements, terms, and conditions of the MIC & JS Plan if the minority manpower utilization rate of the Contractor meets or exceeds its commitment to the goals for minority manpower utilization in its aggregate work force, both Federally involved and non-Federal, within the MIC & JS Plan area. However, if the Contractor has denied equal employment opportunity in violation of the equal opportunity clause of this contract, it shall not be in compliance with the MIC & JS Plan.

(d) In the event that work is performed after the expiration date of the MIC & JS Plan on a construction contract awarded pursuant to the requirements, terms and conditions of the plan the goals for minority manpower utilization for 1980 shall be applicable to such work.

(e) The Contractor's commitment to goals of minority manpower utilization is intended to meet its affirmative action obligations under Executive Order 11246, as amended, and is not intended and shall not be used to discriminate against any qualified applicant or employee. Whenever it comes to the Contractor's attention that the goals are being used in a discriminatory manner, it shall immediately report that fact to the Office of Federal Contract Compliance Programs, Employment Standards Administration, U. S. Department of Labor, and the compliance agency so that appropriate proceedings may be instituted.

1-41.2 Part II SPECIFIC AFFIRMATIVE ACTION STEPS (Good Faith Efforts)

(a) The Contractor shall be deemed to be in compliance with the requirements, terms, and conditions of the MIC & JS Plan if it meets or exceeds its commitment to the goals for minority manpower utilization in its aggregate work force in the MIC & JS Plan area for each trade for which it is committed to a goal under the MIC & JS Plan. The Contractor's commitment to the goals for minority manpower utilization as required by the MIC & JS Plan constitutes a commitment that it will make every good faith effort to meet such goals. No Contractor shall be found to be in noncompliance solely on account of the Contractor's failure to meet its goals, but shall be given the opportunity to demonstrate that the Contractor has initiated all the specific affirmative action steps specified in the MIC & JS Plan and has made every good faith effort to make these steps work toward the attainment of its goals within the timetables, all to the purpose of expanding minority manpower utilization in its aggregate work force in the MIC & JS Plan area. Contractors who fail to achieve their commitments to the goals for minority manpower utilization must have engaged in affirmative action directed at increasing minority manpower utilization, which is at least as extensive as the following steps:

(1) Specific written notification to minority recruitment sources and community organizations when the Contractor or its unions have employment opportunities available and maintenance of records regarding the organizations' response.

(2) Maintenance of a file of the names and addresses of each minority worker referred by the union, minority recruitment source(s) and community organization(s) to the Contractor and what action was taken with respect to each such referred worker. If such worker was not employed by the Contractor, the file should document this and the reasons therefor.

(3) Written notification to both the contracting agency and the Office of Federal Contract Compliance Programs when the union or unions with whom the Contractor has a collective bargaining

have not referred to the Contractor a minority worker sent by the Contractor, or the Contractor has other information that the union referral process has impeded its efforts to meet its goals.

(4) Participation in training programs in the area, including apprenticeship, trainee, and journeymen upgrading programs, especially those funded by the Department of Labor.

(5) Dissemination of the Contractor's or union's EEO policy by including it in any policy manual and collective bargaining agreement(s); by publicizing it in the company or union newspaper, annual report, etc.; by posting of the policy; and by specific review of the policy with minority employees at least once a year.

(6) Dissemination of the Contractor's EEO policy externally by advertising in news media, specifically including minority news media, if the Contractor has a need to advertise; and by notifying and discussing it with other Contractors, and subcontractors with whom the Contractor does or anticipates doing business.

(7) Encourage present minority employees to recruit their friends and relatives.

(8) Validation of all tests and other selection requirements as required by the testing and selection order (41 CFR Part 60-3).

(9) Making every effort to provide after school, summer and vacation employment to minority youth - both on the job site and in other areas of a Contractor's work force.

(10) Conduct inventory and evaluation of all minority personnel for promotional opportunities on a quarterly basis and encourage minority employees to seek such opportunities.

(11) Ensuring that seniority practices, job classifications, etc., do not have a discriminatory effect.

(12) Ensuring that all facilities and company activities are nonsegregated.

(13) Continual monitoring of all personnel activities to ensure that its EEO policy is being carried out.

(14) Documentation of solicitation of bids for subcontracts from available minority subcontractors engaged in the trades covered by the MIC & JS Plan, including circulation to minority contractor associations.

(b) The Office of Federal Contract Compliance Programs Assistant Regional Administrator and the contracting agency compliance staff will provide technical assistance, upon request, pertaining to minority recruitment sources, community organizations and minority news media.

1-41.3 Part III

1-41.3(1) ADMINISTRATIVE PROCEDURES FOR ENFORCEMENT

(a) The agency shall review the Contractor's employment practices during the performance of the contract. If the Contractor meets its goal(s) or can demonstrate that it has made every good faith effort to meet the goal(s) and is not otherwise violating the equal opportunity clause of this contract or any other Federal equal employment opportunity laws or regulations, the Contractor shall be presumed to be in compliance with Executive Order 11246, as amended, and the MIC & JS Plan. In that event, no formal sanctions or proceedings leading toward sanctions shall be instituted unless the agency otherwise determines that the Contractor is not providing equal employment opportunities.

(b) Where the agency finds that the Contractor has failed to comply with the requirements of Executive Order 11246, the implementing regulations and the MIC & JS Plan, the agency shall take such action and impose such sanctions, which include suspension, termination, cancellation and debarment, as may be appropriate under the Executive Order and its regulations.

(c) When the agency proceeds with such formal action it has the burden of proving that the Contractor has not met the requirements of the MIC & JS Plan. The Contractor's failure to meet its goal(s) shall, however, shift to it the requirement to come forward with evidence to show that is has made every "good faith" effort to meet such goals.

(d) The pendency of such formal proceedings shall be taken into consideration by Federal agencies in determining whether such Contractor can comply with the requirements of Executive Order 11246, as amended, and is therefore, a "responsible prospective Contractor" within the meaning of the Federal procurement law.

(e) It shall be no excuse that the union with which the Contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees. Discrimination in referral for employment, even if pursuant to provisions of a collective bargaining agreement, is prohibited by the National Labor Relations Act, as amended, and Title VII of the Civil Rights Act for 1964. It is the policy of the Office of Federal Contract Compliance Programs that Contractors have a responsibility to provide equal employment opportunity if they wish to participate in Federally-involved contracts. To the extent they have delegated the responsibility for some of their employment practices to a labor organization and, as a result, are prevented from meeting their obligations pursuant to Executive Order 11246, as amended, such Contractors cannot be considered to be in compliance with Executive Order 11246, as amended, and its implementing rules and regulations.

1-41.3(2) CONTRACTOR OBLIGATIONS

(a) All Contractors shall include the MIC & JS Plan in all bid invitations or other pre-bid communications, written or otherwise, with their prospective subcontractors. Whenever a Contractor subcontracts a portion of the work in any trade covered by the MIC & JS Plan it shall include the plan in such subcontracts and each subcontractor shall be bound by the MIC & JS Plan to the full extent as if it were the prime contractor. The Contractor shall not be accountable for the failure of its subcontractor to fulfill its affirmative action commitments. However, the prime contractor shall give notice to the Office of Federal Contract Compliance Programs of the Department of Labor and the contracting agency of any refusal or failure of any subcontractor to fulfill its obligations under the MIC & JS Plan. Noncompliance with these requirements by a subcontractor will be treated in the same manner as such failure by the prime contractor.

(b) Contractors hereby agree to refrain from entering into any contract or contract modification subject to Executive Order 11246, as amended, with a Contractor debarred from, or who is determined not to be a "responsible" bidder for Government contracts and Federally-assisted construction contracts pursuant to the Executive Order.

(c) The Contractor shall carry out such sanctions and penalties for violation of these bid conditions and the equal opportunity clause including suspension, termination and cancellation of existing subcontracts and debarment from future contracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the contracting or administering agency and the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall also be deemed to be in noncompliance with these bid conditions and Executive Order 11246, as amended.

(d) Nothing herein is intended to relieve any Contractor during the term of its contract from compliance with Executive Order 11246, as amended, and the equal opportunity clause of its contract with respect to matters not covered in the MIC & JS Plan.

(e) Contractors must keep such records and file such reports relating to the provisions of the MIC & JS Plan as shall be required by the contracting or administering agency or the Office of Federal Contract Compliance Programs.

1-41.3(3) OBLIGATIONS OF THE FEDERAL GOVERNMENT

(a) Nothing in the MIC & JS Plan shall be interpreted to diminish or relieve the responsibilities of the contracting and administering agencies pursuant to Executive Order 11246, as amended, with respect to matters not covered in these bid conditions.

(b) The procedures set forth in the MIC & JS Plan shall not apply to any contract when the head of the agency determines that such contract is essential to the national security and that its award without following such procedure is necessary to the national security. Upon making such a determination, the agency head will notify, in writing, the Director of the Office of Federal Contract Compliance Programs within 30 days.

(c) Nothing in the MIC & JS Plan shall be interpreted to diminish the present contract compliance review and complaint programs.

(d) Requests for exemptions from the MIC & JS Plan must be made in writing, with justification, to the Director, Office of Federal Contract Compliance Programs, U. S. Department of Labor, Washington, D.C. 20210, and shall be forwarded through and with the endorsement of the head of the contracting of administering agency.

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Appendix 1 Accident Prevention Plan

Appendix 2 Control of Construction Hazards

Appendix 3 Major Construction Phase and Hazard Check List

PART II

SAFETY REQUIREMENTS

2-1. SAFETY REQUIREMENTS. In accordance with the General Provisions Article, "Accident Prevention," the Contractor will insure that all pertinent provisions of Corps of Engineers Manual EM 385-1-1 dated 1 March 1967 entitled "General Safety Requirements" as amended and changed is complied with by all personnel within the area of operations.

2-1.1 Prior to commencement of work, the Contractor will:

(1) Submit in writing his proposal for effectuating Accident Prevention, using the format shown in Appendix 1, entitled "ACCIDENT PREVENTION PLAN" at the end of this section. This format shall not be considered as all inclusive but shall include under Item 8, "Safety Hazards," general safety requirements that pertain to this particular contract. As construction of this contract progresses, specific safety hazards will be dealt with under "Control of Construction Hazards" covered in subparagraph 2-1.2 below. A format is shown in Appendix 2 (at the end of this section).

(2) Meet in conference with the Contracting Officer or his authorized representative to discuss and develop mutual understanding relative to administration of the overall safety program.

2-1.2 Control of Construction Hazards:

(1) Prior to the commencement of any major phase of construction activity, the Government representative in charge will meet with the Contractor and jointly determine the methods to be used to control specific hazards which could result in a fatality, serious injury, or severe property damage. A check list which can be utilized as a guide for determining breakdowns of work and major hazards for which control measures shall be established is attached as Appendix 3 entitled "MAJOR CONSTRUCTION PHASE AND HAZARD CHECK LIST" at the end of this section. This guide shall not be considered as all inclusive but shall be supplemented by including additional construction phases or hazard control measures as job circumstances may dictate.

(2) The agreement so reached will be documented and submitted as a supplement to the Contractor's Accident Prevention Plan. Suggested brief outline and format is attached as Appendix 2 entitled "CONTROL OF CONSTRUCTION HAZARDS" at the end of this section.

2-1.3 The Chief, Contractor Quality Control will be responsible for implementation of the Safety Program.

2-1.4 The following augments, modifies, and where at variance supersedes the requirements of EM 385-1-1.

2-2. TEMPORARY ELECTRICAL SERVICE. See subparagraph 1-27 for safety requirements for temporary electrical service.

2-3. HAUL ROUTES, TEMPORARY ROADS AND GENERAL CONSTRUCTION AREAS: The Contractor shall maintain and if necessary repair and/or upgrade haul routes, temporary roads, and the general work area in an appropriately clean condition, free of obstacles that would present a hazard to traffic and shall perform dust control by wetting the surface as needed. Sweeping and cleaning of pavements will be done as necessary to remove spillage resulting from the hauling operations. The Contractor shall restore all haul routes at the completion of the contract. The routes shall be restored by the Contractor in accordance with paragraph 1-40.

2-4. CRANE AND DRAGLINE SAFETY REQUIREMENTS. In addition to meeting all applicable requirements of Section XVIII of the Corps of Engineers manual, "General Safety Requirements," EM 385-1-1, dated 1 March 1967, all cranes used in performing the work set forth in these specifications shall be equipped with geared boom hoists or otherwise provided with mechanisms which will prevent the booms from falling free. Cranes that are equipped with booms that can be lowered either by gravity or by power shall have the mechanisms for operating the booms by gravity made inoperative so that the booms cannot be lowered by gravity. The booms of all cranes and draglines shall also be equipped with shock absorbing type backstops to prevent them from overtopping.

2-5. SIGNAL LIGHTS. The Contractor shall display signal lights and conduct his operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipes or in submarine or bank protection operations, lights to be displayed on dredge pipelines, and day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel and the passing by other vessels or floating plan working in navigable channels, as approved by the Secretary of the Army (Title 33 C.F.R. 201.1 - 201.16) and the Commandant, U. S. Coast Guard (Title 33 C.F.R. 80.18 - 80.31a and 95.51 - 95.70).

2-6. DRILL AND EMERGENCY SIGNALS. On any floating plant quartering 10 or more persons, or employing 10 or more persons on any one shift, there shall be one or two alarm systems inside the vessel or plant for signaling emergency conditions or drills.

2-6.1 The inside alarm system(s) shall be capable of emitting two distinctive sounds, one of which shall be continuous and the other intermittent or undulating. The system shall be electrically operated with standby batteries on trickle charge that will automatically furnish the required energy in the event of failure of the primary electrical system. A sufficient number of signaling devices shall be placed on each deck so that the sound can be heard distinctly at any point above the usual background noise. All of the inside signals shall be so interconnected that they can be activated from at least one strategically located point on each deck level.

2-6.2 The following signals shall be used on the inside alarm system for the referenced emergencies and/or drills:

(1) Fire Signal - Continuous sound from alarm. All personnel shall respond.

(2) Abandon Ship Signal - Intermittent or undulating sound from alarm. All personnel shall respond except key personnel who shall be given advance confidential verbal notification of the impending drill by the Master or Superintendent in Charge. Where dangerous currents or other conditions may needlessly endanger life in the transfer to tug or tenders, the Contracting Officer's representative may waive actual transfer of personnel; however, all hands shall assemble at designated points and boats shall stand by in position.

2-6.3 The following outside alarm signals shall be used for emergencies and drills on all vessels and floating plant equipped with whistles or horns:

(1) Fire Signal - Continuous short blast of the whistle or horn. All personnel and attendant vessels in the vicinity shall respond.

(2) Abandon Ship Signal - Six short blasts followed by one long blast of the whistle or horn. All personnel and attendant vessels in the vicinity shall respond.

(3) Man Overboard Signal - Hail and pass the word. The vessel first receiving the alert shall sound three long blasts on its whistle or horn. All personnel and vessels capable of rendering assistance shall respond.

2-6.4 The above requirements are in addition to those contained in Section XXVI, paragraph 26.D of EM 385-1-1, but will not apply to vessels subject to CG-257, "Rules and Regulations for Cargo and Miscellaneous Vessels."

2-7. USE OF EXPLOSIVE MATERIALS. No explosives will be allowed in the accomplishment of work for this job.

2-8. OSHA STANDARDS. It will be the responsibility of the Contractor and all subcontractors to comply with OSHA Standards and all changes thereto.

FORMAT

ACCIDENT PREVENTION PLAN

DATE_____

1. Name of Contractor:

2. Project and Location:

   a. Contract No.

3. Name of Project Superintendent and/or Quality Control Engineer

   a. Define and delegate supervisory responsibility for safety implementation.

4. First Aid Capabilities:

   a. Name of Hospital:

   b. Ambulance Service:

   c. Name of Doctor:

5. Fire: Phone No.

6. Indicate extent of safety indoctrination and continuing instruction to employees.

7. Work will be performed in accordance with Corps of Engineers', U. S. Army, EM 385-1-1, 1 March 1967, and as amended and changed, and will take such additional measures as the Contracting Officer may deem to be reasonably necessary for the prevention of accidents.

8. Safety Hazards:

   a. Inherent hazards anticipated for this job and measures to combat them as follows:

   (Note - use as many sheets as needed.)

Plan has been reviewed and determined appropriate for the job:

_____
Prime Contractor

_____
District Safety Officer

_____
Area/Project/Resident Engineer

_____
(TYPE NAME IN CAPS)
RANK, Corps of Engineers
Contracting Officer

APPENDIX 1

FORMAT

CONTROL OF CONSTRUCTION HAZARDS

Supplement to Safety Plan Contract No._____

District Engineer
Charleston District

1. Scope of work

   a. Give description of operation.

   b. List equipment to be used.

2. Analysis of Hazardous Operation

   Pinpoint hazardous operations and identify pertinent items related to each work phase.

3. Statement of Action to be Taken

   Outline specific measures to be taken to eliminate or control each hazardous operation defined in the analysis.

4. Indoctrination of Employees

   a. Method of indoctrination.

   b. Specific subjects to be discussed.

   c. Plan for follow-up job instructions at time activity is accomplished.

   (NOTE - use as many sheets as needed.)

Proposed Actions Concurred in:

_____
Prime Contractor

Plan has been reviewed and determined appropriate for the job:

_____
District Safety Officer

_____
(TYPE NAME IN CAPS)
RANK, Corps of Engineers
Contracting Officer

_____
Area/Project/Resident Engineer

APPENDIX 2

	Scaffolding: Handrails and Toeboards Scaffold Machines Suspended Scaffolds Bracing and Stability Access Facilities: Stairways Ladders Workmen Hoists Floor, Roof and Wall Openings Multi-Story Perimeter Guarding Material Storage: Orderliness Fire Hazard Control Hoisting Equipment: Pre-Work Checks Load Tests Electrical Exposures Material Hoists Electrical Grounding Lighting: Work Areas Access Areas Powder Actuated Tools
Electrical and Instrumentation Work	Clearance Procedures: Outages Coordination with others Hot Line Work Electrical Grounding Protective Equipment
Use of Chemicals, Caustics, Toxic Materials, Radiation Exposures, Welding	Determination of Hazard Protective Equipment: Masks Respirators Eye Protection Protective Clothing Dosimetry Fire and Explosion Hazard Control Storage of Materials Ventilation Radiation Exposures
Floating Plant Operation	Equipment Checks Machinery Guarding Protective Equipment: Work Vests Ring Buoys Life Saving Skiffs Lighting Lifesaving and Rescue Drills

MAJOR CONSTRUCTION PHASE AND HAZARD CHECK LIST

MAJOR CONSTRUCTION PHASES	HAZARDS TO BE CONTROLLED
Excavation and Foundation	Equipment Operation: Pre-Work Checks Machinery Guards Crane Load Tests Reverse Alarms Traffic Controls: Haul Road Patterns Signs and Signals Flagmen and Signalmen Dust Control Barricades Night Lighting Explosives (covered separately) Shoring and Sloping Protective Equipment: High Visibility Vests Head Protection Pile Driving
Steel Erection	Hoisting Equipment: Pre-Work Checks Load Testing Access: Stairways Ladders Man Skips Scaffolding: Handrails and Toeboards Scaffold Machines Suspended Scaffolds Safety Nets Protective Equipment: Safety Belts Lifelines Housekeeping Controls Welding: Cylinder Storage and Use Flash Burn Hazards Fire Protection
Building Construction	Housekeeping Controls: Fire Hazards Stumbling Hazards

APPENDIX 3

Land Clearing	<u>Equipment Operation</u>: Pre-Work Checks Equipment Guards Canopies Winch Guards
Land Clearing	Felling Controls Decking Controls Burning Controls Power Tool Operations <u>Protective Equipment</u>: Head Protection Leg and Knee Protection Clearing Rule Handbook
Paving	<u>Traffic Controls</u>: Signs Signals Flagmen Haul Patterns Equipment Checks Vehicle Reverse Alarms Protective Equipment
Quarrying Cableway Operations	(Where necessary the services a staff Safety Engineer will be utilized to develop hazard controls for these operations.)

AD-A152 512 SPECIFICATIONS FOR CONSTRUCTION OF CHANNEL AND JETTY SYSTEM MURRELLS INLE..(U) CORPS OF ENGINEERS CHARLESTON SC CHARLESTON DISTRICT 14 JUN 77 DACW60-77-B-0014 2/3

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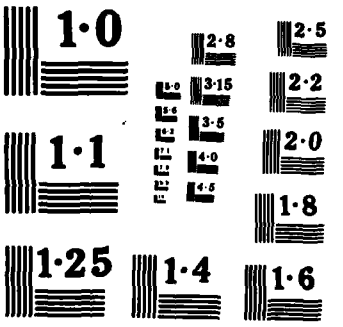
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Appendix 2	Shop Drawings and Materials Submittal Register
Appendix 3	Construction Quality Control Report

PART III

REQUIREMENTS FOR CONTRACTOR SUBMITTALS

3-1. REQUIRED INSURANCE. The Contractor and subcontractors shall procure and shall maintain during the entire period of their performance under this contract the following minimum insurance:

(1) Comprehensive and Employer's Liability Insurance in the amount required by law in the State in which the work is to be performed under this contract.

(2) Comprehensive General Liability Insurance in an amount not less than $50,000 per person; and $100,000 per accident.

(3) Automobile Liability Insurance: $50,000 per person and $100,000 per accident for bodily injury liability and $5,000 property damage liability.

3-1.1 Prior to the commencement of work hereunder by the Contractor or any subcontractor, the Contractor shall furnish to the Contracting Officer a certificate or a written statement verifying that he has obtained all the required insurance. The policies evidencing required insurance shall contain an endorsement to the effect that cancellation or material change in the policies, adversely affecting the interest of the Government in such insurance, shall not be effective until 30 days after written notice has been received by the Contracting Officer.

3-1.2 The Contractor agrees to insert the substance of this clause, including this paragraph, in all subcontracts hereunder.

3-2. PURCHASE ORDERS. The Contractor shall furnish three (3) copies of all purchase orders in accordance with the following:

Send two (2) copies to:	Send one (1) copy to:
Chief, Construction and Project Operations Branch U. S. Army Engineer District, Charleston P. O. Box 919 Charleston, South Carolina 29402	District Engineer U. S. Army Engineer District, Charleston Corps of Engineers Post Office Box 919 Charleston, South Carolina 29402 **ATTN: SACEC-SS**

The purchase orders shall reflect required delivery date of materials and equipment, and shall include any other information which may be necessary in verifying that the delivery of material and equipment will be phased with construction requirements.

3-3. SAMPLING, CERTIFICATES, AND TESTING. Any product or item mentioned in these specifications and required to meet Federal, ASTM, AASHO, U. S. Army or Navy, AREA, AWWA, NEC, and UL Specifications or Codes, specified herein with certain limiting or qualifying requirements, or any product or item which is required to be similar and equal to a specified product or item may require the submission, before delivery of the product or item to the job site, of one or more of the following:

(1) Certificate by the manufacturer that the item meets the contract requirements.

(2) Samples for inspection, comparison, and testing, including destructive tests.

3-3.1 Within thirty (30) days after acknowledgement of Notice to Proceed, the Contractor shall submit to the Contracting Officer five (5) copies of a list of the items for which he proposes to furnish manufacturer's certificates and/or samples for inspection and testing. The list shall include, but is not limited to the following information:

(1) Name of item;
(2) Governing specification;
(3) Date sample will be furnished;
(4) Delivery date of product; and
(5) Items for which a certificate will be furnished.

3-3.2 Unless otherwise specified or authorized, all samples shall be delivered (without cost to the Government) to:

South Atlantic Division Laboratory
611 S. Cobb Drive
Georgia Highway 280
Marietta, Georgia 30061

If required by the Contracting Officer, duplicate samples shall be shipped to the project site at no expense to the Government.

3-3.3 In those instances where testing is specified to be made at the Government's expense (paragraphs 4-7 and 8-9.1), the cost of the initial testing will be at the Government's expense; however, any retesting due to failure of the materials to meet the requirements in the initial test shall be performed at the Contractor's expense. The retests shall be made at laboratories approved by the Contracting Officer. The costs of retests made at Government Laboratories will be deducted from the total amount due the Contractor, at actual cost to the Government, unless otherwise specified.

