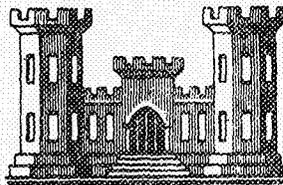


INVITATION NO. DACW33-79-B-0031

LOCAL PROTECTION PROJECT
ISRAEL RIVER
SPECIFICATIONS
FOR THE CONSTRUCTION
OF
ICE IMPOUNDMENT WEIR
LANCASTER, NEW HAMPSHIRE

79 AUGUST 01



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

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INVITATION FOR BIDS
(CONSTRUCTION CONTRACT)

DATE

79 AUGUST 01

NAME AND LOCATION OF PROJECT

LOCAL PROTECTION PROJECT
CONSTRUCTION OF ICE IMPOUNDMENT WEIR
LANCASTER, NEW HAMPSHIRE

DEPARTMENT OR AGENCY

Department of the Army
Corps of Engineers

BY (Issuing Office)

Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Mass. 02154

Sealed bids in duplicate for the work described herein will be received until 2:00 p.m., local time at place of bid opening, 79 AUGUST 29 at the address of the Division Engineer, U.S. Army Engineer Division, New England, 424 Trapelo Road, Waltham, Mass., 02154, and at that time publicly opened. Information regarding bidding material, bid guarantee, and bonds.

1. Bids may be mailed to: The Division Engineer, New England Division, Corps of Engineers, 424 Trapelo Road, Waltham, Mass., 02154. In lieu of mailing, bids may be delivered in advance to the Bids Receiving Desk, Bldg. 111 at the above address or, just prior to bid opening, delivered to the Contracting Officer in Bldg. 100 (Conference Room)
2. Bids will be opened at: Bldg. 100 (Conference