3-4. CERTIFICATES OF COMPLIANCE. Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in triplicate copies. Each certificate

material samples, and guarantees. The schedule will indicate the type of item, contract requirement, reference, the Contractor's scheduled dates for submitting the above items and projected needs for approval answers and procurement dates. In preparing the schedule adequate time (minimum of 15 days or more) will be allowed for review and approval and possible resubmittal. Also the scheduling will be coordinated with the approved progress schedule. The Contracting Officer will furnish upon request of the Contractor a form on which to include the above information. (See ENG Form 4288 in Appendix II at the end of Section). The Contractor may, at his option, use a special printout limited to a listing of procurement activities in i-j order with each status report to provide the required information for monitoring control of submittals instead of using ENG Form 4288. In any event, in those contracts where scheduling is done under a Network Analysis System method, a submittal register covering the submittals required within the first 60 days of the contract shall be submitted for review prior to the initial shop drawing submission and not later than the initial NAS submittal. Furnishing of the schedule shall not be interpreted as relieving the Contractor of his obligation to comply with all the specification requirements for the items on the schedule. Contractor's Quality Control representative shall review the listing at least every 30 days and take appropriate action to maintain an effective system. Contractor shall furnish a list each 30 days of all submittals on which either Government or Contractor action is past due. He shall also furnish revised due dates in those cases when the original schedule is no longer realistic. This monthly list of delayed items shall also be annotated by the Contractor to show what corrective action he is taking with regard to slippages in submittal schedule which are attributable to actions by him, his subcontractor or suppliers.

3-6.1 Payment will not be made for any material or equipment that does not comply with contract requirements.

3-7. SUBMITTAL OF WARRANTIES. All warranties required under Paragraph 1-17 "WARRANTY OF CONSTRUCTION" will be submitted as stated in subparagraph 1-17(5).

3-8. CONTRACTOR'S ACCIDENT PREVENTION PLAN. Prior to commencement of work under this contract, the Contractor shall submit in writing an Accident Prevention Plan in accordance with the requirements of subparagraph 2-1.1(1) of the SAFETY REQUIREMENTS.

3-9 CONTRACTOR'S QUALITY CONTROL. The Contractor shall provide and maintain an effective quality control program that complies with General Provision 41 of the contract, entitled "Contractor Inspection System."

3-9.1 The Contractor shall establish a quality control system to perform sufficient inspection and tests of all items of work, including that of his subcontractors, to insure conformance to applicable specifications and drawings with respect to the materials, workmanship,

shall be signed by an authorized officer of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certificateion shall not be construed as relieving the Contractor from furnishing satisfactory material.

3-5. SUBMITTALS TO BE MADE BY THE CONTRACTOR. Submittals required by the Contractor shall be made to the Contracting Officer. ENG Form 4025, in quadruplicate (forms of which will be furnished by the Government) shall be used to transmit each submittal of material required by this section, except: (a) Insurance papers; (b) purchase orders; (c) Accident Prevention Plan; (d) Quality Control Plan; and (e) Network Analysis System. Instructions for preparation of Form 4025 are on the reverse of that form. A copy of this form is shown in Appendix I, at the end of this section.

3-5.1 Additional submittals to be made in writing by the Contractor are listed as follows:

(1) A proposal for implementing a plan of environmental control.

(2) Plans showing storage and housing facilities.

(3) A layout of all temporary roads, excavations, and embankments to be constructed within the work area.

(4) Details of road construction, as required.

(5) Plans and cross sections of proposed embankments and their foundations including a description of proposed embankment materials.

(6) A landscaping plan showing the proposed restoration of the area.

(7) A plan showing a scheme for controlling erosion and disposing of wastes.

These submittal requirements are discussed in greater detail in Part 8, "Environmental Protection".

3-6. SHOP DRAWINGS AND MATERIALS SUBMITTAL. Within 30 days after receipt of Notice to Proceed, the Contractor shall submit to the Contracting Officer, in duplicate, a schedule listing all items that will be furnished for review and approval action by the Government. For example, such schedules would include, among other things, shop drawings and manufacturer's literature, certificates of compliance,

construction, finish, functional performance, and identification. This control will be established for all construction except where the technical provisions of the contract provide for specific Government control by inspections, tests, of other means. The Contractor's control system will specifically include the surveillance and tests required in the technical provisions of the contract specifications. For purposes of the above description, shop manufacture of standard products is not defined as construction. Quality Control personnel shall also as a collateral duty be charged with the responsibility of policing Contractor's Safety Program. This duty will be clearly set forth in the Quality Control Program.

3-9.2 The Contractor's quality control system is the means by which he assures himself that his construction complies with the requirements of the contract plans and specifications. The controls shall be adequate to cover all construction operations, including both on-site and off-site fabrication and will be keyed to the proposed construction sequence and shall include as a minimum at least three phases of inspection for all definable items or segments of work as follows:

(1) Preparatory Inspection. To be performed prior to beginning any work on any definable segment of work. To include a review of contract requirements; a check to assure that all materials and/or equipment have been tested, submitted, and approved; a check to assure that provisions have been made to provide required control testing; examination of the work area to ascertain that all preliminary work has been completed; and a physical examination of materials and equipment to assure that they conform to approved shop drawings or submittal data and that all materials and/or equipment are on hand. As a part of this preparatory work, Contractor's Quality Control organization will review all shop drawings, certificates, and other submittal data prior to submission to the Contracting Officer. Contractor's Quality Control chief shall affirm by signing and dating each submittal, prior to offering it to the Contracting Officer for his approval, that the material or equipment conforms to the plans and specifications. Any departures from plans and specifications shall be clearly pointed out on the submittal. Submittals which do not contain evidence of review and approval by the Contractor's Quality Control organization are unacceptable and will be returned with no approval action taken. Final approval of those submittals designated elsewhere in this contract for action by Contractor's Quality Control is also a part of the preparatory inspection process.

(2) Initial Inspection. To be performed as soon as a representative segment of the particular item of work has been accomplished and to include examination of the quality of workmanship and a review of control testing for compliance with contract requirements, use of defective or damaged materials, omissions, and dimensional requirements.

(3) Follow-up Inspections. To be performed daily or as frequently as necessary to assure continuing compliance with

contract requirements, including control testing, until completion of the particular segment of work.

(4) Completion Inspection. At the completion of all work or any increment thereof established by a completion time stated in the paragraph entitled "Commencement, Prosecution, and Completion of Work" or stated elsewhere in the specifications, the Contractor's Quality Control representative shall conduct a completion inspection of the work and develop a 'punch list' of items which do not conform to the approved plans and specifications. Such a list shall be included in the Contractor's Quality Control Documentation, as required by subparagraph (c) below, and shall include the estimated date by which the deficiencies will be corrected. Representative shall make a second completion inspection to ascertain that all deficiencies have been corrected and so notify the Contracting Officer. The completion inspection and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

3-9.3 The Contractor shall maintain current records of all inspections and tests performed on an appropriate approved format similar to Exhibit 1A-A, attached at the end of Part I. These records should provide factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, cause for rejection, etc.; proposed remedial action; and correction actions taken. The Contractor shall not build upon or conceal any feature of the work containing uncorrected defects. Payment on such defective or deficient features will be withheld until they are satisfactorily corrected or other action has been taken as authorized pursuant to the General Provision entitled "Inspection and Acceptance." These records must cover both conforming and defective or deficient features and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records must be furnished to the Contracting Officer daily. The records will cover all work placement subsequent to the previously furnished records and will be verified by the prime contractor's designated representative. The Quality Control shall document inspection and tests as specified in each technical section of the specifications, and these records shall be available for review by the Contracting Officer or his authorized representative throughout the life of the contract.

3-9.4 The Contractor's job supervisory staff may be used for quality control, supplemented as necessary by additional personnel for surveillance, special technicians, or testing facilities to provide capability for the controls required by the technical provisions of the specifications. The minimum qualifications for a technician employed directly by the Contractor shall be the completion of a full 4-year or senior high school curriculum and two (2) years of experience in work related to that which he is to perform and three (3) years of specialized experience in the work he is to perform.

3-9.5 The Contractor shall furnish to the Government within seven days after receipt of the Notice to Proceed a quality control plan which shall include the procedures, instructions, and reports to be used. This document will include as a minimum:

(1) The quality control organization.

(2) Number and qualifications of personnel to be used for this purpose.

(3) Authority and responsibilities of quality control personnel.

(4) Methods of quality control including that for his subcontractor's work.

(5) Test methods including name of qualified testing laboratory to be used.

(6) Method of documenting quality control operations, inspection and testing.

(7) A copy of a letter of direction to the Contractor's representative responsible for quality control, outlining his duties and responsibilities, and signed by a responsible officer of the firm.

3-9.6 After the contract is awarded and before construction operations are started, the Contractor shall meet with the Contracting Officer, or his representative, and discuss quality control requirements. The meeting shall develop mutual understanding relative to details of the system, including the forms to be used for recording the quality control operations, inspections, administration of the system, and the inter-relationship of Contractor and Government inspection.

3-9.7 Unless specifically authorized by the Contracting Officer, no construction and/or off-site fabrication will be started until the Contractor's quality control plan is approved. Construction of any feature of the work will only be permitted after approval of the quality control plan, or at least approval of that portion of the plan applicable to the specific feature of the work. As a rule, except for the start of the construction period, quality control and test techniques should be approved at least 10 days in advance of their planned application. No payment estimate will be processed under this contract until the quality control program has been approved by the Government.

3-9.8 If deficiencies indicate that the Quality Control System, personnel, inspections, tests and/or records are not adequate, corrective actions shall be taken as directed by the Contracting Officer.

3-9.9 The Contractor shall notify the Contracting Officer or his authorized representative in writing of any proposed change to this inspection system; no such change shall be implemented prior to approval in writing by the Contracting Officer or his authorized representative.

3-9.10 Laboratory Testing.

(1) Capability Check. In the event the Contractor utilizes the service of a commercial testing laboratory, the Contracting Officer reserves the right to check laboratory equipment for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques.

(2) Capability Re-check. The Contractor will be assessed a change of $300.00 to reimburse the Government for each succeeding re-check of the laboratory or the checking of a subsequently-selected laboratory. Such costs will be deducted from the total amount due the Contractor.

(3) Project Laboratory. The Contracting Officer reserves the right to utilize the Contractor's control testing laboratory and equipment to make spot tests and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

ENG FORM 4025-R, 1 JUL 72, IS OBSOLETE.

ANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATE SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANC E FOR ROVAL *(Read instructions on the reverse side prior to initiating this form.)*	DATE	☐ NEW SU AL ☐ RESUBMITTAL

I. REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	TRANSMITTAL NO.
		D.O. FILE NO.	PREVIOUS TRANS. NO. *(If any)*
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED *(Type, size, model number, etc.)* b.	MFG. OR CONTR. CAT., CURVE, DRAWING OR BROCHURE NO. *(See instruction No. 7)* c.	NO. OF COPIES d.	U.S.–C OF E SPEC. PARA NO. e.	U.S. C OF E DRAWING SHEET, PLATE, OR FILE NO. f.	FOR C OF E USE ONLY ACTION CODE g.

REMARKS	*I certify, that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.* NAME AND SIGNATURE OF CONTRACTOR

II. U. S. ARMY CORPS OF ENGINEER ACTION *(This section will be used by the approving authority only)*

ENCLOSURES RETURNED *(List by item No.)*	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

ACTION CODES THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED *(A code letter will be inserted for each item in column g, section I, above.)*

A. APPROVED AS SUBMITTED
B. APPROVED EXCEPT AS NOTED ON DRAWINGS RESUBMISSION NOT REQUIRED
C. APPROVED EXCEPT AS NOTED ON DRAWINGS REFER TO ATTACHED SHEET. RESUBMISSION REQUIRED
D. WILL BE RETURNED BY SEPARATE CORRESPONDENCE
E. DISAPPROVED *(See attached)*
F. RECEIPT ACKNOWLEDGED
G. OTHER *(Specify)*

Appendix 2

SHOP DRAWINGS AND MATERIALS SUBMITTAL REGISTER

CONTRACTOR:

CONTRACT NUMBER:

SUBMITTAL IDENT. NO.	SPECIFICATION PARAGRAPH NO.	TYPE OF SUBMITTAL	DESCRIPTION OF MATERIAL	CONTRACTOR SCHEDULED DATES			ACTION ELEMENT		CORPS ACTION DATES				REMARKS
				SUBMIT DATE	APPROVAL NEEDED BY	MATERIAL EQUIP. NEEDED	TECH. REVIEW BY	APPROVAL COR	SUBMITTED	APPROVAL OR REJECTED	RESUBMIT	FINAL ACTION	

ENG FORM OCT 71 4208 (ER 415-1-10) PREVIOUS EDITIONS ARE OBSOLETE. TRANSLUCENT

PAGE _____ OF _____ PAGES

Sample of Typical Contractor
Quality Control Report

CONTRACTOR'S NAME
(Address)

CONSTRUCTION QUALITY CONTROL REPORT

Date: _____ Report No. _____

Contract No.: _____

Description and Location of Work: _____

WEATHER: (Clear)(P. Cloudy)(Cloudy); Temperature: ____Min;____Max;
Rainfall _____inches

Contractor/Subcontractors and Area of Responsibility

a.
b.
c.
d.
e.
f.
g.

1. Work Performed Today:

(Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in table above.)

2. Results of Surveillance:

(Include satisfactory work completed, or deficiencies with action to be taken.)

3. Tests Required by Plans and/or Specifications Performed and Results of Tests:

4. Verbal Instructions Received:

(List any instructions given by Government personnel on construction deficiencies, retesting required, etc., with action to be taken.)

5. Remarks:

(Cover any conflicts in plans, specifications or instructions.)

Inspector

CONTRACTOR'S VERIFICATION:

The above report is complete and correct and all material and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications except as noted above.

Contractor's Approved Authorized Representative

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PART IV

TECHNICAL PROVISIONS

Jetty Structures

4-1. SCOPE. The work covered by this section consists of furnishing all plant, labor, equipment, and materials, and performing all operations in connection with the construction of the jetty structures as specified herein and on the contract drawings. Both the north jetty (including the weir) and the south jetty shall be constructed prior to initiation of final Channel dredging.

General

4-2. LINES AND GRADES. The work shall be constructed to the lines, grades and cross-sections described herein or as indicated on the drawings, unless otherwise directed by the Contracting Officer. The Government reserves the right to make such changes in the lines, grades, or cross-sections as may be deemed necessary to produce a safe completed job. Changes in quantities of materials, resulting from prescribed changes in sections, shall not be made cause for claims for increased unit prices.

4-3. CONDUCT OF WORK. The Contractor shall maintain and protect the work in a satisfactory condition at all times until the final completion and acceptance of all work under the contract. The Contracting Officer may order any phase of the work suspended during severe weather conditions, if in his opinion satisfactory work cannot be performed under the contract. The Contractor may be required to remove, at his own expense, any material placed by the Contractor outside of the prescribed slope lines.

4-4. ORDER OF WORK - JETTY CONSTRUCTION. Construction shall proceed as follows unless previously approved by the Contracting Officer:

(1) North Jetty
(2) Pilot Channel
(3) Initiate construction of south sand dike with pilot channel excavation
(4) South Jetty

4-5. HAUL ROADS. The Contractor will be responsible for obtaining proper authority or permits for use of existing state and local routes or beach access roads as haul roads or the construction of temporary roads. Any haul roads constructed across existing sea walls or groins shall be constructed and maintained in such a manner as to prevent damage to these existing structures. Any sand dunes removed to

allow beach access shall be rebuilt to their original heights and approximate size, and revegetated with native beach grasses. The Contractor shall obtain prior approval from the Contracting Officer before altering the dune line to allow beach access. Damage to existing roads and other structures caused by the Contractor's operations shall be repaired by the Contractor in accordance with paragraph 1-40.

Stone Requirements

4-6. STONE QUALITY. All stone shall be sound, angular, durable, dense, free from laminations and undesirable weathering, and of such character that it will not disintegrate from the action of air, sea water, or the conditions to be met in handling and placing. All stone shall be clean and free from soil, refuse or adherent coating. The stone shall have a saturated surface dry specific gravity (SSD) of not less than 2.6, except foundation blanket stone which may have an SSD as low as 2.30. Neither the breadth nor the thickness of any piece of stone shall be less than one-third of its length.

4-7. STONE SOURCES. The Contractor shall notify the Contracting Officer in writing of the source or sources from which the Contractor proposes to obtain the stone at least 21 days in advance of the time when stonework is to begin. The Contracting Officer will require that suitable samples of stone be submitted for approval prior to delivery of any such material to the work site. Suitable tests and service records will be used to determine the acceptability of the stone. In the event satisfactory test reports and service records are not available, as in the case of newly-operated sources, the Contracting Officer shall be notified by the Contractor 35 days in advance of the beginning of stonework so that the material can be subjected to such tests as are necessary to determine its acceptability for use in the work. Tests to which the materials shall be subjected include petrographic analysis, specific gravity, abrasion, absorption, wetting and drying, and such other tests as may be considered necessary to demonstrate to the Contracting Officer that the materials are acceptable for use in the work. Tests will be made by the Government at its expense. Should a source (recommended by the Contractor) fail to meet the requirements specified herein, the Contractor will then use those sources recommended and approved below. Approval of the source shall not be construed as a waiver of the right of the Government to require the Contractor to furnish stone which complies with the specifications. All stone will be subject to inspection on delivery and if found to be of improper gradation or quality, it will be rejected. All material shall be made to the required gradation at the source, (allowing 5% spalls), and individual loads as delivered to the project shall meet the required grading. The following stone sources have been approved by the Corps for use in this project, subject to proper gradation and quality:

1. Bass Limited — Foundation Stone
   Box 201
   Jamestown, SC 29453
   Phone: 723-4858 - Charleston, SC
   Phone: 257-2246 - Moncks Corner, SC
   Owner: Mr. Arthur B. Schirmer, Jr.

   a. Jamestown Quarry

2. Lone Star Industries, Inc. — All Stone
   Georgia St., P. O. Drawer 5185
   South Atlantic Division
   Columbia, SC 29205
   Phone: 771-0090
   Mr. Rudy Sheely

3. Martin Marietta
   Box 1758
   1801 Charleston Hwy.
   Columbia, SC 29202
   Phone: 796-6360
   Mr. Luther Wilson
   Mr. Al Cullen

   a. Camak Quarry, Camak, GA — All Stone
   b. Augusta Quarry, Augusta, GA — All Stone
   c. Rion Quarry, Rion, SC — All Stone
   d. Cayce Quarry, Columbia, SC — All Stone
   e. North Columbia Quarry, SC — All Stone
   f. Berkeley Quarry, Eutawville, SC — All Stone
   g. Georgetown Quarry, Jamestown, SC — Foundation Stone

4. Ware Brothers — Foundation Stone
   P. O. Box 626
   Moncks Corner, SC
   Phone: 899-2791
   Mr. Ware

   a. Jamestown Quarry, SC

4-8. FOUNDATION BLANKET. The jetty structure and weir shall be founded on stone designated as the foundation blanket. Foundation blanket stone shall be reasonably well graded within the limits as specified below:

Foundation Blanket Stone Gradation

Percent Finer by Weight	Limits of Stone Size in Inches
100	3"-6"
50	0.5"-1"
15	0.25"-0.75"

4-9. CORE STONE. Core stone shall be reasonably well graded within the limits as specified below:

Core Stone Gradation

Percent Finer by Weight	Limits of Stone Size in Inches
100	18"-24"
50	12"-18"
15	12"-16"

4-10. TOE PROTECTION STONE. The stone used for toe protection shall be reasonably well graded within the limits as specified below:

Toe Protection Stone Gradation

Percent Finer by Weight	Limits of Stone Size in Inches
100	18"-24"
50	12"-18"
15	12"-16"

4-11. ARMOR STONE. The stone used for the armor stone shall consist of selected quarried stones weighing within the limits as specified below corresponding to the specified area of placement.

(1) Cover Stone. (North jetty from Station 15+10 to Station 28+59) The stone used for cover stone (in the weir section only) shall consist of select quarried stones weighing from 2,400 to 5,000 pounds with at least 75% of the stones placed weighing 4,000 pounds or more.

(2) Armor Stone I. (North jetty from Station 43+70 to Station 42+20 - South jetty from Station 65+34 to Station 63+84) Armor Stone I shall be used for the head section of the north and south jetty. The stone shall consist of stones weighing from 6.0 to 10.0 tons with at least 75% of the stones weighing 8.0 tons or more.

(3) Armor Stone II. (North jetty from Station 42+20 to Station 28+59 and from Station 15+10 to Station 9+24 - South jetty from Station 63+84 to Station 32+15) The stone shall consist of stones weighing from 4.0 to 7.0 tons with at least 75% of the stones weighing 5.5 tons or more.

4-12. APPROVAL OF MATERIALS. As an integral part of the contractors quality control program, the Contractor will be required to submit suitable samples of all stones and aggregate to be used in the construction for approval of any such material. The sources from which the Contractor proposes to obtain the material shall be selected well in advance of the time when the material will be required for the work (see paragraph 4-7) and notification of the sample locations shall be given to the Contracting Officer at least five (5) days prior to sampling. All test samples shall be obtained by the Contractor under the supervision of the Contracting Officer and delivered by and at the expense of the Contractor to:

South Atlantic Division Laboratory
611 South Cobb Drive
(Georgia Highway 280)
Marietta, Georgia 30061

Foundation Preparation and Sitework

4-13. QUALITY CONTROL. The Contractor shall provide and maintain an effective quality control program in accordance with requirements as specified in paragraph 3-9. Minimum sampling of the stones will be required as follows:

Stone Type	One Sample Required Per Tonnage "In Place"
Foundation Blanket	5000 Tons
Toe Protection Stone	5000 Tons
Core Stone	5000 Tons
Armor Stone I	5000 Tons
Armor Stone II	5000 Tons
Cover Stone (weir)	500 Tons

4-14. EXCAVATION FOR STONE STRUCTURES. Excavation shall be performed as necessary to construct the weir and jetty structures to the grades and sections indicated on the plans. Such excavation consists of removal and disposal of any class of material encountered in the designated areas. The material to be removed is predominately sand, but may contain varying amounts of shells, stones, and miscellaneous debris. Excavation shall be made to the elevations indicated on the drawings within a tolerance of 12(±) inches, except that either extreme of such tolerance shall not be continuous over an area greater than 100 square feet. Excavation, backfill and disposal shall be conducted in such a manner to preclude wave action from returning any of the excavated material prior to placing the foundation stone, core stone, toe protection, and armor stones.

Excavation for elements of the weir and jetty structure shall be done in such a manner as to preserve the undisturbed condition of materials remaining in place below the required grade and to permit recovery of the maximum amount of suitable material for use as fill and backfill. Blasting will not be permitted.

4-15. DISPOSAL OF SUITABLE EXCAVATED MATERIAL. Sand excavated for construction of weir and jetty structures will be permitted for use as fill or backfill. The portions of required excavations not to be occupied by the stone structures shall be backfilled to original grades with the excavated sand. Excavated sand not required for such backfill and not containing objectionable debris shall be disposed of in areas designated on the drawings as "nourishment areas," or as directed by the Contracting Officer. Any stones, 12" or greater, excavated during foundation excavation shall be cleaned, sized, and stockpiled for use in the weir and jetty structures where corresponding sizes are specified.

4-15.1 DISPOSAL OF UNSUITABLE EXCAVATED MATERIAL. Excavated material that is determined by the Contracting Officer to be unsuitable for placement in the beach surf shall be removed from the site of the work for disposal. Unsuitable material will normally be any soil that contains greater than 20% by weight passing a No. 200 seive. A highland disposal area will be made available to the Contractor by the Government approximately 3.6 miles from the jetties.

Construction

4-16. JETTY CONSTRUCTION. Unless otherwise specified by the Contracting Officer, the limits of the stone in place shall follow, as nearly as practicable, the lines and slopes indicated on the plans without continuous under-building. The equipment used to place the stone shall be subject to the approval of the Contracting Officer. The weir and jetty stones shall be placed to a full section as the construction progresses seaward with the following exceptions:

(1) The Contractor shall maintain the foundation blanket stone a minimum of 50 feet ahead of the jetty and weir construction. This distance of blanket stone will be maintained until the seaward limit of the foundation blanket is reached.

(2) The Contractor may construct a roadway on top of the jetty if desired, or if required by the method of construction selected. Any over-building for construction shall be removed to the design lines and grades prior to completion of the project. The Contractor shall maintain the weir and jetty structures until final acceptance under the contract, and any material displaced due to fault or negligence of the Contractor shall be replaced by the Contractor to the lines and grades shown on the plans at no additional expense to the Government.

4-17. FOUNDATION BLANKET STONE PLACEMENT. The foundation stone shall be placed with a crane-operated skip, clam, or other approved equipment to the lines and grades required on the plans. The stones shall be so placed as to interlock and form, as near as practicable, a continuous layer. The stone shall be carefully placed, not dropped, with a minimum of segregation to the required section in a reasonably well-graded mass with a minimum practical percentage of voids. Dropping material into or through the water will not be permitted.

4-18. CORE STONE PLACEMENT. The core stone shall be used as a filler to compensate for ground (elevation) variations. The stone shall be placed to the lines and grades required on the plans to form a layer of variable thickness on which to place the armor stone. The stones shall be so placed that the stones will interlock and form as nearly as practicable a continuous layer. Each stone shall be lowered to rest before being released and shall be placed to the satisfaction of the Contracting Officer. The larger stones in the range allowable for each section shall be placed at the toe of the slope of the core stone layer. The size and shape of the core stone shall be such that the armor stone when placed upon it will complete the weir or jetty structure to the cross-sectional dimensions required on the plans. A tolerance of plus or minus 12 inches will be allowed in the top and side slopes of the completed core stone layer, provided neither extreme of this tolerance is continuous over a linear length greater than 10 feet or an area greater than 100 square feet.

4-19. TOE PROTECTION STONE PLACEMENT. The toe protection stone shall be placed to the lines and grades required on the plans. The stones shall be so placed as to interlock and form, as nearly as practicable, a continuous layer. A tolerance of plus or minus 12 inches will be allowed in the top and side slopes of the completed toe protection layers, provided neither extreme of this tolerance is continuous over a linear length greater than 10 feet or an area greater than 100 square feet.

4-20. COVER STONE AND ARMOR STONE PLACEMENT. The armor stone shall be placed on completed sections of the core stone. Placement of armor stone shall follow as closely as possible the placement of the core stone to minimize the danger of damage to unprotected portions of the jetty and weir sections. The armor stone shall be placed on the side slopes, as shown on the plans, in such a manner that the stones will interlock and form as nearly as practicable a continuous outer surface. Care shall be taken during placement to insure proper positioning and maximum interlocking of each stone. Each stone shall be placed to the satisfaction of the Contracting Officer with each stone being lowered to rest before being released. The heaviest stones shall be placed at the toe of the slope. Stone shall be placed as closely together as practicable with the stones above 0 mlw placed in juxtaposition with vertical joint faces parallel and touching. In general, the longest dimension of each outer stone shall be normal to the axis of the jetty and slope downward toward the center of the jetty. The top of the jetty and slope transitions shall be reasonably smooth. A tolerance of plus or minus 1.5 feet vertical to the theoretical plane of the surface of

the jetty section will be permitted for projections and depressions due to the placement of the larger size armor stones, provided neither extreme of this tolerance is continuous over a length greater than 10 feet or an area greater than 100 square feet.

4-21. CEASE WORK FOR SEVERE WEATHER. Severe storms have occurred at the project site in the past and may be expected to occur during the construction time period of this contract. The Contractor shall stop work on the placement of stone when directed by the Contracting Officer. When work is stopped by the Contracting Officer due to severe weather, the Contractor shall cap the end of the weir or jetties with armor stone of the size corresponding to the size being placed on the jetty at the time. Such stone shall be removed when construction is resumed. No payment will be made for protecting the foundation blanket, weir or jetties from severe weather. Work performed by the Contractor to repair damage to the extended foundation blanket, weir or jetty sections caused by severe weather will be paid for as provided in paragraph 1-18, "Damage to Work."

4-22. MAINTENANCE OF EXISTING NAVIGATION. A navigation channel shall be kept open at all times regardless of order of work. The Government will be responsible for any maintenance dredging that may be required in the channels until such time as the contractor closes the existing main channel with construction of the south jetty. At time of closure, contractor will have completed construction of north jetty and pilot channel and will assume responsibility for maintaining all channels. The pilot channel (through the inlet bar) shall be at least 90 feet wide and have a minimum depth of 8 feet at mean low water. The pilot channel shall be dredged only in the location designated on the contract plans as the Entrance Channel and Inner Channel A.

4-22.1 Initial dredging and periodic maintenance of the pilot channel will be performed only at the direction of the Contracting Officer. It is expected that maintenace will be required once a calendar year in the months of March to May.

4-22.2 Payment for all pilot channel excavation, including maintenance dredging, will be made to the Contractor upon completion of each acceptance section at the contract unit price for appropriate bid items "Unclassified Pilot Channel Excavation" and "Mobilization and Demobilization of Dredging Plant for Pilot Channel Excavation." No payment will be made to the Contractor for any material dredged outside of the limits specified on the contract plans as Entrance Channel and/or Inner Channel A.

Measurement and Payment of Jetty Construction

4-23. PAYMENT OF EXCAVATION. No separate payment shall be made for any excavation required for construction of the Jetty sections as specified in these plans.

4-24. MEASUREMENT OF STONE. All classifications of stone shall be measured by the ton (2,000 pounds), surface dry as determined by approved scales or barge displacement except as specified in Section 5, "Fishing Walkway." If the Contractor delivers the stone to the site of the work by land transportation, he shall, unless otherwise directed by the Contracting Officer, weigh the stone on approved scales in the presence of an authorized agent who will certify as to the correctness thereof. (Railroad freight bills will be accepted.) If the Contractor delivers stone to the site of the work on barges, it will be measured in still water on the barges by displacement, and the weight of one cubic foot of salt water will be taken as 64.0 pounds. If barge displacement is used for measuring stone, the Contractor shall equip his barges with suitable gages, not less than 4 in number, at such points as are indicated by the Contracting Officer. The Contractor shall furnish plans of all barges used for transporting stone, and barges will be measured by a representative of the Contracting Officer to check these plans. The capacity of all barges will be determined for various drafts from these plans and measurements, and a record of same will be furnished to the Contractor. No barge will be used on the work for transporting stone until measurements for determining its capacity have been made under the direction of the Contracting Officer. Each barge shall be plainly marked by a distinctive letter, number, or name which shall not be changed or assigned to any other barge during the period of the contract. Barges shall be loaded so that there will be no great variation in trim or list so that the displacement can be accurately determined. Barges which cannot be easily measured for accurate displacement owing to their model or for any other cause will not be accepted. The level of the water surface in each barge shall be ascertained just before the load is discharged and again immediately afterwards. Between measurements, no pumping will be allowed and all equipment, dirt, and rejected stone must be left aboard the barge until after the second reading has been taken. From these readings, the number of tons of stone will be determined. Not more than one classification of stone shall be delivered on the same barge or other vehicle at one time. Any rejected, misplaced or unused stone will be deducted from the measured quantities prior to payment.

4-25. PAYMENT OF STONE. All classifications of stone will be paid for at the applicable contract unit price per ton (2,000 pounds) as specified below. Such payment shall include full compensation for all work in connection with furnishing, placing, protecting, and all other work incidental to installation of the stone as required by the specifications and contract drawings for which a separate payment is not specifically provided for herein. At the request of the Contractor, monthly payments for purchase and delivery of the stone will be considered. Payments for purchase and delivery of stone will be limited to the actual cost of the stone at the quarry documented by acceptable bills plus the cost of transportation to the site or stockpile documented by acceptable freight or weigh bills. Any such payments for purchase and delivery of the stone will be deducted from any amounts due under the applicable contract items.

(1) Foundation Blanket Stone. Payment for this classification of stone will be at the contract unit price bid per ton for item in paragraph 4-7, "Foundation Blanket".

(2) Core Stone. Payment for this classification of stone will be at the contract unit price bid per ton for item in paragraph 4-8, "Core Stone".

(3) Toe Protection Stone. Payment for this classification of stone will be at the contract unit price bid per ton for item in paragraph 4-9, "Toe Protection Stone".

(4) Cover Stone. Payment for this classification of stone will be at the contract unit price bid per ton for item in paragraph 4-10(1), "Cover Stone".

(5) Armor Stone. Payment for these two (2) classifications of stone (Armor Stone I and II) will be at the contract unit price bid per ton for item in paragraph 4-11(2,3), "Armor Stone I" and "Armor Stone II", respectively.

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PART V

TECHNICAL PROVISIONS

Piles for Weir Warning Markers

5-1. SCOPE. The work covered by this section consists of furnishing all plant, labor, equipment, and materials (except the metal signs), and performing all operations in connection with the construction of weir warning markers, complete, in accordance with these specifications and the contract drawings.

5-2. MATERIALS.

5-2.1 Wood piles. Wood piles shall conform to Federal specification MM-P-371b, "Piles, Wood," Type II, Class B, clean-peeled, subject to further limitations in this section of the specifications.

5-2.2 Bolts, nuts, washer staples, sheet metal, and other hardware shall be commercial grade, galvanized and of the size or gage indicated on the drawings.

5-3. PRESERVATIVE TREATMENT. Timber piling shall be given a preservative treatment in accordance with the requirements of Federal Specification TT-W-571i and Int. Am-1 (AGR-FS), "Wood Preservation: Treating Practices," using either creosote conforming to Federal Specification TT-C-645b, or creosote-coal tar solution conforming to Federal Specification TT-C-650c with the minimum net retention indicated for coastal water use and for the type of wood being treated. Timber piling meeting the American Wood Preservers Institute Standard (MP-2) for wood piling, pressure treated with creosote for use in marine waters of severe borer hazard will also be accepted. A certificate from any approved nationally recognized testing organization adequately equipped and competent to perform such services attesting that the piles have been treated in accordance with the requirements of Federal Specification TT-W-571i and Int. Am-1 (AGR-FS), shall be delivered to the Contracting Officer prior to the commencement of pile placement. The seal of approval of American Wood Preserver Institute (AWPI-MP-2) on each pile will be accepted in lieu of a certificate. Treated piles shall be carefully handled with no sudden dropping, breaking of outer fibers, bruising, or penetrating the surface with tools. Peaveys, cant hooks, pikes, hooks, and other pointed tools shall not be used in handling treated piles. Cut or damaged surfaces of piles, including the tops of the piles after heading, shall be given after-treatment care as required by Federal Specification TT-W-571i and Int. Am-1 (AGR-FS), using creosote for brush application conforming to Federal Specification TT-C-655 and Am-1.

5-4. CREOSOTE FOR BRUSH TREATMENT. Creosote for brush treatment of cut or damaged piles shall conform to Federal Specification TT-C-655 and AM-1, "Creosote, Technical, Wood Preservative, (for) Brush, Spray, or Open-Tank Treatment."

5-5. INSPECTION OF PILES. Piles will be inspected either at the shipping point or at the site of the work, as determined by the Contracting Officer. Facilities shall be made available to the inspector for proper inspection of each pile throughout its length. Piles damaged after inspection may be subsequently rejected if damage is deemed sufficient for rejection by the Contracting Officer. All rejected piles shall be removed as directed. Treatment of piles will be inspected in accordance with Standard Instructions M2 of the American Wood-Preserver's Association as required in Federal Specification TT-W-571i and Int. Am-1 (AGR-FS).

5-6. LENGTHS OF PILES. The lengths of piles shall be as called for on the drawings. To provide for "heading" and cutting off square after driving or jetting, piles shall be furnished in lengths at least one foot greater than the lengths specified to be below the cut-off elevations.

5-7. PLACING. Piles shall be jetted or driven as accurately as practicable in the correct locations true to line both laterally and longitudially and to the vertical or batter lines, all as shown on the contract drawings. The correct relative position of group piles shall be maintained by the use of templates or by other approved means. The maximum permissible deviation from the location indicated on the driving plan shall be no more than 6 inches for each pile. Excessive bending of piles to pull them into final position will not be permitted. If the pile as jetted or driven does not meet the requirements of this paragraph, it shall be pulled and rejetted or redriven by the Contractor at no additional cost to the Government. If, due to fault or negligence of the Contractor, a pile is jetted or driven below the elevation fixed by the plans or by the Contracting Officer, it shall be withdrawn and replaced, at the expense of the Contractor.

5-8. DRIVING. The Contractor shall have the option to drive or jet the piles for the weir warning markers.

(1) Driving. Driving equipment shall be limited to single or double acting hammers of the size and type suitable for the work, as approved by the Contracting Officer. The use of drop hammers shall be prohibited. The dynamic energy delivered by the driving equipment shall not exceed 15,000 foot-pounds. Each pile shall be driven without interruption until the required penetration has been obtained. The use of followers or splices will not be permitted except where specifically authorized by the Contracting Officer. The use of free-swinging leads will not be permitted. All piles shall be driven to the full penetration called for where practicable to do so without damage to the piles. Driving of piles beyond the point of refusal, as indicated by excessive bouncing of the hammer or kicking of the pile, shall not be attempted. Unless rock layers are encountered in pile driving, the piles shall be driven to the tip elevations shown on the drawings. When rock layers are encountered, the rock shall be drilled or punched as required to obtain the penetration called for on the drawings. Drilling and punching of rock layers encountered after the required penetration has been attained will not be required.

Piles which have uplifted after driving shall be redriven to grade after conclusion of driving in that general area. After driving, all piles shall be cut off to a normal, regular surface at the cut-off grade line and such cutoffs shall become the property of the Contractor and shall be removed at his expense. Collars or bands of an approved design shall be used if required to protect the butts against splitting, brooming, and other damage.

(2) Jetting. The jetting equipment shall be of a type and capacity approved by the Contracting Officer and at least two jets shall be used. The jetting operation will be continuous until required penetration has been obtained. When drilling in rock is required to achieve the required penetration, the Contractor shall employ the minimum driving energy required to seat the pile firmly on rock at the bottom of the drilled hole.

5-9. PILE PLACEMENT INSPECTION. The Contractor shall provide all facilities for proper inspection of pile placement and shall conduct his operations so that proper inspection of each pile can be made.

5-10. DAMAGED AND MISPLACED PILES. Driving of piles shall not subject them to abuse producing serious injury. Piles which are split, broomed, broken by reason of internal defects or by improper driving, or otherwise injured below "cut-off" elevation so as to impair them for the purpose intended and all piles driven out of proper location shall be removed and replaced or at the option of the Contracting Officer a second pile may be driven adjacent thereto. All piles so driven shall be at the Contractor's expense. The Contracting Officer may require the Contractor to pull certain selected piles after driving, for test and inspection to determine the conditions of the piles. Any pile so pulled and found to be damaged to such extent as, in the opinion of the Contracting Officer, would impair its usefulness in the completed structure shall be removed from the work and the Contractor shall furnish and drive a new pile to replace the damaged pile. Piles pulled and found to be sound and in a satisfactory condition shall be redriven.

5-11. FRAMING TREATED PILES. Bolt holes shall be bored as called for on the drawings. Holes bored into piles shall be filled with hot creosote and when not used for bolts shall be tightly closed by a treated plug. Holes shall not be bored or spikes driven into piles to support scaffolding. As soon as practicable after "heading," the tops of all creosoted piles shall be treated with two coats of hot creosote, followed by an application of a heavy coat of coal-tar pitch. In addition to the "after heading" treatment specified above, the tops of all piles shall be capped with sheet metal as shown on the drawings.

5-12. QUALITY CONTROL. The Contractor shall establish and maintain quality control system in accordance with paragraph 3-9.

5-13. PAYMENT FOR WEIR WARNING MARKERS. Payment for each weir warning marker acceptably constructed will be made at the applicable contract price indicated in the Unit Price Schedule, Item No. 23, "Weir Warning Markers," which price shall include all items incidental to furnishing and driving the piles, redriving uplifted piles, any required notching, the cutting off of all piles at the prescribed elevations, treatment of the pile head, installing the hardware and Government furnished signs as indicated on the contract drawings.

5-13.1 PULLED PILES. Piles which are pulled at the direction of the Contracting Officer, and found to be in good condition will be paid for at the pro-rata cost per pile of the contract unit price of the affected marker plus 50 percent of the amount to cover the cost of pulling. Such pulled piles when redriven will be paid for at 50 percent of the pro-rata cost per pile of the contract unit price of the affected marker for furnishing and driving the pile to be redriven, which price shall constitute payment for redriving only, the cost of furnishing, driving and pulling the piles having been paid for as specified above. Where piles are pulled and found to be damaged, they shall be replaced by new piles at no expense to the Government.

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PART VI

TECHNICAL PROVISIONS

Fishing Walkway

6-1. SCOPE. The work covered by this section consists of furnishing all plant, labor, equipment, and materials and performing all operations in connection with constructing the asphaltic concrete fishing walkway strip on the south jetty.

6-2. LINES AND GRADES. The work shall be constructed to the lines, grades and cross-sections described herein or as indicated on the drawings, unless otherwise directed by the Contracting Officer. The Government reserves the right to make such changes in the lines, grades, or cross-sections as may be deemed necessary to produce a safe completed job. Changes in quantities of materials, resulting from prescribed changes in sections, shall not be made cause for claims for increased unit prices.

6-3. CONDUCT OF WORK. The Contractor shall maintain and protect the work in a satisfactory condition at all times until the final completion and acceptance of all work under the contract. The Contracting Officer may order any phase of the work suspended during severe weather conditions, if in his opinion satisfactory work cannot be performed under the contract. The Contractor may be required to remove, at his own expense, any material placed by the Contractor outside of the prescribed slope lines. Work involving placement of bituminous materials will not be performed when wave and weather conditions cause the surface of the jetty stones to be excessively wet or when the temperature is below 60 degrees Fahrenheit and falling.

6-4. HAUL ROADS. The Contractor will be responsible for obtaining proper authority or permits for use of existing state, local routes or beach access roads as haul roads, or the construction of temporary roads. Any haul roads constructed across existing sea walls or groins shall be constructed and maintained in such a manner as to prevent damage to these existing structures. Any sand dunes removed to allow beach access shall be rebuilt to their original heights and approximate size and revegetated with native beach grasses. The Contractor shall obtain prior approval from the Contracting Officer before altering the dune line to allow beach access. Damage to existing roads and other structures caused by the Contractor's operations shall be repaired by the Contractor at no expense to the Government.

6-5. MATERIALS.

6-5.1 Mineral Aggregate. The mineral aggregate shall consist of mixtures of fine or fine and coarse aggregates and shall be free from lumps of clay or other deleterious matter.

When tested by means of laboratory sieves the aggregate shall conform to the following gradation requirements for grouting or capping applications:

(1) Grouting mix aggregate shall conform to that of the State Highway Department Hot Laid Sand Asphalt Base Course as described in Section 310 of the South Carolina State Highway Department Standard Specifications for Highway Construction, adopted 1973.

(2) Capping mix aggregate shall conform to that of the State Highway Department Hot Laid Asphaltic Concrete Surface Course as described in Section 403 of the South Carolina State Highway Department Standard Specifications for Highway Construction, adopted 1973.

6-5.2 Mineral Filler. Mineral filler shall consist of finely ground particles of limestone, hydrated lime, Portland cement or other approved non-plastic mineral matter. When tested by AASHO Designation M-17, it shall meet the following minimum gradation requirements:

Sieve Size	% Passing by Dry Weight
No. 30	100
No. 100	95-100
No. 200	70-100

6-5.3 Where natural occurring fine materials are used they shall be free from organic matter and clay particles or other deleterious matter, and shall have a liquid limit less than 25 and a plasticity index of less than 3 as determined by AASHO Designations T 89 and T 90.

6-5.4 Asphaltic Material. The asphalt cement used in grouting mix, capping mix, and tack coat shall be the 85-100 penetration grade and shall conform to the requirements of AASHO M 20.

6-6. JOB MIX FORMULA. A job mix formula (including materials test reports) prepared by a recognized commercial testing laboratory and a certificate indicating the stability and flow of mixture proposed for use, shall be submitted to the Contracting Officer for approval at least fifteen (15) days prior to commencing the work. Furnishing of the job mix formula and testing of the proposed mixture shall be at the expense of the Contractor. The Contractor has the option of using either the asphaltic grouting and capping mixes specified in paragraphs 6-7 through 6-11, or the Type 3 mixes described in Sections 310 and 403, respectively, of the South Carolina State Highway Department Standard Specifications for Highway Construction, adopted 1973. However, once the Contractor has selected his option, he shall not change mixes during any period of the construction.

6-7. ASPHALT HOT MIX.

6-7.1 Proportions in Mix. The asphalt hot-mix shall be prepared using approved materials as described in paragraphs 6-5.1 through 6-5.4, above, and shall be proportioned within the following limits:

	Grouting Mix	Capping Mix
Aggregate (% of total mix)	60-80	76-84
Mineral Filler (% of total mix)	10-20	8-12
Asphalt Cement (% of total mix)	10-20	8-12

6-7.2 Temperature of Mix. The asphalt hot-mixes shall be prepared at a suitable temperature so that when delivered to the job site and ready to apply the temperature range shall be as follows:

	Temperature °F
Grouting Mix	325°-350°
Capping Mix	275°-325°

6-8. ASPHALTIC GROUTING MIX. Grouting mix shall conform to the State Highway Department Hot Laid Sand Asphalt Base Course as described in Section 310 of the South Carolina State Highway Department Standard Specifications for Highway Construction, adopted 1973. The asphalt grouting mix shall be used to fill the voids in the stone jetty structures to the theoretical slope lines and grades shown on the contract drawings. The grouting mix shall be placed by means of mass dumping and chutes or stand pipes.

6-8.1 Compaction of Grouting Mix. The grouting mix shall be consolidated with the aid of mechanical vibrating equipment and supplemented by hand spading and tamping.

6-8.2 Work involving placement of bituminous materials will not be performed when wave and weather conditions cause the surface of the jetty stones to be excessively wet or when the temperature is below 60 degrees Fahrenheit and falling.

6-9. BITUMINOUS TACK COATS. The bituminous tack coats shall consist of an application of hot bituminous material placed on the previously asphalt-grouted jetty surface prior to applying the cap mix layer and an application between the grouting mix and the asphaltic concrete layer.

6-9.1 Quantities to be Applied. Bituminous material for the tack coat shall be applied in quantities of approximately 0.08 gallon per square yard of jetty surface. The exact quantities, which may be varied to suit field conditions, will be determined by the Contracting Officer.

6-9.2 Preparation of Surface. Immediately before applying the tack coat, all loose material, dirt, clay, or other objectionable material, shall be removed from the surface to be tack coated. After the cleaning operation, and prior to the application of the tack coat an inspection of the area to be coated will be made by the Contracting Officer to determine its fitness to receive the bituminous tack coat material. That portion of the jetty surface prepared for immediate treatment, if considered excessively dry, shall be lightly sprinkled with water immediately in advance of the application, as directed by the Contracting Officer to assure a uniform spread of the bituminous material.

6-9.3 Application of Tack Coat. The tack coat material shall be so applied that uniform distribution is obtained at all points of the surface to be covered with cap mix. The tack coat surface shall be maintained by the Contractor until the cap mix layer or the asphaltic concrete has been placed. During this interval the Contractor shall protect the tack coat surface against damage and shall repair all broken spots.

6-9.4 Time of Application. The tack coat shall be applied sufficiently in advance of the cap mix layer or asphaltic concrete layer to permit drying but shall not be applied so far in advance or over such an area that it might lose its adhesiveness as a result of being covered with dust or other foreign material.

6-10 ASPHALTIC CONCRETE CAP MIX. Capping Mix shall conform to the State Highway Department Type 3 Asphaltic Concrete as described in Section 403 of the South Carolina State Highway Department Standard Specifications for Highway Construction, adopted 1973. The asphalt capping mix shall be placed to finish the top of the asphalt grouted jetty structure to provide a wearing surface for pedestrian and maintenance vehicular traffic only. The cap mix layer shall be placed on the tack coat as soon as possible after curing of tack coat.

6-10.1 Compaction of Asphaltic Concrete Cap Mix. The asphalt capping mix shall be compacted by means of small steel rollers, pneumatic-tired rollers and supplemented by vibratory compactors and hand tampers. The rolling shall be done in the following sequence, with equipment specified:

(1) Seal rolling, using tandem steel rollers weighing 5 to 12 tons, and following as close behind the spreading of cap mix as is possible without pickup, undue displacement or blistering of the material.

(2) Rolling with self-propelled pneumatic-tired rollers following as close behind the seal rolling as the mix will permit. The roller shall cover every portion of the surface with at least six passes.

(3) Final rolling with the 5 to 12 ton tandem steel roller to be done after the seal rolling and pneumatic-tired rolling are completed, but before the pavement temperature has dropped below 140°F. This rolling shall be continued until all roller marks and tire marks have been eliminated.

6-10.2 The rolling of the cap mix layer shall be longitudinal. The motion of the roller shall at all times be slow enough to avoid displacement of the mixture, and any displacement shall at once be corrected by the use of rakes and by adding fresh mixture if required. Areas which are inaccessible to a roller shall be compacted by the use of vibratory compactors and hand tamps. Depressions which develop before the completion of the rolling shall be remedied by loosening the mixture and adding new mixture to bring the depressions to a true surface. The cap mix upon completion of final rolling shall be smooth and true to cross section. Low or defective areas remaining after final compaction shall be immediately corrected by cutting out the faulty areas and replacing with fresh hot mixture, and compacting the area to conform to the remainder of the cap mix layer. After final rolling of the cap mix, traffic of any kind shall not be permitted until the cap mix has cooled and hardened or for at least 6 hours.

6-10.3 Density Required for Cap Mix Layer. The density of the cap mix layer, after final compaction, shall at no location be less than 95 percent of the laboratory-compacted density of the mixture. All tests necessary to determine compliance with density requirements specified herein will be performed by an approved commercial laboratory at the expense of the Contractor. A minimum of six field density tests shall be performed.

6-11. SINGLE SURFACE TREATMENT (TYPE 3). Regardless of the job mix formula (paragraphs 6-6 and 6-7) selected, the Contractor shall surface treat the fishing walkway after the grouting and cap mixes have been placed. The bituminous surfacing *(single treatment) shall conform* to Section 407 of the South Carolina State Highway Department Standard Specifications for Highway Construction, adopted 1973. The cap mix (surface) shall receive Type 3 single treatment using No. 8M aggregate.

6-12. APPROVAL OF MATERIALS. As an intergral part of the Contractor's quality control program, the Contractor will be required to submit suitable samples of all aggregate, mineral filler and asphalt cement to be used in the construction (for approval of any such material) to the work site. The sources from which the Contractor proposes to obtain the material shall be selected well in advance of the time when the material will be required for the work and notification of the sample locations shall be given to the Contracting Officer at least five (5) days prior to sampling. All test samples shall be obtained by the Contractor under the supervision of the Contracting Officer and delivered by and at the expense of the Contractor to the South Atlantic Division Laboratory (see paragraph 4-12).

6-12.1 Testing the Mix. Laboratory test specimens of grouting and capping mixes, combined in proportions as shown in paragraph 6-7, above, shall be prepared and tested in accordance with the procedures set forth for either the Marshall, the Hubbard-Field, or the Hveem Method of mix Design in the Asphalt Institute Manual. "Mix Design

Methods for Hot-Mix Asphalt Paving," M.S. No. 2. When tested in this manner the job mix formula shall be selected from specimens conforming to the following test limits:

CRITERIA FOR TEST LIMITS

Design Method	Grouting Min.	Mix Max.	Capping Min.	Mix Max.
MARSHALL				
Number of compaction flows, each end of specimen	50	50	50	50
Stability, lbs.	-	-	500	-
Flow, Units of 0.01 in.	30	-	10	20
Voids in Total Mix, %	-	2	1	3
Aggregate Voids Filled, %	95	-	80	95
Voids in Mineral Aggregate, %	40	-	15	-
HUMMARD-FIELD				
Original Method[1], Stability, lbs.	-	-	1000	1500
Voids in Total Mix, %	-	2	1	3
Aggregate Voids, Filled, %	95	-	80	95
Voids in Mineral Aggregate, %	40	-	15	-
Modified Method[2], Stability, lbs.	-	-	1500	3500
Voids in Total Mix, %	-	-	1	3
Aggregate Voids, Filled, %	-	-	80	95
Voids in Mineral Aggregate, %	-	-	15	-
HVEEM				
Stabilometer value	-	20	15	30
Cohesiometer value	100	-	150	-

NOTES: (1) The original Hubbard-Field Method is applicable to mixtures using penetration grades of asphalt and aggregate grading having at least 65% passing the No. 10 sieve. The method is intended only for the laboratory design of asphalt mixes and today has been used primarily for the design of mixes having 100% passing the No. 4 sieve.

(2) The modified Hubbard-Field Method is applicable to mixtures using penetration grades of asphalt and aggregate gradings having more than 35% of coarse aggregate with a maximum size of 3/4-inch or less. This Modified Method is intended only for the laboratory design of asphalt mixes.

6-13. LEVELING STONE. Leveling stone shall be required for the paved walkway access as follows:

(1) Where the crest elevation of the south jetty is lower than +8 feet (mlw) leveling stone shall be used to close or reduce the larger voids in the armor stone. This leveling stone shall be reasonably well graded within the limits as specified below:

Percent Finer by Weight	Limits of Stone Size in Inches
100	18-24
50	12-18
15	12-16

This stone has the same gradation as the jetty core stone (paragraph 4-9).

(2) Where the crest elevation of the south jetty is higher than +9.5 feet (mlw) no leveling stone will be required. However, the Contractor may use leveling stone provided that he builds the minimum fishing walkway section required in the contract plans.

6-14. EQUIPMENT. Asphalt plants used for grouting and capping mixes shall conform to requirements described in Section 4 of the Asphalt Institute Specification Series No. 1 entitled "Specifications and Construction Methods for Hot-Mix Asphalt Paving." Bin requirements for the hot-mix plant should be modified to provide a 1-bin mix for grouting and a 2-bin mix for capping.

6-15. TRANSPORTATION OF MIXES. Vehicles used for transportation of asphalt hot-mixes from the plant to the site of work shall have tight metal bodies, and these shall be free from dust, screenings, petroleum oils, volatiles or other mineral spirits which may affect the mix being hauled. To prevent the mixes from sticking to the floor or sides of the truck bed, the beds shall be painted or sprayed with a limewater or soap solution as often as necessary but at least once a day. After spraying or painting, the truck bed shall be elevated and thoroughly drained to remove excess solution.

6-15.1 All trucks shall be equipped with a canvas cover of equal or sufficient size to completely cover the mixture so as to maintain the temperature of the mix as high as possible.

6-16. MEASUREMENT. Measurement for the "fishing walkway" will be made by the linear foot. No separate measurement will be made for asphaltic grouting mix, bituminous tack coat, asphaltic cap mix, leveling stone, or single surface treatment.

6-17. PAYMENT. Payment for the fishing walkway construction will be made at the applicable contract unit price per linear foot for the completed constructed item. This contract unit price shall include all costs connected with labor and materials necessary for the fishing walkway construction as required by the plans and specifications. No separate payment will be made for asphaltic concrete grouting and cap mix, bituminous tack coat, level stone, or single surface treatment.

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PART VII

TECHNICAL PROVISIONS

Dredging

7-1. WORK COVERED BY CONTRACT PRICE. The contract price per cubic yard for dredging shall include the cost of removal and disposal of all material as specified herein or indicated on the maps and drawings, exclusive of mobilization and demobilization costs as defined in paragraphs 1-10 and 4-22.2. The Contractor shall remove sufficient material to provide the limiting side slopes shown on the drawings and specified in paragraph 6.9.

7-2. ORDER OF WORK. Final channel dredging operations shall not be initiated until construction of the stone structures of both the north and south jetties have been completed. However, a pilot channel shall be dredged and maintained in accordance with paragraph 4-22 of these specifications. Items of dredging will proceed as follows:

(1) Entrance channel dredging
(2) Auxiliary channel dredging
(3) Deposition basin dredging

Inner Channel "A" dredging and Inner Channel "B" dredging may be accomplished concurrent with above-listed dredging items. Construction of the sand dike will be accomplished simultaneous with dredging operations (see paragraph 4-4). Blasting will not be permitted.

7-3. CLOSURE OF EXISTING NAVIGATION CHANNEL. The Contractor shall submit a "Plan of Closure" to the Contracting Officer for approval at least 60 days prior to actual closing operations of the existing navigation channel. (The limits of the closure section are shown on the contract plans.) Approval of the closure plan by the Government does not relieve the Contractor's responsibility of closing the existing channel. The Contracting Officer has the authority to stop the dredging operations if the weather or tidal conditions prohibit the pumped material from "building up" and closing the channel.

7-4. DISPOSAL OF DREDGED MATERIAL. Dredged material that is suitable for beachfront placement shall be disposed of in the areas designated as the north and south sand dikes. These dikes shall be constructed and dressed to the lines and grades and cross-sections shown on the drawings, unless otherwise directed by the Contracting Officer. A tolerance of +1.0 foot will be allowed on the dike crests and ±6 inches on the side slopes, provided neither extreme is continuous over a linear length greater than 10 feet or an area greater than 100 square feet.

7-4.1 Excess suitable material. Dredged material that is in excess of the amount required to construct the sand dikes and that is suitable for beachfront placement shall be disposed of in two areas designated on the drawings as "nourishment areas". The excess dredged material shall be equally divided and evenly distributed along the 4,000 feet of each nourishment area, unless otherwise directed by the Contracting Officer. The "nourishment areas" shall be constructed to the approximate lines and grades and cross-sections shown on the drawings, unless otherwise directed by the Contracting Officer. A tolerance of ±1 foot will be allowed on the crest and side slopes.

7-4.1(1) Any material that is deposited or allowed to flow in places other than those designated or approved by the Contracting Officer will not be paid for and the Contractor shall remove such misplaced material and deposit it where directed at his expense.

7-4.1(2) Runoff of discharge water shall be so regulated by the Contractor as to prevent obstructing natural drainage and the deposit of dredged material in navigable channels. The Contractor shall be required to remove without cost to the United States any deposits in such channel as a result of dredge discharge, and will be responsible for any damage to other areas and to existing facilities or private property caused by dredged material or discharge water; he shall be responsible for any damage to aids to navigation within the dredging areas or areas adjacent thereto caused by his operations.

7-4.2 Excess unsuitable material. Unsuitable material will normally be any soil that contains fine soil particles greater than 20% by weight passing a No. 200 seive. Dredged material that is not suitable shall be removed from the site of the work and placed in the highland disposal area, at the location shown on Plate I of the plans. A highland disposal area will be made available to the Contractor by the Government approximately 3.6 miles from the jetties. The Contracting Officer will specify (at time of the dredging operations) whether dredged material is suitable or unsuitable. The limits of unsuitable material expected from dredging operations are shown on Plate 2 of the contract plans.

7-4.3 No separate payment will be made to the Contractor for construction of the sand dikes, except as specified in Part 8, "Grassing". The cost of the dike and "nourishment area" construction shall be included in the contract unit price for dredging (Bid Items 14-19).

7-5. HIGHLAND DISPOSAL. All the dikes and other works required for confining the material placed in the highland disposal area with necessary effluent control weirs (spillways) will be provided by Georgetown County and maintained by the Contractor. However, in the event of dike breaching, the pumping of material into the disposal area shall cease until dike repairs are made by the Contractor. The Contractor shall control discharge of materials into the disposal area such that turbidity of the effluent water from the control weirs (spillways) does not exceed 50 Jackson Units at any time.

7-6. PIPELINE CROSSING IN PUBLIC USE AREAS AND LIGHTING. The Contractor shall be required to construct and maintain walks or ramps over all discharge lines at the end of and crossing streets and at existing public access points during the construction period. The Contractor shall provide sufficient lighting to illuminate the discharge line as specified by the Contracting Officer.

7-7. CLEAN-UP AND RESTORATION. Prior to completion of the contract, the Contractor shall remove from the disposal area and work site any discarded material, dredge pipe, cables, boards, trash, etc. as a result of the execution of this contract and the cost therefor shall be included in the contract unit price for dredging. Restoration shall be accomplished by the Contractor in accordance with paragraph 1-40.

7-8. CHARACTER OF MATERIALS. The material to be excavated is predominantly sand and includes some shell fragments. However, bidders are expected to visit the site of the work and decide for themselves the character of the material to be excavated. The materials to be dredged are considered to be "new work."

7-9. ESTIMATED QUANTITIES. The total estimated quantity or quantities of material necessary to be removed from within the specified limits to complete the work are as follows:

Reach	Net Depth Feet MLW	Net Depth C.Y. Pl. Meas.	Overdepth 2 Ft. C.Y. Pl. Meas.	Total C.Y. Pl. Meas.
Entrance Channel*	-10	213,000	79,000	292,300
Auxiliary Channel	-10	74,000	18,000	92,000
Deposition Basin	-18	552,000	48,000	600,000
Inner Channel "A"	-10	187,000	39,800	226,800
Inner Channel "B"	-8	4,250	18,750	23,000
	TOTAL	1,030,250	203,550	1,234,100

*Includes Pilot Channel Excavation

7-9.1 The quantities shown above are computed from the latest survey as reflected on the contract drawings. They have not been increased to allow for shoaling because of the unpredictable shoaling pattern.

7-9.2 Within the limit of available funds, the Contractor will be required to excavate the entire quantity of material necessary to complete the work specified herein, be it more or less than the amounts above estimated, all work to be done in accordance with the contract at the contract price or prices, except as may be affected by Variations in Estimated Quantities, paragraph 1-12.

7-10. OVERDEPTH. To cover inaccuracies of the dredging process, material actually removed from within the specific areas to be dredged to a depth of not more than two feet below the required depth will be estimated and paid for at the contract price.

7-11. SIDE SLOPES. Material actually removed, within limits approved by the Contracting Officer, to provide for final side slopes no flatter than one vertical on four horizontal, but not in excess of the amount originally lying above this limiting side slope will be estimated and paid for, whether dredged in original position or by dredging space below the pay slope plane at the bottom of the slope for upslope material capable of falling into the cut. In computing the limiting amount of side slope dredging, an overdepth of two feet measured vertically will be used.

7-12. EXCESSIVE DREDGING. Material taken from beyond the limits as extended in the provisions of paragraph 7-10 and 7-11 above will be deducted from the total amount dredged as excessive overdepth dredging or excessive side-slope dredging for which payment will not be made. Nothing herein shall be construed to prevent payment for the removal of shoals performed in accordance with the applicable special provisions of paragraph 1-15.

7-13. COMMUNICATIONS. The Contractor shall furnish, maintain, and operate one FM narrow-band radio transmitter-receiver with a capacity of not less than one (1) watt, equipped for operating on the maritime channel 13 at 156.65 mHz. This frequency shall be used for communications with passing vessels, harbor pilots and bridge operators and has been approved by the Federal Communications Commission for this purpose. It is not required that this frequency be disabled after termination of the contract.

7-14. QUALITY CONTROL. The Contractor shall establish and maintain a quality control system (see paragraph 3-9) for all work to assure compliance with contract requirements and record his inspections and tests under this system including but not limited to the following:

(1) The Contractor shall take soundings daily to assure that proper depths and side slopes are being met.

(2) The Contractor will be responsible to see that all disposal operations are performed in accordance with paragraphs 7-4 and 7-5.

(3) Dredging, including suitability of dredged material and manipulation, and control of the dredge discharge.

(4) Placement of fill material, including continuity and order of placement, distribution of material and measures used to control loss of material.

7-14.1 The Contractor will be required to prepare and maintain a daily report of operations and furnish copies thereof to the Contracting Officer's representative. A copy of the format prescribed for recording the required information is specified in paragraph 3-9. Further instructions on the preparation of the report will be furnished to the Contractor at a preconstruction conference.

7-15. MEASUREMENT AND PAYMENT. The total amount of material removed and to be paid for under this contract will be measured by the cubic yard in place by computing the volume between the bottom surface shown by soundings of the last survey made before dredging and the bottom surface shown by the soundings of a survey made as soon as practicable after the entire work specified within an acceptance section (paragraph 1-19.1) has been completed and included within the limits of the overdepth and side slopes described in paragraphs 7-9 through 7-11, less any deductions that may be otherwise required by these specifications.

7-15.1 The maps and/or drawings already prepared, as stated in 1-5, are believed to represent accurately conditions existing as indicated on each detailed sheet but the depths shown thereon will be verified and corrected by before-dredging soundings taken of the entire area to be dredged under this contract. The first acceptance section will be sounded commencing not less than 5 days after notice has been given the Contracting Officer by the Contractor that the Contractor is ready to proceed with dredging. The remaining acceptance sections will be surveyed at an estimated time of not more than 14 days prior to arrival on the section, the time to be estimated by the contractor. Determination of quantities and the deductions made therefrom to determine quantities by place measurement to be paid in the area specified after having once been made, will not be reopened except on evidence of collusion, fraud, or obvious error.

7-15.2 All initial and final sounding surveys shall be performed by the Government and all expenses incurred therefrom shall be borne by the Government except as otherwise specified in paragraph 1-19. The soundings in the Murrells Inlet Channels will be taken with a Bludworth ES-130SS Fathometer operating on a frequency band of 198 to 202 kHz. In areas inaccessible by survey boat, soundings will be taken with a hand-line and an 8-pound shoe.

7-15.3 Monthly partial payments will be based on approximate quantities estimated by the inspector.

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PART VIII

TECHNICAL PROVISIONS

Grassing

8-1. SCOPE. This specification provides for the establishment of a permanent vegetative cover on the north and south sand dikes above elevation +6 feet (mlw).

8-2. PLANTING. Planting shall be performed only during the season from 1 November to 1 June unless otherwise authorized in writing by the Contracting Officer, and at a time when the dike slope is moist but not in danger of freezing. Due to the hydraulic placement of sand, planting shall not commence until at least 30 days after filling is completed to allow for leaching of salt from the sediments. Occurence of adequate leaching will be determined by salinity testing of dike material samples taken at random in the surface 12 inches following placement of the material and prior to commencing planting operations. Sampling will be performed by the Contractor and testing will be accomplished at the Contractor's expense by a qualified Soil Testing Laboratory in accordance with standard procedures. In general, the upper limit of salinity allowable in the surface 12 inches shall be as follows:

(1) 1 November to 1 March - 3300 PPM salt of 200 MHO's conductivity.

(2) 1 March to 30 March - 2000 PPM salt or 125 MHO's conductivity.

Tolerances may be liberalized following adequate testing, as determined by the Contracting Officer. The optimum time to transplant the grass sprigs is from early February through March.

8-2.1 Planting shall not be conducted when the ground is frozen or excessively wet. The Contractor will be required to produce a satisfactory stand of grass regardless of the period of the year the work is performed. Maintenance of the sprigged areas and establishment of grass shall conform to the requirements specified hereinafter.

8-2.2 Planting of the vegetative cover shall consist of pushing grass sprigs through Hold-Gro (or equal) soil erosion control fabric with suitable tool and into the prepared sand dike surface to a depth of six (6) inches (minimum). Following digging, roots and basal portion of the plants shall be dipped in a mud slurry or protected in a similar approved manner to avoid drying of roots during transportation and prior to planting. Plants shall be stored in a cool location.

8-3. GRASS. The Contractor shall plant sea oats, panic grass, or American beach grass to protect the dikes. Plant sources will be subject to approval by the Contracting Officer. A minimum of five plants (clumps) of either grass shall be planted per square yard.

8-3.1 Seaoats. The plants shall be transported in boxes with liners and labeled in accordance with applicable state and local regulations. Plants that have become saturated and stagnant, moldy, or otherwise damaged in transit or in storage will not be acceptable. The sea oats shall be planted at the rate of five plants (clumps) per square yard. Sea oats (also referred to as Uniola paniculata) grow best when sprigged into individual holes. The length of time between uprooting the sea oats and replanting shall be kept to a minimum; however, in no case shall this time period exceed 10 days.

8-3.2 Panic Grass. The panic grass (also referred to as Panicum amarum) shall be of a running variety. The plants shall be transported in boxes with liners and labeled in accordance with applicable state and local regulations. Plants that have become saturated and stagnant, moldy, or otherwise damaged in transit or in storage will not be acceptable. The panic grass shall be planted at the rate of five plants (clumps) per square yard (average). Panic grass grows best when cut into sections, each with two or three nodes or joints, and layered in trenches. The length of time between uprooting the panic grass and replanting shall be kept to a minimum, however, in no case shall this time period exceed 10 days.

8-3.3 American Beach Grass. American beach grass (Ammophilia Breviligulata Fern) plants shall be transported in boxes with liners and labeled in accordance with applicable state and local regulations. Plants that have become saturated and stagnant, moldy, or otherwise damaged in transit or in storage will not be acceptable. The grass shall be planted at the rate of five plants (clumps) per square yard (average). American beach grass grows best when sprigged into individual holes, the plants having a minimum of three stems per clump. The length of time between uprooting the grass the replanting shall be kept to a minimum; however, in no case shall this time period exceed 10 days.

8-4. SOURCE. The only commercial source of the sea oats and panic grass known at present is:

Horticultural Systems, Inc.
P. O. Box 70
Parrish, Florida 33564
Phone: 813-776-1605

The Contractor will be permitted to use other suppliers provided prior approval is obtained from the Contracting Officer.

8-5. FERTILIZER. Fertilizing of plants will be required using 8-8-8 or 16-8-8 pellets or granular commercial fertilizers at approximately

eight-hundred pounds per acre commencing the first spring following initial planting.

8-5.1 The fertilizer shall be delivered to the site in bags or other convenient containers, each fully labeled, conforming to applicable state fertilizer laws and bearing the name or trademark and warranty of the producer. The Contracting Officer shall be furnished with a copy of invoices for all fertilizer used on the project. Invoices shall show grade furnished. Each lot shall be subject to sampling and testing at the discretion of the Contracting Officer. Sampling and testing will be in accordance with official methods of the Association of Official Agricultural Chemists.

8-6. WATERING. The Contractor will be permitted, but not required, to lightly water the area after fertilization. The water shall be free from oil, acid, alkali, salt, and other substances harmful to growth of the grasses and shall be from a source approved prior to use.

8-7. SOIL FOR REPAIR. Additional fill material shall be added to the sand dikes if these dikes suffer significant erosion caused by wind, wave action, or by other causes. The soil required for the repair of these dikes shall be of the same quality and character as that of the fill. The Contractor shall refill damaged areas of the sand dikes as directed by the Contracting Officer.

8-7.1 Additional payment at the contract unit price for excavation (Item No. 14) will be made to the Contractor for each time he is required to repair the sand dikes. Payments will be made only when such operations are initiated at the request of the Contracting Officer and shall be full compensation for all work involved with repairing the structure.

8-8. PREPARATION OF GROUND SURFACE.

8-8.1 General. Equipment, in good condition, shall be provided for the proper preparation of the ground and for handling and placing all materials. Equipment shall be approved before work is started.

8-8.2 Grading. Previously established grades shall be maintained on the areas to be treated in a true and even condition; necessary repairs shall be made to previously graded areas. Where grades have not been established, the areas shall be graded as shown on the plans, and all surfaces shall be left in an even and properly shaped condition.

8-9. EROSION CONTROL FABRIC. The erosion control fabric shall protect the sand dikes from erosion above elevation +6 mlw and shall be of a knitted construction and shall consist of polypropylene yarn in a uniform pattern with distinct and measurable openings interwoven with strips of biodegradeable paper. The yarn shall contain

stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultra-violet rays and/or heat exposure. The fabric should be calendered or otherwise finished so that the yarns will retain their relative position with respect to each other. The Contractor shall furnish the Contracting Officer, in duplicate, a mill certificate or affidavit signed by a company officer authorized to sign such documents from the company manufacturing the fabric. The mill certificate or affidavit shall attest that the fabric meets the requirements stated in these specifications. The fabric shall be free of defects, rips, holes, or flaws. The edges of the fabric shall be selvaged or otherwise finished to prevent the outer yarn from pulling away from the fabric. Rolls of fabric shall be shipped in opaque polyethylene bags. Each roll shall be 10 feet wide, 360 feet long, and shall cover an area of 400 square yards. Outside storage of the fabric shall not exceed three months.

8-9.1 Acceptance Testing and Requirements. All brands of erosion control fabric to be used shall be tested by the Government. If the fabric that the Contractor proposes to use has not been tested previously by the Government, it shall be subjected to the same tests as previously tested fabrics. The fabric shall meet the minimum requirements of any previously tested fabrics. The costs related to testing of the erosion control fabric shall be borne by the Government.

8-9.2 Overlap Seams. Seams of the fabric shall be overlapped providing a shingle effect with a 4-inch minimum overlap.

8-9.3 Securing Pins. Securing pins (also referred to as staples) shall be 11 gauge wire, "U" shaped with a 1-inch crown and legs 12 inches in length.

8-9.4 Installation of Erosion Control Fabric. The erosion control fabric shall be placed at the locations designated on the drawings, as the north and south sand dikes. The surface to receive the fabric shall be prepared to a relatively smooth condition free of obstructions, depressions, and debris. The fabric shall be applied vertically (down the slope) and shall be applied loosely by setting the roll back approximately 6 inches every 15 to 20 feet as it is unrolled in the direction of application. The strips shall be placed to provide a minimum overlap of 4 inches between any two rolls. Staples may be pressed in the ground firmly by hand, foot, mallet, or other tool until they bear against the fabric. Staples shall be placed at 12-inch intervals (maximum) on any overlap and 3-foot intervals within the fabric. The extreme ends of the fabric shall be buried 4 inches below the ground surface and stapled at 12-inch intervals (maximum). The fabric shall be protected at all times during construction from contamination by surface runoff and any fabric so contaminated shall be removed and replaced with uncontaminated fabric at no expense to the Government. Any damage to the fabric during its installation or during placement of bedding material shall be replaced by the Contractor at no expense to the Government.

8-9.5 Measurement and Payment. The erosion fabric shall be measured for payment by the square yards in place. Overlap joints and seams shall be measured as a single layer of fabric. No separate payment shall be made for shipping, hauling, storage, protection, fabrication, securing pins, or installation. The costs incidental to construction of fabric shall be included in the contract price for "Erosion Control Fabric."

8-10. PROTECTION OF GRASS. Grass protection shall be provided to avoid damage from traffic or other sources after planting is completed by placing warning signs, as directed by the Contracting Officer, on various areas.

8-11. MAINTENANCE. The Contractor shall maintain the grassed areas until all work, or designated portions thereof, have been completed and accepted. Any damage shall be repaired at no additional cost to the Government.

8-12. ESTABLISHMENT. The Contractor shall be responsible for the proper care (maintenance) of the grassed areas until the Contracting Officer decides that a satisfactory stand of growing grass has been established as specified in paragraph 8-2.1. During this establishment period, it will be the responsibility of the Contractor to replant unsatisfactory areas as designated by the Contracting Officer. Soil for repairs shall be excavated, transported, and placed in accordance with paragraph 8-7. All costs and charges in connection with work and materials necessary for maintenance and establishment of the grass, excluding soil for repairs, shall be borne by the Contractor at no additional expense to the Government. The establishment period shall extend until the Contracting Officer decides that a satisfactory stand of grass has been provided.

8-13. QUALITY CONTROL. During construction, an established system of quality control shall be maintained. To assure compliance with contract requirements and the maintenance of records of all materials, equipment, and construction operations, control shall include but not be limited to the following:

Sprigging. Specified species planted at proper rates; preparation of planting bed, depth of planting and leveling.

A copy of these records and the records of corrective action taken shall be maintained by the Contracting Officer.

8-14. MEASUREMENT AND PAYMENT. The payment for this work will be made at the contract unit price bid per acre for Item No. 21, "Grassing," and shall include the number of acres placed and accepted including soil preparation, plants (clumps), planting, fertilization, replanting, and refertilization.

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PART IX

TECHNICAL PROVISIONS

Environmental Protection

9-1. SCOPE. The work covered by this section consists of furnishing all labor, materials and equipment and performing all work required for the prevention of environmental pollution during and as the result of construction operations under this contract except for those measures set forth in other Technical Provisions of these specifications. For the purpose of this specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and recreational purposes. The control of environmental pollution requires consideration of air, water, and land, and involves noise, solid waste-management and management of radiant energy and radioactive materials, as well as other pollutants.

9-2. APPLICABLE REGULATIONS. In order to prevent, and to provide for abatement and control of, any environmental pollution arising from the construction activities of the Contractor and his subcontractors in the performance of this contract, they shall comply with all applicable Federal, State, and local laws, and regulations concerning environmental pollution control and abatement, and all applicable provisions of the Corps of Engineers Manual, EM 385-1-1, entitled "General Safety Requirements," in effect on the date of solicitation, as well as the specific requirements stated elsewhere in these contract specifications.

9-3. NOTIFICATION. The Contracting Officer will notify the Contractor in writing of any non-compliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it was later determined that the Contractor was in compliance.

9-4. SUBCONTRACTORS. Compliance with the provisions of this section by subcontractors will be the responsibility of the Contractor.

9-5. IMPLEMENTATION. Prior to commencement of the work the Contractor will:

(1) Submit in writing his proposals for implementing this section for environmental pollution control.

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

9-6. PROTECTION OF LAND RESOURCES. It is intended that the land resources within the project boundaries and outside the limits of permanent work performed under this contract be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project. Insofar as possible, the Contractor shall confine his construction activities to areas defined by the plans or specifications. The following additional requirements are intended to supplement and clarify the requirements of General Provision Articles 42, 43, and 47.

9-6.1 Prevention of Landscape Defacement. Except in areas marked on the plans to be cleared, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without special authority. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized by the Contracting Officer. Where such special emergency use is permitted, the Contractor shall first adequately wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.

9-6.2 Where, in the opinion of the Contracting Officer, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by dumping, or other operations, he may direct the Contractor to protect adequately such trees by placing boards, planks, or poles around them. When earthwork operations are liable, in the opinion of the Contracting Officer, to cause rock to roll or otherwise be displaced into uncleared areas, the Contractor shall construct barriers of heavy planking to protect the trees. Rocks that are displaced into uncleared areas shall be removed. Monuments, markers and works of art shall be protected similarly before beginning operations near them. A preconstruction survey including photographs shall be accomplished by the Contractor and a report of survey furnished when required by the Contracting Officer.

9-6.3 Restoration of Landscape Damage. Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original

condition at the Contractor's expense. The Contracting Officer will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of under requirements for clearing and grubbing.

9-6.4 All scars made on trees by equipment construction operations, or by the removal of limbs larger than one inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted. Where tree climbing is necessary, the use of climbing spurs will not be permitted. The use of climbing ropes shall be required by the Contracting Officer where deemed necessary for safety. Trees either within or outside established work limits, that are subsequently damaged by the Contractor and are beyond saving, in the opinion of the Contracting Officer, shall be immediately removed and replaced with a nursery-grown tree of the same species.

9-6.5 Location of Storage and Housing Facilities. The location of the Contractor's storage and other construction buildings, required temporarily in the performance of the work, shall be upon cleared portions of the job site and shall require written approval of the Contracting Officer. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Plans showing storage and housing facilities shall be submitted for approval of the Contracting Officer. Where buildings are on sidehills, the Contracting Officer may require cribbing to be used to obtain level foundations. Benching or leveling of earth may not be allowed, depending on the location of the proposed facility.

9-6.6 Temporary Excavation and Embankments. If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least thirty (30) days prior to scheduled start of such temporary work.

9-6.6(1) A layout of all temporary roads, excavations and embankments to be constructed within the work area.

9-6.6(2) Details of road construction as required.

9-6.6(3) Plans and cross-sections of proposed embankments and their foundations, including a description of proposed materials.

9-6.6(4) A landscaping plan showing the proposed restoration of the area. Removal of any necessary trees and shrubs outside the limits

of the work shall be indicated. The plan shall also indicate location of required guard posts or barriers required to control vehicular traffic passing close to trees and shrubs to be maintained undamaged. The plan shall provide for the obliteration of construction scars as such and shall provide for a resonably natural appearing final condition of the area. Modification of the Contractor's plans shall be made only with the written approval of the Contracting Officer. No unauthorized road construction, excavation or embankment construction (including disposal areas) will be permitted.

9-6.7 Post-Construction Cleanup or Obliteration. The Contractor shall obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, or any other vestiges of construction as directed by the Contracting Officer. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be graded and filled as required. Restoration to original contours is not required. No separate or direct payment will be made for post-construction cleanup or obliteration and all costs thereof shall be considered incident to and included in the applicable contract unit price items requiring such temporary facilities.

9-7. RECORDING AND PRESERVING HISTORICAL AND ARCHEOLOGICAL FINDS. All items having any apparent historical or archeological interest which are discovered in the course of any construction activities shall be carefully preserved. The Contractor shall leave the find undisturbed and shall immediately report the find to the Contracting Officer so that the proper authorities may be notified.

9-8. PROTECTION OF WATER RESOURCES. The Contractor shall not pollute the waters of the ocean, rivers, or streams with fuels, oils, bitumens, calcium chloride, acids or harmful materials. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County and Municipal laws concerning pollution of rivers and streams. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in streams through or adjacent to the project areas.

9-8.1 Erosion Control. Prior to any major construction the Contractor shall submit a plan for approval to the Contracting Officer showing his scheme for controlling erosion and disposing of wastes as part of the requirements for Plant Layout Drawings contained in the GENERAL and SPECIAL PROVISIONS.

9-8.2 Surface drainage from cuts and fills within the construction limits, whether or not completed, and from borrow and waste disposal

areas, shall, if turbidity producing materials are present, be graded to control erosion within acceptable limits. Temporary erosion and sediment control measures such as berms, dikes, drains, if required to meet the above standards, shall be provided and maintained until permanent drainage and erosion control facilities are completed and operative. The area of bare soil exposed at any one time by construction operations should be held to a minimum. Fills and waste areas shall be constructed by selective placement to prevent surface erosion that will contaminate adjacent streams.

9-8.3 Spillages. At all times of the year, special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, waste washings, herbicides and insecticides, and cement and surface drainage from entering public waters.

9-8.4 Disposal. Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to waters shall be subject to the approval of the Contracting Officer for reasons similar to those stated above. If any waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Contracting Officer, and replaced with suitable fill material, compacted and finished with topsoil all at the expense of the Contractor.

9-9. PROTECTION OF FISH AND WILDLIFE. The Contractor shall at all times perform all work and take such steps as required to prevent any interference or disturbance to fish and wildlife. The Contractor will not be permitted to alter water flows or otherwise disturb native habitat adjacent to the project area which, in the opinion of the Contracting Officer, are critical to fish, shellfish or wildlife. Fouling or polluting of water will not be permitted. Wash waters and wastes shall be processed, filtered, ponded, or otherwise treated prior to their release into the river.

9-10. JANITOR SERVICES. The Contractor shall furnish janitorial services for the temporary construction facilities and perform any required maintenance of construction facilities and grounds as deemed necessary by the Contracting Officer during the entire life of the contract. Toilet facilities shall be kept clean and sanitary at all times. Services shall be performed at such a time and in such a manner as to least interfere with the operations but will be accomplished only when the buildings are occupied. Services shall be accomplished to the satisfaction of the Contracting Officer. The Contractor shall also provide trash collection and clean-up of the construction facilities and adjacent outside areas, and shall dispose of all discarded debris, aggregate samples and concrete test samples in a manner approved by the Contracting Officer. No separate payment will be made for these Contractor-furnished services, and all costs thereof shall be incidental to the various bid items of the contract.

9-11. DISPOSAL OF CLEARED MATERIAL. No material shall be burned at the site of the project. Materials shall be disposed of by removal. Every reasonable effort shall be made by the Contractor to channel materials of value resulting from clearing operations into beneficial use. The Contractor may, at no cost, retain for his own use or disposal by sale or otherwise any such materials of value. Such material shall be removed from the project area before the date of completion of the work under the specifications. The Government assumes no responsibility for the protection of safekeeping of any materials so retained by the Contractor.

9-12. MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION. During the life of this contract the Contractor shall maintain all facilities constructed for pollution control under this contract as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created. During the construction period the Contractor should conduct frequent training courses for his maintenance personnel. The curricula should include methods of detection of pollution, familiarity with pollution standards, and installation and care of vegetation covers, plants and other facilities to prevent and correct environmental pollution.

9-13. RESTORATION OF BEACH AREAS. Upon completion of the work under the contract, the area of work, including haul roads, work and storage areas, and other areas used by the Contractor, outside of the new construction, shall be restored to the original conditions and stabilized by planting salt-tolerant vegetation. All restoration shall be accomplished by the Contractor in accordance with paragraph 7-7 and 1-40.

9-14. PAYMENT. No separate payment will be made for environment protection. All such costs shall be included in the contract prices bid for items pertaining to the activities tending to cause any such pollution as described in this section.

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SPECIFICATIONS

PART X
Technical Provisions
Signs for the Project

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10-3.	Other Signs	X-1
10-4.	Payment	X-2

PART X

TECHNICAL PROVISIONS

Signs for the Project

10-1. SCOPE. This section covers all signs that the Contractor will be required to furnish on the project.

10-2. PROJECT SIGN. Two signs shall be furnished by the Contractor to identify the Project. One sign shall be located on the Garden City Peninsula and one on the Huntington Beach Peninsula. Both shall be erected at a location selected by the Contracting Officer.

10-2.1 Materials. The Contractor shall furnish suitable materials for the construction of a project sign. The sign shall be constructed of not less than 3/4-inch thick Weldwood Duraply or equal (good one side). The Duraply shall be suitable for paint finish. Two 4x4-inch treated posts shall be used to support the sign. Paint used on the project sign shall be the exterior type. All parts of frame and sign shall be given one coat of lead and oil primer and two finish coats of white semi-gloss paint. Decals of the Corps of Engineers' Insignia (castle) will be furnished by the Government. The sign shall be erected within 5 days after construction begins.

10-2.2 Construction and Erection. The project sign shall be constructed to the size and dimensions indicated on Plate X-1 of the contract specifications. The signs shall be securely fastened to two 4x4-inch posts placed to a depth of at least 3 feet in the ground. The height of the bottom of the sign above the ground shall be approximately 3 feet. Lettering shall be provided as shown on Plate X-1 and shall be of block type. Lettering shall be executed by craftsmen skilled in this type of work and shall be painted in black and applied over a white background. Decals shall be applied, in accordance with the printed instructions thereon, in the location indicated on Plate X-1 at the end of this section.

10-2.3 Maintenance. The project sign shall be maintained for the entire construction period. All damages to the project sign including damage by the elements, shall be corrected at no additional cost to the Government. Additional decals will be furnished by the Government, if necessary. Upon completion of the project, the contractor shall remove the sign from the work site.

10-3. OTHER SIGNS. All other required project signs that are specified in the contract drawings and specifications will be furnished by the Government. However, bolts, nuts, nails, posts, and other hardware required for erection shall be furnished by the contractor. Construction and erection of such signs shall be the responsibility of the

Contractor and shall be placed at locations as directed by the Contracting Officer. Specifications for construction and erection of Government furnished signs are presented in Section 5.

10-4. PAYMENT. No separate payment will be made for the work covered under this section.

MURRELLS INLET NAVIGATION PROJECT

CONSTRUCTION UNDER SUPERVISION OF

U. S. ARMY

CORPS OF ENGINEERS

CHARLESTON DISTRICT

,CONTRACTOR

6" 4" 5" 8½" 3" 2" 1½" 4" 3¼" 1½" 1½" 2" 2¼" 2"

4' - 0"

6' 0"

Plate

Appendix "A"

Boring Logs

Hole No. MI-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Entrance Channel and Jetty System
2. LOCATION (Coordinates or Station) N.621,140 E.2,596,350
3. DRILLING AGENCY Savannah District
4. HOLE NO. (As shown on drawing title and file number) MI-1
5. NAME OF DRILLER Parden
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN
8. DEPTH DRILLED INTO ROCK
9. TOTAL DEPTH OF HOLE 25.5'
10. SIZE AND TYPE OF BIT 13/8" ID Splitspoon
11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Mean low water
12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN DISTURBED 5 UNDISTURBED
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE STARTED 10 MAR 1975 COMPLETED 10 MAR 1975
17. ELEVATION TOP OF HOLE +3.2 MLW
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR C. DAVIS

ELEVATION a	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			SM-Gray Silty Fine Sand		1	Scale 1"=5'	8
MLW							9
	5						9
					2		13
							20
							11
	10		MH-Dark Gray Silty Clay		3		8
							8
							9
	15				4		10
							8
							7
	20				5		9
							8
							8
							10
-21.8	25						11

NOTE: [illegible] identified [illegible] Soil Classification System.

REMARKS:
Number [illegible] 13/8" ID [illegible] 140 lb. hammer [illegible].

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE +6.9 MLW **Hole No.** MI-4

PROJECT Murrells Inlet Entrance Channel and Jetty System INSTALLATION Charleston District SHEET 2 OF 3 SHEETS

ELEVATION a	DEPTH 30[b]	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			SC-Gray, Calcareous clayey sand				12
							13
	35						22
							24
							27
							27
	40						30
							23
							27
	45						29
							31
							30
							31
	50						35
							37
-47.1							40
	55		CL-Dark gray, silty clay W/thin sand lenses		7		50
							51
							47
	60					Scale Change at 60.0'	52
							46
	62						60
			Sandstone, dark gray, hard 63.0' to 63.6' TOP OF ROCK 63.0'				
-56.1							100/0.0
			Shale, dark gray, hard and soft layers		BOX 1	Pull #1 Continued	
	64		----Continued on Sheet #3----				

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE +6.9 MLW **Hole No.** MI-4

PROJECT Murrells Inlet Entrance Channel and Jetty System | INSTALLATION Charleston District | SHEET 3 OF 3 SHEETS

ELEVATION a	DEPTH 64b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Shale, dark gray, soft W/thin sand lenses very low core recovery			Pull #1 63.0' to 69.4' Run 6.4' Rec 2.4' CL 4.0'
	66			37		
	68					
	70			-		Pull #2 69.4' to 75.4' Run 6.0' Rec 0.0' CL 6.0'
	72			0		
	74					
	76			JAR 8		Splitspoon 53
-70.0	76.9		BOTTOM OF HOLE 76.9'			

Hole No. MI-5

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Entrance Channel and Jetty System	10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N.621,845 E.2,598,160	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Mean low water
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) MI-5	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 5 — UNDISTURBED
5. NAME OF DRILLER Parden	14. TOTAL NUMBER CORE BOXES
	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	16. DATE HOLE — STARTED 8 March 75 — COMPLETED 8 March 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE +1.6 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 25.5'	19. SIGNATURE OF INSPECTOR C. Davis

ELEVATION a	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
MLW			SM-Gray Silty Fine Sand W/ Shell Fragments		1	Scale 1"=5'	13
							13
							15
	5				2		23
							28
							31
	10		W/Clay Layers		3		20
							19
							18
	15						19
					4		21
							24
							30
	20				5		33
							37
							40
	25						46
-24.0							

NOTE: Soils field classified in accordance with the Unified Soil Classification System.

BLOWS PER FOOT:
Number required to drive 1⅜" ID splitspoon w/140 lb. hammer falling 30".

Hole No. MI-6

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Entrance Channel and Jetty System	10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N.621,725 E.2,599,540	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Mean low water
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) MI-6	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 7 — UNDISTURBED
5. NAME OF DRILLER Parden	14. TOTAL NUMBER CORE BOXES
	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	16. DATE HOLE — STARTED 1 March 75 — COMPLETED 1 March 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE -0.3 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 25.5'	19. SIGNATURE OF INSPECTOR R. Lawson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g BLOWS
						Scale 1"=5'
			SM-Tan and Gray silty fine sand W/ shell Fragments		1	10, 40, 47
	5				2	50, 77
			SP-Gray fine and medium sand W/ shell fragments		3	37, 52
	10		SM-Dark gray silty fine and medium sand W/ shell fragments		4	55, 77
	15		SP-Gray and tan medium sand W/ shell fragments		5	32, 67, 63, 96
	20				6	72
			fine sand W/shell fragments			92
			SM-Gray fine sand W/Shell fragments		7	38
-25.2	25					BOTTOM OF HOLE 25.5' 36

NOTE: Soils field classified in accordance with the Unified Soil Classification System:

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BLOWS PER FOOT:

Number required to drive 1⅜" ID splitspoon [illegible] lb. hammer fall[illegible] 30".

Hole No. MI-8

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S.C.	SHEET 1 OF 4 SHEETS

1. PROJECT Murrells Inlet Entrance Channel and Jetty System	10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N.623,950 E.2,599,990	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Mean low water
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) MI-8	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 18; UNDISTURBED
5. NAME OF DRILLER Parden	14. TOTAL NUMBER CORE BOXES 3
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 1 March 75; COMPLETED 1 March 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE +6.1 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 80.7'	19. SIGNATURE OF INSPECTOR R.J. Conley

ELEVATION a	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			SM-Tan, silty fine sand		1	Scale 1"=5' 9, 9, 20
MLW	5		SP-Tan, Poorly graded sand W/shell fragments		2	18, 35
	10		GP-Poorly graded gravel & shell fragments, Tan		3	47, 35
			SM-Gray, silty fine & medium grain sand		4	95, 62
	15		silty fine sand W/shell fragments			76, 68, 70
	20		GP-Tan, poorly graded gravel & shell fragments		5	30, 28, 50, 58
	25		SM-Gray silty fine & medium sand		6	59, 54, 70
	30		silty fine sand			75
			Continued on Sheet #2			
			NOTE: Soils field classified in accordance with the Unified Soil Classification System	p. 9		

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE +6.1 MLW **Hole No.** MI-8

PROJECT Murrells Inlet Entrance Channel & Jetty System | INSTALLATION Charleston District | SHEET 2 OF 4 SHEETS

ELEVATION a	DEPTH 30 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			SM-Gray, silty fine sand W/shell fragments		7		66
					8		90
					9		100
	35				10		27
					11		24
					12		14
	40				13		23
					14		22
					15		30
	45		Black		16	Scale Change at 45.0'	30
					17		80
-40.5			TOP OF ROCK 45.6'		18		100/0.1'
	47		Shale, black, hard to medium hard, with thin fine sand lenses. varies with sand content. Upper 1.5' broken 48.6' to 51.6' about eight horizontal breaks. most from 48.6' to 49.5'.	100	BOX 1	Pull #1 46.6' to 52.2' Run 3.6' Rec 3.6'	
	49						
	51						
			Limestone, gray to black hard cannot be penetrated with knife or broken by hand. Thin shale lenses. Glauconitic			Pull #2 52.2' to 55.8' Run 3.6' Rec 3.6'	
	53		Shale, black, moderately hard	100			
			Limestone, gray, hard				
	55		Shale, black, moderately hard				

----Continued on Sheet #3----

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE +6.1 MLW (INSTALLATION) Hole No. MI-8

PROJECT Murrells Inlet Entrance Channel and Jetty System Charleston District

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX SAMPLE NO.	
	55		Limestone, gray, hard to very hard. Glauconitic			Pull #2 Continued
	57		Core loss, core end indicates grinding			Pull #3 55.8' to 62.7' Run 6.9' Rec 5.0' CL 0.9'
			Shale, dark gray, moderately hard			
	59		Limestone, dark gray, very glauconitic, hard to very hard 5 low angle breaks	87		
	61		Shale, dark gray to black, sandy lenses, low angle bedding moderately hard. 9 low angle shale partings.		BOX 2	
	63		63.3 Paleontologic Sample			Pull #4 62.7' to 72.7' Run 10.0' Rec 10.0'
-58.8	65		Limestone, dark gray, very glauconitic, hard to very hard, Few breaks to 70.2' 65.7' to 66.1' thin shale zone	sandy 100		
	67		67.8' to 68.3' sample taken.			
	69		moderately hard			
	71		Continued on Sheet #4			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE +6.1 MLW Hole No. MI-8

PROJECT Murrells Inlet INSTALLATION Charleston District SHEET 4 OF 4

Entrance Channel and Jetty System

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
a	71 b	c	d	e	f	g
			Sandstone, gray, moderately hard, highly glauconitic (phosphorite?) moderately broken, about 3 per foot			Pull #4 Continued
	73					Pull #5 72.7' to 80.7' Run 8.0' Rec 8.0'
	75			100	BOX 3	
			soft, can be crushed by hand, sample 76.0' to 76.2'			
	77		77.0' to 80.7' core missing from box.			
	79					
-74.5						BOTTOM OF HOLE 80.7'

Hole No. MI-9

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Entrance Channel and Jetty System	10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N.622,425 E.2,600,030	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Mean low water
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) MI-9	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 17; UNDISTURBED
5. NAME OF DRILLER Parden	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 1 March 75; COMPLETED 1 March 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE -0.2 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 25.5'	19. SIGNATURE OF INSPECTOR R. Lawson

ELEVATION a	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g BLOWS
MLW			SP-Tan, fine and medium sand W/shell fragments		1	Scale 1"=5' 10
					2	12
			Gray and Tan		3	15
	5				4	20
					5	20
			SM-Gray, silty fine and medium sand W/shell fragments		6	26
	10				7	68
					8	66
					9	67
	15				10	72
					11	53
					12	36
	20				13	32
					14	38
					15	40
						46
	25				16	49
-25.3	25.5		BOTTOM OF HOLE 25.5'		17	

NOTE: Soils field classified in accordance with the Unified Soil Classification System.

BLOWS PER FOOT:
Number required to drive 1 3/8" ID spl[illegible] 140 lb. hammer [illegible] 30".

Hole No. MI-10

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Entrance Channel and Jetty System	10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N.621,850 E.2,600,040	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Mean low water
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314
4. HOLE NO. (As shown on drawing title and file number) MI-10	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7 UNDISTURBED
5. NAME OF DRILLER Parden	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE X VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN	16. DATE HOLE STARTED 7 March 75 COMPLETED 7 March 75
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE -0.5 MLW
9. TOTAL DEPTH OF HOLE 24.0'	18. TOTAL CORE RECOVERY FOR BORING %
	19. SIGNATURE OF INSPECTOR C. Davis & R. Lawson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
MLW	0		SM-Gray and Tan silty fine sand W/shell fragments		1	Scale 1"=5'	9
							20
					2		22
	5						43
							30
					3		45
	10						36
					4		50
							53
	15						90
					5		80
							90
	20				6		60
						NOTE: Unable to continue hole due to incoming tide.	60
					7		60
-23.5	24						60

NOTE: Soils field classified in accordance with the Unified Soil Classification System.

BLOWS PER FOOT:

Number required to drive 1 3/8" [illegible] hammer [illegible].

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Hole No. MI-11

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N625,675 E2,599,825	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40 CL
4. HOLE NO. (As shown on drawing title and file number) MI-11	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN DISTURBED 6 UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE X VERTICAL INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE STARTED 7 Nov 75 COMPLETED 7 Nov 75
7. THICKNESS OF OVERBURDEN 9.0	17. ELEVATION TOP OF HOLE -6.3 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 9.0	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth weathering, etc., if significant) g
			Water 11.1 Ft.			Blows/Ft
-6.3	0		Top of Hole			Channel Floor
			SM - Brown coarse to medium grain silty sand		1	9
					2	15
			- Grey fine grain silty sand		3	28
	5				4	42
					5	29
-15.3					6	47
	10		Bottom of Hole			
	15					

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Hole No. MI-12

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N625,900 E2,599,500	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40 CL
4. HOLE NO. (As shown on drawing title and file number) MI-12	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 8 — UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE X VERTICAL ___ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN 13.3	16. DATE HOLE — STARTED 6 Nov 75 — COMPLETED 6 Nov 75
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE -2.0 MLW
9. TOTAL DEPTH OF HOLE 13.3	18. TOTAL CORE RECOVERY FOR BORING
	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 7.4 Ft			Blows/Ft
			Top of Hole			Channel Floor
-2.0	0		SC - Grey muddy, clayey, fine grain sand with shell material		1	3
					2	3
					3	1
	5				4	10
-8.1			SM - Grey fine grain silty sand		5	5
					6	16
	10				7	10
					8	22
-15.3					0	20
			Bottom of Hole			

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Hole No. MI-13

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT: Inner Channel	10. SIZE AND TYPE OF BIT: 1-3/8" ID Splitspoon
2. LOCATION (Coordinates or Station): N625,535 E2,600,545	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MLW
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: Sprage & Henwood 40 CL
4. HOLE NO. (As shown on drawing title and file number): MI-13	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED
5. NAME OF DRILLER: Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: X VERTICAL; INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10 Nov 75; COMPLETED 10 Nov 75
7. THICKNESS OF OVERBURDEN: 10.5	17. ELEVATION TOP OF HOLE: -5.4 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 10.5	19. SIGNATURE OF INSPECTOR: W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 11.9'			Blows/Ft
-5.4	0		Top of Hole			Channel Floor
			SM - Brown coarse to medium grain with some gravel and shell		1	6
					2	18
					3	16
	5				4	14
					5	10
			- grey, fine grain silty sand		6	16
-15.9	10				7	37
						NOTE: Investigation extended to -19.3 MLW in attempt to find top of rock. Ended in tight fine grain silty sand.

Hole No. MI-14

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT: Inner Channel	10. SIZE AND TYPE OF BIT: 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station): N626,605 E2,600,450	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MLW
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: Sprage & Henwood 40 CL
4. HOLE NO. (As shown on drawing title and file number): MI-14	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED
5. NAME OF DRILLER: Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: X VERTICAL; INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN: 6.0	16. DATE HOLE: STARTED 10 Nov 75; COMPLETED 10 Nov 75
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE: -10.3 MLW
9. TOTAL DEPTH OF HOLE: 6.0	18. TOTAL CORE RECOVERY FOR BORING
	19. SIGNATURE OF INSPECTOR: W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 15.3 Ft.			Blows/Ft
-10.3	0		Top of Hole			Channel Floor
			SM-Brown, coarse to med. grain silty sand with shell		1	5
			-Grey, med. grain silty sand with shell		2	13
			-with gravel		3	5
-16.3	5		-medium to fine grain		4	13
			Bottom of Hole			

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Hole No. MI-15

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT: Inner Channel	10. SIZE AND TYPE OF BIT: 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station): N626,685 E2,600,325	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MLW
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: Sprage & Henwood 40 CL
4. HOLE NO. (As shown on drawing title and file number): MI-15	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 6 UNDISTURBED
5. NAME OF DRILLER: Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: X VERTICAL INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10 Nov 75 COMPLETED 10 Nov 75
7. THICKNESS OF OVERBURDEN: 9.0	17. ELEVATION TOP OF HOLE: -6.4 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 9.0	19. SIGNATURE OF INSPECTOR: W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 8.0 Ft.			Blows/Ft
-6.4	0		Top of Hole			Channel Floor
			SM - Brown, med. to fine grain silty sand with shell		1	8
			- dark grey fine grain silty sand		2	14
					3	24
	5				4	42
					5	37
-15.4					6	39
	10		Bottom of Hole			

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Hole No. MI-16

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S.C.	SHEET 1 OF 2 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" ID Splitspoon
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-16	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 10 — UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE — STARTED 3 Nov 75 — COMPLETED 3 Nov 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE -6.2 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-6.2	0		Top of Hole			
			SM - Brown coarse size shell		1	12
-8.7			Coquina in med.to fine silty sand.Grey fine to med. grain silty sand		2	15
-11.2	5		Green-grey fine grain silty sand		3	17
			-grey-fine grain silty sand w/oyster coquina		4	29
-13.7					5	14
					6	14
-16.2	10		-grey-fine grain silty w/med. size shell fragments		7	19
-18.7			-grey-calcareous quartz feldspar fine to med.grain sand		8	31
					9	44
-21.2	15		CH - Black calcareous		10	39 28
-23.7			Limestone - grey			No sample extract-100/0.4' ed -21.7 to -22
			End of splitspoon sampling 23.8'			
-21.7	15		Start coring @ 21.7			
						Pull-1 -21.7- -23.1 Run 1.4 RGC 1.4 C/L 0.0
-26.7	20					Pull-2 -23.1 - -28.8 Run 5.7 RGC 5.4 C/L 0.3
			Continue on Sheet 2			

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Hole No.

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 2 OF 2 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-16	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 10; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 3 Nov 75; COMPLETED 3 Nov 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE -6.2 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
-31.7	25					Pull-3 -28.8 - -34.5 Run -5.7 RGC -4.2 C/L -1.5
-36.7	30					Pull-4 -34.5 - -39.1 Run 4.6 RGC 2.5 C/L 2.1
-41.7	35					Pull-5 -39.1 - -43.5 Run 4.4 RGC 0.9 C/L 3.5
-46.7	40					Pull-6 -43.5 - -47.5 Run 4.0 RGC 0.5 C/L 3.5
			Bottom of Hole EC -47.5			

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Hole No. MI-17

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S.C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station) N027,360 E2,600,941	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-17	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 5 — UNDISTURBED
5. NAME OF DRILLER	14. TOTAL NUMBER CORE BOXES
	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	16. DATE HOLE — STARTED 6 Nov 75 — COMPLETED 6 Nov 75
7. THICKNESS OF OVERBURDEN 7.5	17. ELEVATION TOP OF HOLE -7.5' MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 7.5	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 9.6 Ft			Blows/Ft
-7.5	0		Top of Hole			Channel Floor
			SM - Brown fine grain silty sand with shell		1	11
			grey fine grain silty sand		2	10
					3	16
	5				4	16
-15.0					5	16
			Bottom of Hole			
	10					

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Hole No. MI-18

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station) N627,428 E2,600,855	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-18	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 6 Nov 75; COMPLETED 6 Nov 75
7. THICKNESS OF OVERBURDEN 6.2	17. ELEVATION TOP OF HOLE -9.1 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 6.2	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 11.4 Ft.			Blows/Ft
-9.1	0		Top of Hole			Channel Floor
			SM - Brown medium grain silty sand with shell		1	11
			- grey fine grain silty sand		2	9
					3	24
	5				4	33
-15.3			Bottom of Hole			

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Hole No. MI-19

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S.C.	SHEET 1 OF 1 SHEETS

1. PROJECT: Inner Channel	10. SIZE AND TYPE OF BIT: 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station): N626,995 E2,601,475	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MLW
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number): MI-19	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER	14. TOTAL NUMBER CORE BOXES
	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE: STARTED 11 Nov 75; COMPLETED 11 Nov 75
7. THICKNESS OF OVERBURDEN: 8.9	17. ELEVATION TOP OF HOLE: -7.6' MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING: %
9. TOTAL DEPTH OF HOLE: 8.9	19. SIGNATURE OF INSPECTOR: W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 8.9 Ft			Blows/Ft
			Top of Hole			Channel Floor
-7.6			SM - Brown coarse to fine grain silty sand w/some shell and gravel		1	11
					2	9
			Grey, fine to med. grain silty sand with oyster shell		3	8
					4	17
					5	24
-16.5						22
			Bottom of Hole			

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Hole No. MI-20

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station) N628,035 E2,601,395	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-20	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10 Nov 75; COMPLETED 10 Nov 75
7. THICKNESS OF OVERBURDEN 7.5	17. ELEVATION TOP OF HOLE -7.8' MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 7.5	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 12.4 Ft			Blows/Ft
			Top of Hole			Channel Floor
-7.8			SM - Grey initially fine grain silty sand grades with depth to coarse grain with shell and pea gravel		1	9
					2	15
					3	11
					4	10
					5	20
-15.3			Bottom of Hole			

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Hole No. MI-21

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station) N628,100 E2,601,287	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-21	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10 Nov 75; COMPLETED 10 Nov 75
7. THICKNESS OF OVERBURDEN 10.5	17. ELEVATION TOP OF HOLE -5.3' MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 10.5	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 10.3 Ft			Blows/Ft
			Top of Hole			Channel Floor
-5.3			SM - Brown fine grain silty sand with shell		1	12
			Grey fine to med. grain sand with shell		2	16
					3	15
					4	21
					5	15
					6	14
-15.8					7	2-
			Bottom of Hole			

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Hole No. MI-22

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N628,675 E2,601,980	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-22	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10 Nov 75; COMPLETED 12 Nov 75
7. THICKNESS OF OVERBURDEN 7.5	17. ELEVATION TOP OF HOLE -7.7 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 7.5	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 9.7 Ft			Blows/Ft
			Top of Hole			Channel Floor
-7.7			SM-Brown fine grain silty sand w/shell & gravel		1	5
						6
			CL-dark grey mud w/grit		2	3
			SC-dark grey clayey fine grain sand		3	15
			SM-grey muddy silty sand w/ oyster shell		4	20
-15.2			Bottom of Hole			

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Hole No. MI-23

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT: Inner Channel	10. SIZE AND TYPE OF BIT: 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station): N628,715 E2,601,863	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MLW
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number): MI-23	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER: Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 12 Nov 75; COMPLETED 12 Nov 75
7. THICKNESS OF OVERBURDEN: 7.5	17. ELEVATION TOP OF HOLE: -7.4 FT MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING: %
9. TOTAL DEPTH OF HOLE: 7.5	19. SIGNATURE OF INSPECTOR: W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 9.0 Ft			Blows/Ft
			Top of Hole			Channel Floor
-7.4	0		SM-Green grey calcareous fine grain silty sand		1	
			-dark grey fine grain muddy sand		2	
					3	
	5		- green grey med.to fine grain silty sand w/gravel and shell		4	
					5	
-14.9			Bottom of Hole			

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Hole No. MI-24

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station) N628,781 E2,601,720	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-24	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 7 — UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE — STARTED 12 Nov 75 — COMPLETED 12 Nov 75
7. THICKNESS OF OVERBURDEN 10.2	17. ELEVATION TOP OF HOLE -5.0 MLW
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 10.2	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 7.5 Ft			Blows/Ft
-5.0	0		Top of Hole			Channel Floor
			SM-Grey fine grain silty calcareous sand		1	11
			-with oyster shell		2	15
			-fine grain silty sand		3	30
	5				4	17
					5	17
					6	32
-15.2	10		Bottom of Hole		7	30

P 24

Hole No. MI-25

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-25	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-30-75; COMPLETED 10-30-75
7. THICKNESS OF OVERBURDEN 12.1	17. ELEVATION TOP OF HOLE -4.6
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 12.1	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-4.6	0.0		Top of Hole			
-6.5	1.9		SM-grey 0.5' silt overlying silty sand silt 4.6' - 5.1'		1	1
-8.0	3.4				2	3
-9.5	4.9		ML-gray(dk) silt & mud w/some silty sand to 9.0		3	7
			SM - gray fine grain silty sand & shell hash			25
-12.5	7.9				4	22
			Fine grain silty sand w/some oyster shell		5	24
					6	22
-16.7	12.1				7	22
			Bottom of Hole @ -16.7			

P. 4c

Hole No. MI-26

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-26	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-30-75; COMPLETED 10-30-75
7. THICKNESS OF OVERBURDEN 9.0	17. ELEVATION TOP OF HOLE 6.4
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 9.0	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-6.4	0.0		Top of Hole			
			SM-gray 0.25' of silt overlying shell & fine grain sand		1	3
					2	15
			shell & fine grain silty sand		3	15
-11.4	5.0					15
					4	12
-15.4	9.0				5	16
			Bottom of Hole @ -15.4			

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Hole No. MI-27

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-27	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-30-75; COMPLETED 10-30-75
7. THICKNESS OF OVERBURDEN 4.5	17. ELEVATION TOP OF HOLE -12.3
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 4.5	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-12.3	0.0		Top of Hole			
-13.8	1.5		SM-Green/gray fine grain silty sand w/some shell mat'l.		1	8
-15.3	3.0				2	16
-16.8	4.5		Fine grain silty sand gray		3	23
			Bottom of Hole @ -16.8			

PBL

Hole No. MI-28

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-28	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-30-75; COMPLETED 10-30-75
7. THICKNESS OF OVERBURDEN 6.0	17. ELEVATION TOP OF HOLE -9.3
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 6.0	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-9.3	0.0		Top of Hole			
-10.8	1.5		SM-gray, fine grain silty sand		1	3
-12.3	3.0					6
-13.8	4.5				2	18
-15.3	6.0				3	15
			Bottom of Hole @ -15.3			

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Hole No. MI-29

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-29	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN 6.0	16. DATE HOLE: STARTED 10-30-75; COMPLETED 10-30-75
8. DEPTH DRILLED INTO ROCK	17. ELEVATION TOP OF HOLE -10.2
9. TOTAL DEPTH OF HOLE 6.0	18. TOTAL CORE RECOVERY FOR BORING %
	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-10.2	0.0		Top of Hole			
-11.7	1.5		SM - Gray, fine grain silty sand w/some shell		1	2
-13.2	3.0				2	12
-14.7	4.5				3	15
-16.2	6.0				4	13
			Bottom of Hole @ -16.2			

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Hole No. MI-30

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x3" BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-30	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 8; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-30-75; COMPLETED 10-30-75
7. THICKNESS OF OVERBURDEN 11.3	17. ELEVATION TOP OF HOLE -4.2
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 11.3	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						BLOWS/Ft
-4.2	0.0		Top of Hole			
			ML-Black, black silt, mud w/ some sand, fine grain		1	[illegible]
-7.2	3.0				2	0
			SM-Gray, fine grain silty sand		3	1
-10.2	6.0				4	16
					5	4
-13.2	9.0				6	6
					7	18
-15.5	11.3				8	34
			Bottom of Hole @ -15.5			

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Hole No. MI-31

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N630,681 E26,020,041	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40 CL
4. HOLE NO. (As shown on drawing title and file number) MI-31	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 25; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 31 Oct 75; COMPLETED 31 Oct 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE -3.1 mlw
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING 38%
9. TOTAL DEPTH OF HOLE 50.0'	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 6.7 Ft			Blows/Ft
-3.1	0		Top of Hole			Channel Floor
			SM-SC-Dark gray muddy grit w/shell-clay,silt & sand est.50-30-20		1	4
-6.6					2	3
			SM-Gray very silty fine grain sand		3	2
	5				4	4
					5	8
					6	16
	10				7	21
					8	28
-15.5					B-10	45
			-muddy		B-11	81
	15		-fine grain silty		B-12	57
					B-13	100/0.8
					B-14	51
	20				B-15	79
					B-16	57
-25.5			-with shell		B-17	100/0.5
-28.0	25				B-18	8

*hole terminated on 31 Oct 75. Hole re-opened 12 Nov 75.

Continued -

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Hole No. MI-31

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 2 OF 2 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N630,681 E26,020,041	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-31	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 25; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 31 Oct 75; COMPLETED 31 Oct 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE -3.1 mlw
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING 38%
9. TOTAL DEPTH OF HOLE 50.0'	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CH-Dark gray to green fat clay with leached shell		B-19	16
-31.0					B-20	56
			SM-Gray med.grain quartz sand w/mud balls			41
	30				B-21	63
-34.5			CH-Dark gray fat sticky clay w/wood root		B-22	32
-36.0			SM-Dark gray med.tocoarse grain silty sand w/mud balls grades coarse.		B-23	90
	35					71
					B-24	100/0.7
						65
	40		GM-Gray Quartz pebbles,gravel		B-25	100/0.3
-43.5			Mudstone-Shale,green gray to dk.gray,induration & fisility developed with depth,initially rich in organics & calcareous cement. After -48.2' deep,core displays plano-convex segments of shale.(Dk laminations)& gritty silt (light laminations) w/flames of sand rock moderately hard to soft.	0	Box 1	Pull 1 - Fm 43.5 to 46.5,Run 3.0,Rec 0, CL 30.
					B-26	100/0.0
				65	Box 1	Pull 2 - Fm 48.2 to 52.2, Run 4.0, Rec 2.6', CL 1.4'.
						100/0.9
			Bottom of Hole P31			

AD-A152 512 SPECIFICATIONS FOR CONSTRUCTION OF CHANNEL AND JETTY SYSTEM MURRELLS INLE..(U) CORPS OF ENGINEERS CHARLESTON SC CHARLESTON DISTRICT 14 JUN 77 DACW60-77-B-0014 3/3

UNCLASSIFIED F/G 13/2 NL

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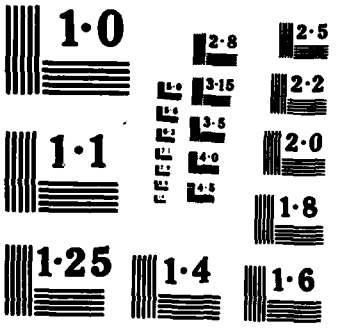
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Hole No. MI-32

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-32	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 8; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-31-75; COMPLETED 10-31-75
7. THICKNESS OF OVERBURDEN 12.5	17. ELEVATION TOP OF HOLE -4.6
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 12.5	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-4.6	0.0		Top of Hole			
			SM-C-Mud w/silty sand & shell hash-dark green		1	4
			SM-Fine grain silty sand, gray		2	7
-9.6	5.0				3	17
					4	14
			SM-L-Muddy silty sand w/shell hash-dark gray		5	12
-14.6	10.0		CL-Mud & lean silty clay		6	12
					7	12
-17.1	12.5				8	10
			Bottom of Hole - 17.1			

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Hole No. MI-31

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 2 OF 2 SHEETS

1. PROJECT: Inner Channel	10. SIZE AND TYPE OF BIT: 1-3/8" ID Splitspoon
2. LOCATION (Coordinates or Station): N630,681 E26,020,041	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MLW
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: Sprage & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number): MI-31	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 25; UNDISTURBED
5. NAME OF DRILLER: Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 31 Oct 75; COMPLETED 31 Oct 75
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE: -3.1 mlw
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING: 38% %
9. TOTAL DEPTH OF HOLE: 50.0'	19. SIGNATURE OF INSPECTOR: W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CH-Dark gray to green fat clay with leached shell		B-19	16
-31.0					B-20	56
			SM-Gray med.grain quartz sand w/mud balls			41
	30				B-21	63
-34.5			CH-Dark gray fat sticky clay w/wood root		B-22	32
-36.0			SM-Dark gray med.tocoarse grain silty sand w/mud balls grades coarse.		B-23	90
	35					71
					B-24	100/0.7
						65
			GM-Gray Quartz pebbles,gravel		B-25	100/0.3
-43.5	40		Mudstone-Shale,green gray to dk.gray,induration & fisility developed with depth,initially rich in organics & calcareous cement. After -48.2' deep,core displays plano-convex segments of shale.(Dk laminations)& gritty silt (light laminations) w/flames of sand rock moderately hard to soft.	0	Box 1	Pull 1 - Fm 43.5 to 46.5,Run 3.0,Rec 0, CL 30.
					B-26	100/0.0
				65	Box 1	Pull 2 - Fm 48.2 to 52.2, Run 4.0, Rec 2.6', CL 1.4'.
						100/0.9
			Bottom of Hole P31			

Hole No. MI-33

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-33	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 6; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-31-75; COMPLETED 10-31-75
7. THICKNESS OF OVERBURDEN 9.0	17. ELEVATION TOP OF HOLE -7.0
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 9.0	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-7.0	0.0		Top of Hole			
			SM-C-Mud w/silty sand & shell		1	5
					2	7
			SM-Fine to med.grain silty sand		3	4
-12.0	5.0				4	6
					5	11
-16.0	9.0				6	12
			Bottom of Hole			

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Hole No. MI-34

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel Plan	10. SIZE AND TYPE OF BIT 1-3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N631,030 E2,602,779	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah, Ga.	12. MANUFACTURER'S DESIGNATION OF DRILL
4. HOLE NO. (As shown on drawing title and file number) MI-34	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER P. Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 20 Oct 75; COMPLETED 20 Oct 75
7. THICKNESS OF OVERBURDEN 12.1	17. ELEVATION TOP OF HOLE Datum MLW -3.5"
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 12.1	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
MLW @1330 @12:35			Water			
@10:00	5					
						Channel floor (Blows)
-6.0			SM-C Dark blue grey muddy silty sand		01	Fine gr. little shell 2 10
	10		SM Grey, blue grey fine grain silty sand.		2	15 8
					3	11 13
	15				4	38 28
-16.6			Large content of silt with pockets of mud.		5	35
			Bottom of hole			

R46

Hole No. MI-35

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station) N631,165 E2,2602,675	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-35	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER Ebb Tide + 0.8'MSL
	16. DATE HOLE: STARTED 10-20-75; COMPLETED 10-20-75
7. THICKNESS OF OVERBURDEN 13.3	17. ELEVATION TOP OF HOLE -4.7
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 13.3	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-4.7	0.0		Top of Hole			
			SM-Blue gray, fine grain silty sand-low silt content			10
-7.7	3.0					11
			Fine grain calcareous sand, silty		1	23
-10.9	6.2					34
			w/coarse grain shell fragments		2	13
-14.9	10.2				3	18
			Dark blue gray		4	24
-18.0	13.3		SM-C coarse 0.25 shell hash in muddy silty sand		5	30
			Bottom of Hole @ -18.0			

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Hole No. MI-36

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-36	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 4 — UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE — STARTED 10-21-75 — COMPLETED 10-21-75
7. THICKNESS OF OVERBURDEN 12.1	17. ELEVATION TOP OF HOLE -5.6
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 12.1	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-5.6	0.0		Top of Hole			
-8.6	3.0		SM-Blue gray fine grain calcareous silty sand /w/shell mat.		1	10
-11.1	5.5		heavier % of silt			16
-14.0	8.4		fine grain silty sand w/ shell		2	18
-16.2	10.6		oyster coquina w/shell hash in sand (75% shell)		3	21
-17.7	12.1		oyster coquina w/silty muddy sand		4	14
			Bottom of Hole @ -17.7			15
						10
						14

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Hole No. MI-37

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station) N631,085 E 2,603,550	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-37	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-21-75; COMPLETED 10-21-75
7. THICKNESS OF OVERBURDEN 10.4	17. ELEVATION TOP OF HOLE -7.3
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 10.4	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-7.3	0.0		Top of Hole			
-10.3	3.0		SM-C-Dk.blue gray fine grain silty calcareous sand w/% of mud			4 7
-12.8	5.5		SM-Gray Fine grain silty sand		1	70
-16.2	8.9				2	50 32
-17.7	10.4				3	44
			Bottom of Hole @ -17.7			

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Hole No. MI-38

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station) N631,630 E2,602,700	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-38	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	16. DATE HOLE: STARTED 10-21-75; COMPLETED 10-21-75
7. THICKNESS OF OVERBURDEN 11.1	17. ELEVATION TOP OF HOLE -6.3
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 11.1	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-6.3	0.0		Top of Hole			
			SM-C-Gray shelly muddy silty sand (Fine)			10
-9.5	3.2		SM		1	16
-11.5	5.2		Gray-green			37
-13.2	6.9		- shell hash in muddy fine sand		2	35 / 14
-14.7	8.4		- fine grain silty sand		3	19 / 14
-17.4	11.1				4	50
			Bottom of Hole @ -17.4			

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Hole No. MI-39

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5" BBI
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-39	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 6; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-29-75; COMPLETED 10-29-75
7. THICKNESS OF OVERBURDEN 10.6	17. ELEVATION TOP OF HOLE -5.0
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 10.6	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-5.0	0.0		Top of Hole			
			SM-Dk gray silty sand w/shell & some mud		1	5
			Silty fine grain sand, gray		2	2
-10.0	5.0				3	3
						22
					4	26
					5	26
-15.6	5.6				6	21
			Bottom of Hole @ -15.6			

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Hole No. MI-40

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/7" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-40	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10- -75; COMPLETED 10- -75
7. THICKNESS OF OVERBURDEN 6.3	17. ELEVATION TOP OF HOLE -8.5
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 6.3	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-8.5	0.0		Top of Hole			
			SM-Gray fine grain silty sand w/some shell			2
-11.5	3.0				1	4
					2	7
-14.8	6.3				3	29
			Bottom of Hole @ -14.8			

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Hole No. MI-41

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBI
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-41	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-29-75; COMPLETED 10-29-75
7. THICKNESS OF OVERBURDEN 12.8	17. ELEVATION TOP OF HOLE -4.0
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 12.8	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-4.0	0.0		Top of Hole			
			SM-Gray silty fine grain sand w/some shell & mud			
-6.5	2.5				1	2
-8.0	4.0				2	4
-9.5	5.5				3	7
-11.0	7.0				4	12
-12.3	8.3					11
-13.8	9.8				5	12
			CL/CH-Green,lean sandy clay			
-15.3	11.3		CH-green,fat clay		6	25
-16.8	12.8				7	23
			Bottom of Hole @ -16.8			

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Hole No. MI-42

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" ID Splitspoon
2. LOCATION (Coordinates or Station) N632,070 E2,602,221	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood 40 CL
4. HOLE NO. (As shown on drawing title and file number) MI-42	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 24 Oct 75; COMPLETED 24 Oct 75
7. THICKNESS OF OVERBURDEN 10.6	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 10.6	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 10.1 Ft.			Blows/Ft
-6.1			Top of Hole			Channel Floor
			CL-Black,gritty mud & clay		1	0
-9.1						0
			SM-gray fine grain silty sand with shell		2	2
						14
					3	23
						53
-16.3					4	47
			Bottom of Hole			

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Hole No. MI-43

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-43	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-29-75; COMPLETED 10-29-75
7. THICKNESS OF OVERBURDEN 10.2	17. ELEVATION TOP OF HOLE -5.9
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 10.2	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-5.9	0.0		Top of Hole			
			SM-L-Mud with silty sand & shell, gray		1	5
					2	6
-9.9	5.0				3	6
			SM-Silty fine grain sand w/shell		4	6
					5	5
			Fine grain silty sand			18
-16.1	10.2				6	19
					7	
			Bottom of Hole -16.1			

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Hole No. MI-44

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-44	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-29-75; COMPLETED 10-29-75
7. THICKNESS OF OVERBURDEN .	17. ELEVATION TOP OF HOLE -9.6
8. DEPTH DRILLED INTO ROCK 0.0	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE .	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
-9.6	0.0		Top of Hole			Blows/Ft
			CL-Mud clear sandy clay w/ shell - gray		1	1
-12.6	3.0		SM-Fine grain silty sand w/ shell		2	1
					3	3
-15.4	5.0				4	7
			Bottom of Hole			

P5c

Hole No. MI-45

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CDX-2
4. HOLE NO. (As shown on drawing title and file number) MI-45	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-29-75; COMPLETED 10-29-75
7. THICKNESS OF OVERBURDEN 10.0	17. ELEVATION TOP OF HOLE -6.2
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 10.0	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-6.0	0.0		Top of Hole			
			SM-C-Dk.Gray mud w/silty sand & shell		1	1
						6
			— Gray fine grain silty sand			10
-11.2	5.0		CL-Gray		2	
			SM-Gray			4
			CL-Dk.Gray lean sandy clay		3	1
					4	23
-16.2	10.0		SM-Gray silty sand w/shell		5	35
			Bottom of Hole @ -16.2			

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Hole No. MI-46

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-46	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10- -75; COMPLETED 10- -75
7. THICKNESS OF OVERBURDEN 8.8	17. ELEVATION TOP OF HOLE -9.5
8. DEPTH DRILLED INTO ROCK 0.0	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 8.8	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-9.5	0.0		Top of Hole			
-12.5	3.0		SM-Gray initially shell for 1/2' then silty fine grain sand		1	7 6 11
-15.5	6.0		Slightly muddy silty fine grain sand		2	14
-18.3	8.8		Dark gray		3	32 43
			Bottom of Hole			

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Hole No. MI-47

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL CD-2 Barge
4. HOLE NO. (As shown on drawing title and file number) MI-47	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-23-75; COMPLETED 10-23-75
7. THICKNESS OF OVERBURDEN 15.4	17. ELEVATION TOP OF HOLE -2.9
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 15.4	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-2.9	0.0		Top of Hole			
			ML-Black, black mud w/very fine grain sand		1	1 1
-7.9	5.0		ML-CL-Black, black mud w/ very fine grain sand & layers of clay			1
-9.8	6.9				2	2
-12.9	10.0		CL-Black, lean clay & mud		3	6 5
			SM-Gray, fine grain silty sand			7
			-w/some mud		4	15
-16.8	13.9		-heavy amts of silt w/silty sand		5	18
-18.3	15.4					27
			Bottom of Hole @ -18.3			

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Hole No. MI-48

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station) N631,370 E2,600,695	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-48	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 23 Oct 75; COMPLETED 23 Oct 75
7. THICKNESS OF OVERBURDEN 5.7	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 5.7	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 16.6'			Blows/Ft
-10.5	0		Top of Hole			Channel Floor
			SM-Gray fine grain silty sand w/shell		1	4
						6
					2	10
-16.2	5				3	11
			Bottom of Hole			

P54

Hole No. MI-49

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrell Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-49	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 4 — UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE — STARTED 10-23-75 — COMPLETED 10-23-75
7. THICKNESS OF OVERBURDEN 12.6	17. ELEVATION TOP OF HOLE -4.8
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 12.6	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-4.8	0.0		Top of Hole			
			CH-SM-Black organic clay & mud & fine grain silty sand		1	9 12
-9.0	4.2		SM-Gray shell hash in med. to fine grain sand			19
			—Fine to med. silty sand		2	23
			—Fine grain silty sand			9
-14.9	10.1		-SM-C-Gray muddy fine grain sand & shell		3	13 ~~3~~
-17.4	12.6				4	3
			Bottom of Hole @ -17.4			

P55

Hole No. MI-50

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-50	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-22-75; COMPLETED 10-22-75
7. THICKNESS OF OVERBURDEN 15.6	17. ELEVATION TOP OF HOLE -3.2
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 15.6	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-3.2	0.0		Top of Hole			
			SM-Gray shell & silty sand			4
					1	13
-7.7	4.5					16
					2	24
			Dk.Gray shell hash in silty sand			7
					3	
-12.2	9.0					11
-14.0	10.8				4	11
						12
			Shell & muddy silty sand			14
					5	
-18.8	15.6					24
			Bottom of Hole @ -18.8			

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Hole No. MI-51

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-51	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 3 — UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE — STARTED 10-22-75 — COMPLETED 10-22-75
7. THICKNESS OF OVERBURDEN 9.1	17. ELEVATION TOP OF HOLE -6.4
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 9.1	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-6.4	0.0		Top of Hole			
			SM-C-Dk.gray shell layer overlying silty sand w/mud			2
-9.4	3.0		Muddy silty fine grain sand		1	3
			SM-gray oyster coquina & shell hash w/silty sand			9
					2	13
-14.0	7.6		Fine grain silty sand			8
-15.5	9.1				3	17
			Bottom of Hole @ -15.5			

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Hole No. MI-52

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-52	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 2 — UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE — STARTED 10-22-75 — COMPLETED 10-22-75
7. THICKNESS OF OVERBURDEN 6.0	17. ELEVATION TOP OF HOLE -11.5
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 6.0	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-11.5	0.0		Top of Hole			
-14.5	3.0		SM-C-Dk.Gray shell hash in sandy mud,fine grain silty sand		1	3 3
-17.5	6.0		SM-Gray fine grain silty sand		2	26 37
			Bottom of Hole @ -17.5			

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Hole No. MI-53

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood) BX-2
4. HOLE NO. (As shown on drawing title and file number) MI-53	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED:
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE — STARTED 10-22-75 — COMPLETED 10-22-75
7. THICKNESS OF OVERBURDEN 14.1	17. ELEVATION TOP OF HOLE -1.3
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 14.1	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-1.3	0.0		Top of Hole			
-4.4	3.1		ML-Black very fine sand, silt & mud		1	1
-6.4	5.1		SM-Gray fine grain silty sand w/a little shell material			4
-9.5	8.2				2	10 26
			Dark gray			34
-12.5	11.2		Silty muddy fine grain sand yielding H_2S Gas		3	49
			Gray			74
-15.4	14.1				4	85
			Bottom of Hole @ -15.4			

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Hole No. MI-54

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Charleston District	SHEET 1 OF 1 SHEETS

1. PROJECT Murrells Inlet Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" SSS & 4x5½ BBL
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY Mobile District	12. MANUFACTURER'S DESIGNATION OF DRILL Barge (Sprague & Henwood)
4. HOLE NO. (As shown on drawing title and file number) MI-54	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 10-22-75; COMPLETED 10-22-75
7. THICKNESS OF OVERBURDEN 7.2	17. ELEVATION TOP OF HOLE -8.7
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 7.2	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows/Ft
-8.7	0.0		Top of Hole			
			SM-Dk.Gray heavy % silt fine grain sand		1	7
-11.7	3.0		Gray coarse shell fragments in silty sand		2	15
						11
-14.7	6.0		Fine grain sand		3	12
-15.9	7.2					9
			Bottom of Hole @ -15.9			

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Hole No. MI-55

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Murrells Inlet, S. C.	SHEET 1 OF 1 SHEETS

1. PROJECT Inner Channel	10. SIZE AND TYPE OF BIT 1-3/8" 1D Splitspoon
2. LOCATION (Coordinates or Station) N625,570 E2,599,925	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood 40CL
4. HOLE NO. (As shown on drawing title and file number) MI-55	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 8; UNDISTURBED
5. NAME OF DRILLER Roundtree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 7 Nov 75; COMPLETED 7 Nov 75
7. THICKNESS OF OVERBURDEN 12.0	17. ELEVATION TOP OF HOLE -3.5' mlw
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 12.0	19. SIGNATURE OF INSPECTOR W. E. HANCOCK, GEOLOGIST

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water 7.4'			Blows/Ft
-3.5	0		Top of Hole			
			SM-Brown fine grain silty sand w/shell		1	16
			Gray fine grain silty sand w/shell material		2	11
					3	5
	5				4	27
					5	24
					6	36
	10		-with pebble gravel		7	47
-15.5					8	44
			Bottom of Hole			
	15					

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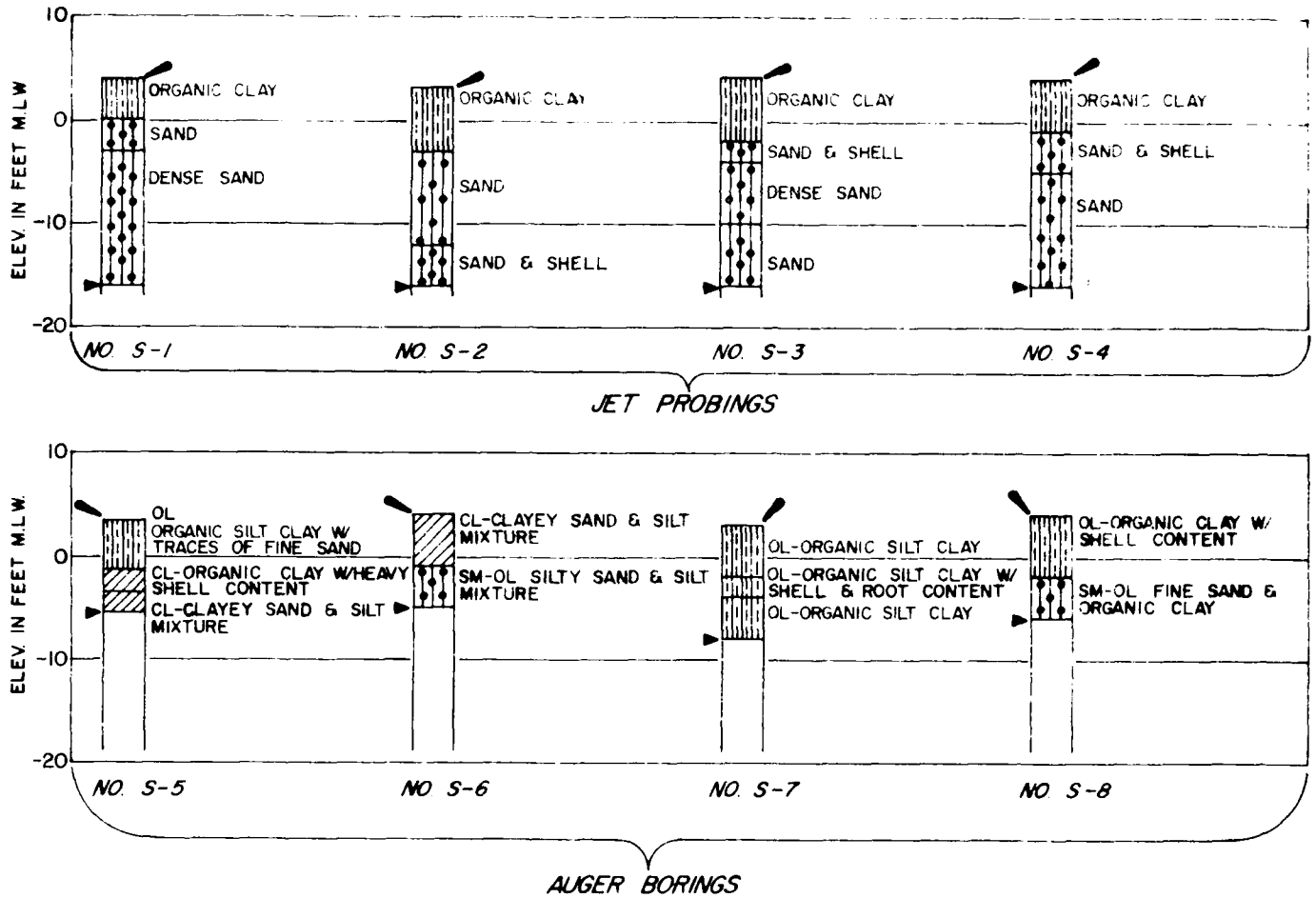

SUBTERRANEAN MATERIALS LOGS
MURRELLS INLET, S C

Fig. 2

Appendix "B"

Wind Data

DATA PROCESSING BRANCH
USAFETAC
Air Weather Service (MAC)

REVISED UNIFORM SUMMARY OF
SURFACE WEATHER OBSERVATIONS

MYRTLE BEACH AFB SOUTH CAROLINA
N 33 41 W 079 56 FLD ELEV 35 FT KMYR

WBAN #13717
WMO #74791

PARTS A-F

POR FROM HOURLY OBS NOV 42-JUL 47, JAN 49-DEC 72
POR FROM DAILY OBS NOV 42-JUL 47, JAN 49-DEC 54,
NOV 56-DEC 72

JUL 03 1975

FEDERAL BUILDING
ASHEVILLE, N. C.

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455 PAGES

859-4820 b

THE EXTREME VALUES COULD CONTAIN SUSPECT OR QUESTIONABLE DATA. SUCH CASES USUALLY APPEAR IN THE TABULATIONS AS A PERCENTAGE FREQUENCY OF ".0", WHICH USUALLY INDICATES ONLY ONE OCCURRENCE. THESE MAY OR MAY NOT BE COMPLETELY VALID, BUT THE USER SHOULD NOT DISREGARD THEM ENTIRELY. OBVIOUS ERRORS OR IMPOSSIBLE CONDITIONS HAVE BEEN LINED THROUGH IN BLACK INK.

U S AIR FORCE
ENVIRONMENTAL TECHNICAL
APPLICATIONS CENTER

REVISED UNIFORM SUMMARY OF SURFACE WEATHER OBSERVATIONS

HOURLY OBSERVATIONS

Hourly observations are defined as those record or record-special observations recorded at scheduled hourly intervals.

DAILY OBSERVATIONS

Daily observations are selected from all data recorded on reporting forms and combined into Summary of the Day observations. (Selected from record-special, local, summary of the day, remarks, etc.)

DESCRIPTION OF SUMMARIES

Preceding each section is a brief description of the data comprising each part of the Revised Uniform Summary of Surface Weather Observations and the manner of presentation. Tabulations are prepared from hourly and daily observations recorded by stations operated by the U. S. Services and some foreign stations using similar reporting practices.

Unless otherwise noted the following summaries are included for this station:

PART A WEATHER CONDITIONS
- ATMOSPHERIC PHENOMENA

PART B PRECIPITATION
- SNOWFALL
- SNOW DEPTH

PART C SURFACE WINDS

PART D CEILING VERSUS VISIBILITY
- SKYCOVER

PART E DAILY MAX, MIN, & MEAN TEMP
- EXTREME MAX & MIN TEMP
- PSYCHROMETRIC-DRY VS WET BULB
- MEAN & STD DEV - (DRY BULB, WET BULB, & DEW POINT)
- RELATIVE HUMIDITY

PART F STATION PRESSURE
- SEA LEVEL PRESSURE

STANDARD 3-HOUR GROUPS

All summaries requiring diurnal variations are summarized in eight 3-hour periods corresponding to the following sets of hourly observations: 0000-0200, 0300-0500, 0600-0800, 0900-1100, 1200-1400, 1500-1700, 1800-2000, 2100-2300 hours local standard time.

MISSING HOUR GROUPS

Summary sheets are omitted when stations maintaining limited observing schedules did not report certain three-hour periods for any particular month during the available period of record. Such missing sheets are listed below, and are applicable to all summaries prepared from hourly observations.

JANUARY _____	APRIL _____	JULY _____	OCTOBER _____
FEBRUARY _____	MAY _____	AUGUST _____	NOVEMBER _____
MARCH _____	JUNE _____	SEPTEMBER _____	DECEMBER _____

874 29958

STATION NO ON SUMMARY	STATION NAME	LATITUDE	LONGITUDE	STATION ELEV. (FT)	CALL SIGN	WMO NUMBER
13717	MYRTLE BEACH AFB SOUTH CAROLINA	N 33 41	W 078 56	35	KMYR	74791

STATION LOCATION AND INSTRUMENTATION HISTORY

NUMBER OF LOCATION	GEOGRAPHICAL LOCATION & NAME	TYPE OF STATION	AT THIS LOCATION FROM	AT THIS LOCATION TO	LATITUDE	LONGITUDE	ELEVATION ABOVE MSL STATION (FT)	ELEVATION ABOVE MSL HGT FT BAROMETER	OBS PER DAY
1	Myttle Beach AAD S.C.	AAF	Nov 42	Jul 47	N 33 41	W 078 56	25	28	24
2	Myrtle Beach Caa S.C.	CAA	Jan 49	22Nov 56	Same	Same	35	25	24
3	Myrtle Beach AFB S.C.	AFB	23Nov 56	May 72	Same	Same	Same	Same	24
4	Same	Same	Jun 72	Dec 72	Same	Same	Same	Same	16to24

NUMBER OF LOCATION	DATE OF CHANGE	SURFACE WIND EQUIPMENT INFORMATION: LOCATION	TYPE OF TRANSMITTER	TYPE OF RECORDER	HT ABOVE GROUND	REMARKS, ADDITIONAL EQUIPMENT, OR REASON FOR CHANGE
1	Nov 42to Jul 46	Located on the Base Operations Bldg	Selsyn	ML-144B	56 Ft	
2	Aug 46to Jul 47	Same	Same	Same	55 Ft	
3	Jan 49to 22Nov 56	Located on the roof.	F420A	None	30 Ft	
4	23Nov 56 toFeb 59	Located on top of Control Tower.	AN/GMQ-1	ML204	57 Ft	
5	Mar 59to Feb 62	Located 3425 ft NNE of Station.	AN/GMQ-11	RO-2	10 Ft	
6	Mar 62to Feb 63	Located 1675 ft N of Station, 850 ft W of centerlineof Rnwy 17/35.	Same	Same	Same	

USAFETAC FORM APR 68 0-19 (OL A)

CONTINUED ON REVERSE SIDE

NUMBER OF LOCATION	DATE OF CHANGE	SURFACE WIND EQUIPMENT INFORMATION: LOCATION	TYPE OF TRANSMITTER	TYPE OF RECORDER	HT. ABOVE GROUND	REMARKS, ADDITIONAL EQUIPMENT, OR REASON FOR CHANGE
7	Mar 63to Feb 70	1.Same 2.Located 500 ft from S end of Rnwy 850 ft W of centerline.	AN/GMQ-11 Same	RC-2 —	10 Ft Same	
8	Mar 70to Jun 71	1.Located 500 ft from end of Rnwy 17,575 ft W of centerline. 2.Located 750 ft from end of Rnwy 35,750 ft W of centerline.	Same Same	RO-362 —	Same Same	
9	Jul 71to Dec 72	1.Same 2.Located 1075 ft from end of Rnwy 35,750 ft W of centerline.	AN/GMQ-20 Same	Same —	Same Same	

PART C SURFACE WINDS

Presented in this part are various tabulations of surface winds as follows:

1. Extreme Values - Peak Gusts: Derived from daily observations and presented by individual year and month for the entire period of record available. Speeds are presented in knots, while directions are given in 16 compass points from the beginning of record through June 1968, and in tens of degrees starting in July 1968. The extreme is selected and printed from available peak gusts for each year-month, however an asterisk (*) is printed in the data block if less than 90% (3 or more missing observations) of the peak gusts are available for the month. An ALL MONTHS value is presented when every month of the year has valid observations. Means and standard deviations are also computed when four or more values are present for any column. A total raw count of valid observations is presented for each month and ALL MONTHS.

   NOTE: According to Federal Meteorological Handbook No. 1 specifications (formerly Circular N), "peak gust data are recorded only at stations with continuous instantaneous wind-speed recorders."

2. Bivariate percentage frequency tabulations: Derived from hourly observations, these tabulations are a percentage frequency of wind directions to 16 compass points and calm by wind speeds (knots) in increments of Beaufort classifications. Percentages are shown by both directions and speed, and in addition the mean wind speed is given for each direction.

   A separate category is provided on the form for variable winds, which are reported in some data sources. In these data where light and variable winds are reported with no directions but with speeds given, the speeds will be summarized in the appropriate groups opposite the column headed VRBL.

   a. Three tables are prepared for ALL WEATHER surface winds, all years combined, by: (1) Annual - all hours combined, (2) By month - all hours combined, and (3) By month - by standard 3-hour groups.

   b. A separate annual teble is also presented for surface winds meeting INSTRUMENT CLASS conditions as follows: Ceiling 200 through 1400 feet inclusive with visibility equal to or greater than 1/2 mile, and/or visibility 1/2 through 2-1/2 miles inclusive with ceiling equal to or greater than 200 feet.

   NOTE: A percentage frequency of ".0" in these tables represents one or more occurrences amounting to less than ".05" percent.

C

USAF/ETAC/OL A
AIR WEATHER SERVICE/MAC

EXTREME VALUES
SURFACE WINDS
(FROM DAILY OBSERVATIONS)

13727 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 42-47, 56-72 (YEARS)

DAILY PEAK GUSTS IN KNOTS

YEAR \ MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	ALL MONTHS
42													
43													
44													
45													
46	NW 33	W *43	S 33	WNW 41	S *28	NE *27	WSW 33		W *21			NNW*32	
47	SW *37	SW 36	NNW 46	SW 32	WSW 35	SW*32							
56													
57									ENE*26	N *26	W 30	SW 36	
58	NNW 27	W 40	E 31	NNE*37	SSW 25	WNW*32	NNW*24	SSW*24	NNW*56	N *27	NW 25	E *30	NNW*56
59	W *33	NW*30	WSW*34	N *31	WSW*51	WNW 38	E *39	SSE 26	E 45	SSW 31	W *35	W 37	WSW*51
60	ENE 36	SW *42	WSW 37	WSW*33	W 41	SSW 26	N 29	SSW 22	WNW 27	NW 27	N 24	N 47	W 47
61	WNW 29	WSW*38	S 39	SE 40	NNW 27	SSW 32	WSW 30	NNW 28	NNE*28	N *29	SSE 25	SW 31	SE 40
62	W 29	NW 43	N 34	NW 37	N 27	SSW*30	SSE 25	N 35	NNE 31	N 29	SSE 40	W 32	NW 43
63	NNW*37	WSW*33	W *38	NNW*33	N *26	E *24	W *30	N *29	S *25	N *36	NW *35	NNW*30	W *38
64	W *47	SW *37	WNW*38	S *30	ENE 34	E 28	WSW*45	E *30	S *32	W *31	SSW*25	N 39	W *47
65	W 39	S *90	E *34	W *34	NNW*34	WNW*24	NNE*19	S *19	ENE*20	S *33	NNW*32	NNW 36	S *90
66	WNW*40	SSW 51	N *31	W *34	S *23	NNE*25	N *26	N 22	ESE 20	SSW 24	WSW 28	SW 28	SSW 51
67	W 32	NNW 30	S 40	NNW 31	WSW 32	NE 36	S 24	NE 19	N 22	S 27	NW 37	WNW 30	S 40
68	ESE 29	NNW 30	WNW 35	N 30	E 21	ENE 23	4/ 40	36/ 26	23/ 20	20/ 30	3/ 28	34/ 39	4/ 40
69	34/ 29	22/ 36	28/ 39	36/ 37	18/ 25	36/ 34	19/ 28	30/ 38	11/ 22	11/ 28	36/ 37	16/ 38	29/ 39
70	33/ 28	34/ 30	6/ 23	19/ 30	14/ 31	3/ 30	19/ 27	19/ 25	19/ 26	1/ 30	21/ 27	11/ 46	11/ 46
71	33/ 40	27/ 36	19/ 43	24/ 34	19/ 28	3/ 21	36/ 26	30/ 42	32/ 36	2/ 29	31/ 31	3/ 30	19/ 43
72	27/ 31	27/ 40	26/ 31	23/ 33	36/ 38	31/ 40	27/ 46	29/ 42	36/ 34	1/ 29	29/ 31	31/ 36	27/ 46
MEAN	33.9	40.3	36.2	34.4	30.9	29.5	30.7	28.5	29.5	29.1	30.6	35.1	47.8
S D	5.521	4.035	4.309	3.374	7.479	5.479	7.865	7.605	9.784	2.849	5.005	5.566	12.757
TOTAL OBS	462	423	464	461	468	435	437	422	44[illegible]	459	446	468	5401

[illegible] (BASED ON < FULL [illegible])

$ (BASED ON < FULL [illegible] AND +100 KNOTS)

USAF ETAC [illegible] 0-PRS

DATA ACCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 42-47,49-72 (YEARS) ALL (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	2.2	2.7	2.2	.8	.1	.0	.0	.0				8.0	6.1
NNE	1.2	2.4	2.3	.6	.0	.0	.0					6.6	6.6
NE	1.0	2.3	1.9	.4	.0	.0	.0					5.6	6.3
ENE	.5	1.1	1.2	.4	.0	.0	.0	.0				3.2	7.2
E	.6	1.4	1.9	.6	.0	.0	.0					4.5	7.3
ESE	.5	1.2	1.5	.3	.0	.0						3.5	7.0
SE	.5	1.2	1.3	.2	.0	.0						3.2	6.5
SSE	.5	1.4	1.7	.4	.0	.0						4.0	6.9
S	.9	2.2	3.6	1.7	.1	.0	.0					8.6	8.0
SSW	.8	1.6	2.4	1.8	.2	.0	.0					6.9	8.6
SW	1.1	1.8	1.9	.9	.1	.0	.0					5.9	7.2
WSW	1.0	1.7	1.7	.6	.1	.0	.0	.0				5.1	6.9
W	1.3	2.2	1.9	.7	.1	.0	.0					6.2	6.7
WNW	.6	1.2	1.3	.7	.1	.0						3.9	7.5
NW	.7	1.1	1.1	.5	.1	.0	.0					3.6	7.0
NNW	1.1	1.4	1.2	.6	.1	.0	.0	.0				4.3	6.7
VARBL													
CALM												16.6	
	14.5	26.9	29.2	11.4	1.0	.1	.0	.0				100.0	5.9

TOTAL NUMBER OF OBSERVATIONS 247175

USAFETAC FORM JUL 64 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND
DIRECTION AND SPEED
(FROM HOURLY OBSERVATIONS)

13717 — STATION
MYRTLE BEACH AFB SOUTH CAROLINA — STATION NAME
43-47,49-72 — YEARS
JAN — MONTH
ALL WEATHER — CLASS
ALL — HOURS (L.S.T.)
CONDITION

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	2.5	3.5	3.2	1.2	.1	.0						10.5	6.5
NNE	1.2	2.4	2.3	.6	.0							6.5	6.5
NE	1.1	2.4	1.7	.4	.0							5.6	6.1
ENE	.5	1.1	1.2	.5	.0							3.4	7.2
E	.7	1.2	1.4	.4								3.7	6.6
ESE	.5	.8	.8	.1								2.2	5.8
SE	.5	.9	.5	.1								2.0	5.3
SSE	.5	1.2	.6	.1	.0							2.8	5.5
S	.9	1.9	1.9	.7	.0							5.4	6.9
SSW	.6	1.4	1.8	.9	.1	.0						4.8	7.8
SW	.9	1.6	2.1	1.0	.1	.0						5.6	7.4
WSW	.8	1.7	1.9	.8	.0	.0						5.2	7.2
W	1.2	2.6	2.5	1.1	.1	.0	.0					7.5	7.2
WNW	.7	1.4	1.9	1.0	.1	.0						5.2	7.3
NW	1.0	1.5	1.9	1.1	.1	.0						5.6	7.5
NNW	1.3	1.9	2.0	1.2	.2	.0						6.6	7.5
VARBL													
CALM												17.4	
	15.1	27.6	27.8	11.1	.8	.1	.0					100.0	5.7

TOTAL NUMBER OF OBSERVATIONS 21411

DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-47,49-72 (YEARS) FEB (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	1.7	2.7	2.8	1.0	.1	.0						8.3	6.8
NNE	.9	2.4	2.3	.8	.0							6.4	6.9
NE	.9	2.4	1.9	.5								5.6	6.4
ENE	.4	1.2	1.8	.7	.0							4.2	7.8
E	.5	1.4	1.9	.6	.0							4.4	7.3
ESE	.3	.8	1.1	.3	.0							2.5	7.1
SE	.4	.8	.9	.2	.0							2.3	6.6
SSE	.5	1.1	1.3	.4	.0							3.3	7.1
S	.7	1.9	2.8	1.2	.1	.0						6.8	7.9
SSW	.5	1.1	2.0	1.7	.3	.1	.0					5.8	9.3
SW	.8	1.3	1.8	1.1	.2	.0						5.2	8.1
WSW	.7	1.5	1.9	1.2	.1	.0	.0					5.3	8.0
W	1.2	2.4	2.6	1.3	.3	.0	.0					7.8	7.6
WNW	.7	1.3	2.3	1.5	.2	.0						6.1	8.3
NW	.5	1.4	1.9	1.2	.1	.0						5.4	8.0
NNW	.9	1.6	2.1	1.1	.1	.0						5.8	7.6
VARBL													
CALM												14.6	
	12.0	23.2	31.4	14.8	1.7	.2	.0					100.0	6.5

TOTAL NUMBER OF OBSERVATIONS 19476

USAFETAC FORM AUG 4 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-47,49-72 (YEARS) MAR (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	1.3	2.1	2.4	1.1	.1	.0						7.0	7.2
NNE	.6	1.4	1.8	.5	.0							4.3	7.0
NE	.7	1.5	1.5	.4	.0	.0						4.2	6.8
ENE	.4	1.0	1.6	.6	.0	.0						3.6	7.8
E	.5	1.5	2.3	1.1	.1	.0						5.4	8.2
ESE	.4	1.2	1.7	.5	.1	.0						4.0	7.6
SE	.3	1.1	1.2	.2	.0	.0						3.8	6.7
SSE	.0	1.2	1.8	.5	.0							4.1	7.1
S	.5	2.1	3.5	1.9	.1	.0	.0					8.8	8.4
SSW	.7	1.6	2.8	2.3	.4	.0						7.8	9.3
SW	.9	1.5	1.9	1.3	.1	.0	.0					5.7	8.0
WSW	.5	1.6	1.7	.9	.2	.0		.0				5.2	7.9
W	.9	2.1	2.3	1.4	.2	.0						7.0	7.9
WNW	.6	1.3	1.9	1.5	.3	.0						5.6	9.0
NW	.5	1.4	1.8	1.0	.2	.0						5.0	9.3
NNW	.7	1.3	1.9	1.1	.1	.0						5.2	9.1
VARBL													
CALM												14.2	
	11.0	23.9	32.3	16.3	2.0	.3	.0	.0				100.0	6.8

TOTAL NUMBER OF OBSERVATIONS 21447

USAFETAC FORM 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-47,49-72 (YEARS) APR (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	1.2	1.7	1.9	.7	.1	.0						5.7	6.8
NNE	.7	1.3	1.6	.5	.0	.0						4.2	7.0
NE	.6	1.2	1.2	.3	.0	.0						3.3	6.6
ENE	.3	.8	1.2	.6	.0	.0						2.9	8.1
E	.4	1.3	2.2	1.1	.1	.0	.0					5.1	8.5
ESE	.4	1.1	2.0	.6	.1	.0						4.2	7.9
SE	.4	1.2	1.7	.4	.0	.0						3.9	7.1
SSE	.5	1.5	2.5	.8	.1							5.4	7.7
S	.8	2.4	4.8	3.0	.2	.0						11.3	8.8
SSW	.9	2.0	3.3	3.2	.3	.1	.0					10.0	9.7
SW	1.1	2.4	2.5	1.6	.2	.0						7.8	7.9
WSW	.5	1.9	2.5	1.0	.2	.0	.0					6.5	7.8
W	.8	1.8	2.2	1.1	.2	.0						6.2	8.1
WNW	.5	1.0	1.3	.9	.1	.0						3.9	8.4
NW	.5	.8	1.2	.7	.1							3.3	7.9
NNW	.8	1.3	1.3	.6	.1	.0						4.2	7.2
VARBL													
CALM												12.1	
	11.0	23.8	33.5	17.1	2.2	.3	.0					100.0	7.2

TOTAL NUMBER OF OBSERVATIONS 20712

USAFETAC FORM JUL 64 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-47,49-72 (YEARS) MAY (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	1.4	1.8	1.4	.3	.1	.0						5.0	5.9
NNE	.9	1.4	1.4	.4	.1							4.3	6.7
NE	.9	1.7	1.5	.5	.0							4.6	6.6
ENE	.5	.9	1.0	.6	.1							3.1	7.7
E	.6	1.5	2.3	.9	.1							5.[illegible]	7.3
ESE	.5	1.6	2.2	.4	.0							4.8	7.3
SE	.7	1.7	2.3	.4	.0							5.[illegible]	6.5
SSE	.6	1.9	2.6	.7								5.8	7.3
S	1.0	2.8	5.4	2.8	.1							12.1	8.4
SSW	.9	2.2	2.9	2.6	.3	.0						9.0	8.0
SW	1.3	2.3	2.7	1.3	.1							7.8	7.2
WSW	1.0	1.8	1.6	.5	.0							4.9	6.5
W	1.2	2.3	1.8	.5	.0							5.8	6.3
WNW	.7	1.1	1.0	.4	.0							3.3	6.6
NW	.7	1.0	.8	.2	.0							2.7	6.1
NNW	.8	1.0	.8	.2	.0							2.8	5.8
VARBL													
CALM												13.6	
	13.7	27.0	31.8	12.9	1.0	.0						100.0	6.3

TOTAL NUMBER OF OBSERVATIONS 21334

DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-47,49-72 (YEARS) JUN (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) D.R.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	1.6	1.8	.9	.3	.0							4.7	5.2
NNE	.9	1.7	1.3	.3	.0	.0						4.2	6.2
NE	.8	2.0	1.7	.3	.0							4.7	6.2
ENE	.4	.8	1.0	.3	.0	.0						2.5	7.0
E	.6	1.3	1.7	.7	.0							4.3	7.4
ESE	.4	1.2	2.0	.5	.0							4.1	7.3
SE	.6	1.5	2.1	.6								4.8	7.1
SSE	.6	1.8	2.6	.6	.0							5.6	7.2
S	1.1	3.2	6.3	3.1	.1							13.8	8.3
SSW	1.3	2.4	3.6	2.5	.4							10.1	8.5
SW	1.5	2.4	2.4	1.0	.0	.0						7.4	6.8
WSW	1.2	2.0	1.7	.5	.0	.0						5.3	6.2
W	1.4	2.3	2.0	.5	.0							6.3	6.1
WNW	.7	1.1	1.1	.3	.0	.0						3.2	6.6
NW	.6	.9	.7	.2	.0	.0						2.3	6.1
NNW	.6	.7	.6	.1	.0							2.1	5.7
VARBL													
CALM												14.5	
	14.3	27.1	31.6	11.7	.8	.0						100.0	6.0

TOTAL NUMBER OF OBSERVATIONS 20143

USAFETAC FORM 0-3-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-47,49-72 (YEARS) JUL (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	1.6	1.3	.7	.1	.0							3.7	4.7
NNE	.8	1.4	.9	.1	.0							3.3	5.7
NE	.9	1.6	1.1	.1								3.6	5.6
ENE	.4	.7	.6	.1	.0							1.8	6.4
E	.5	1.0	1.3	.3	.1							3.1	7.1
ESE	.4	1.1	1.4	.4	.0	.0						3.4	7.4
SE	.5	1.5	1.3	.2								3.3	6.5
SSE	.5	1.4	2.2	.3	.0							4.5	7.0
S	1.0	3.0	5.8	2.6	.2							12.8	6.5
SSW	1.1	3.0	4.5	3.2	.3	.0						12.2	8.7
SW	1.5	3.4	3.1	1.4	.1	.0						10.0	6.5
WSW	1.7	2.9	2.6	.8	.0							8.0	6.3
W	1.7	2.9	1.8	.4	.0							6.8	5.6
WNW	.6	1.4	.9	.1								3.1	5.3
NW	.7	1.0	.4	.1	.0							2.1	5.1
NNW	.5	.6	.3	.0								1.7	4.6
VARBL													
CALM												16.5	
	14.9	28.0	29.0	10.7	.9	.0						100.0	5.8

TOTAL NUMBER OF OBSERVATIONS 20495

USAFETAC FORM JUL 64 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-46,49-72 (YEARS) AUG (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	2.2	1.9	1.0	.2	.1							5.4	4.9
NNE	1.5	2.3	1.6	.7	.1	.0	.0					6.2	6.2
NE	1.3	2.3	1.5	.3	.0	.0						5.3	5.8
ENE	.4	.9	.8	.2	.0							2.3	6.3
E	.6	1.2	1.4	.4	.0							3.5	6.8
ESE	.5	1.5	1.8	.5	.0							4.3	7.0
SE	.6	1.5	1.7	.3	.0							4.1	6.7
SSE	.6	1.7	2.4	.4	.0							5.1	7.0
S	1.1	2.8	4.6	1.9	.1	.0	.0					10.5	7.9
SSW	1.2	2.0	3.1	2.3	.2	.0	.0					8.8	8.4
SW	1.3	2.3	2.2	.8	.0							7.1	6.4
WSW	1.6	2.4	1.7	.3	.0							6.1	5.7
W	1.7	2.4	1.2	.2	.0							5.5	5.1
WNW	.5	1.0	.7	.1	.0							2.4	5.8
NW	.6	.8	.5	.1	.0							2.0	5.6
NNW	.7	.8	.4	.1	.0							1.9	5.2
VARBL													
CALM												19.4	
	16.9	27.7	26.8	8.5	.7	.0	.0					100.0	5.3

TOTAL NUMBER OF OBSERVATIONS 19981

USAFETAC FORM JUL 64 0 8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND
DIRECTION AND SPEED
(FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-46,49-72 (YEARS) SEP (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	3.3	3.2	1.9	.6	.0		.0	.0				9.0	5.3
NNE	2.3	4.7	3.8	.8	.0	.0	.0					11.7	6.2
NE	1.7	4.5	3.9	.7	.0	.0	.0					10.7	6.3
ENE	.6	1.7	1.5	.7	.0							4.5	7.1
E	1.0	2.1	2.5	.8	.1	.0						6.4	7.1
ESE	.5	1.8	2.1	.5	.0	.0						5.2	6.8
SE	.5	1.7	1.5	.2	.0	.0						4.4	6.0
SSE	.7	1.6	1.0	.3	.0	.1						4.3	5.8
S	1.0	1.9	3.1	.8	.1	.0						6.9	7.3
SSW	.5	1.1	1.3	.7	.0	.0						3.7	7.4
SW	.9	1.1	.9	.4	.0							3.2	6.2
WSW	.8	.9	1.0	.3								2.9	6.2
W	1.0	1.1	.8	.2								3.1	5.4
WNW	.5	.8	.6	.2	.0							2.1	6.3
NW	.5	.7	.4	.1	.0	.0	.0					1.7	5.8
NNW	1.1	.9	.5	.2	.0		.0	.0				2.8	5.3
VARBL													
CALM												17.5	
	17.5	29.8	27.4	7.2	.4	.2	.0	.0				100.0	5.3

TOTAL NUMBER OF OBSERVATIONS 19841

USAFETAC FORM JUL 66 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 43-46,49-72 (YEARS) OCT (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	3.4	4.6	3.5	1.5	.2	.0						13.2	6.3
NNE	1.9	4.3	5.1	1.5	.0							12.8	7.0
NE	1.4	3.6	3.5	.8	.0							9.3	6.6
ENE	.6	1.3	1.7	.5	.0	.0	.0	.0				4.1	7.2
E	.9	1.7	2.4	.6	.0							5.6	6.9
ESE	.5	1.2	1.6	.3								3.5	6.8
SE	.4	1.1	.9	.1		.0						2.5	6.1
SSE	.4	.9	1.0	.2	.0	.0						2.5	6.6
S	.6	1.4	1.7	.6	.0	.0	.0					4.3	7.1
SSW	.5	.8	.9	.5	.0	.0	.0					2.7	7.4
SW	.6	.8	.7	.3	.0							2.5	6.2
WSW	.6	1.0	.8	.3								2.7	6.4
W	.9	1.1	1.2	.3	.0							3.6	6.1
WNW	.7	.9	.8	.2								2.6	6.0
NW	.8	.9	.7	.2								2.6	5.7
NNW	1.5	1.8	1.2	.6	.0							5.2	6.0
VARBL													
CALM												20.3	
	15.8	27.3	27.8	8.4	.3	.1	.0	.0				100.0	5.2

TOTAL NUMBER OF OBSERVATIONS 20516

USAFETAC FORM JUL 64 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

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DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 42-46,49-72 (YEARS) NOV (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	3.3	4.1	3.0	1.2	.1	.0						11.7	6.0
NNE	1.3	2.8	3.0	.8	.0							7.9	6.7
NE	1.0	2.2	1.8	.3	.0							5.2	6.1
ENE	.6	1.3	1.1	.2	.0							3.3	6.3
E	.5	1.5	1.5	.3								3.8	6.5
ESE	.4	1.1	.9	.1								2.6	5.9
SE	.4	.8	.6	.1								2.0	5.7
SSE	.5	1.1	.8	.1								2.6	5.9
S	.7	1.5	1.7	.6	.0							4.5	7.0
SSW	.6	1.0	1.5	.7	.1	.0						3.8	7.7
SW	.8	1.0	1.3	.7	.1							3.9	7.2
WSW	.8	1.3	1.1	.5	.0	.0						3.8	6.5
W	1.4	2.4	2.3	.9	.0							7.2	6.8
WNW	.7	1.5	1.7	.9	.1							4.8	7.5
NW	1.0	1.6	1.6	.7	.1							5.0	7.0
NNW	1.5	2.1	1.8	.8	.1	.0						6.7	6.4
VARBL													
CALM												21.3	
	16.0	27.5	25.8	8.9	.5	.0						100.0	5.2

TOTAL NUMBER OF OBSERVATIONS 20559

USAFETAC FORM 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

DATA PROCESSING BRANCH
ETAC/USAF
AIR WEATHER SERVICE/MAC

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND DIRECTION AND SPEED (FROM HOURLY OBSERVATIONS)

13717 (STATION) MYRTLE BEACH AFB SOUTH CAROLINA (STATION NAME) 42-46,49-72 (YEARS) DEC (MONTH)

ALL WEATHER (CLASS) ALL (HOURS (L.S.T.))

(CONDITION)

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	2.9	4.0	3.2	1.1	.0	.0						11.2	6.2
NNE	1.2	2.6	2.7	.6	.0	.0						7.2	6.7
NE	1.0	2.2	2.0	.5	.0							5.7	6.4
ENE	.6	1.1	1.2	.2	.0							3.1	6.5
E	.7	1.3	1.4	.3	.0	.0						3.7	6.5
ESE	.3	.8	.6	.1	.0							1.8	5.9
SE	.5	.7	.4	.0								1.7	5.0
SSE	.5	1.1	.6	.1								2.3	5.6
S	1.1	2.1	1.9	.5	.0							5.6	6.4
SSW	.5	1.2	1.4	.6	.1	.0						4.0	7.9
SW	.5	1.2	1.2	.6	.1	.0						3.9	7.1
WSW	1.0	1.5	1.7	.7	.1	.0	.0					4.9	7.0
W	1.7	2.9	2.2	1.0	.2	.0	.0					8.0	6.9
WNW	.8	1.5	1.6	.7	.1	.0						4.8	7.2
NW	1.1	1.7	1.7	.6	.0							5.1	6.7
NNW	1.0	2.1	1.9	.6	.1	.0						6.7	6.4
VARBL													
CALM												20.2	
	16.6	28.1	25.6	8.7	.8	.1	.0					100.0	6.3

TOTAL NUMBER OF OBSERVATIONS 21260

USAFETAC FORM JUL 64 0-8-5 (OL A) PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

Accession For
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Justification
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Availability Codes
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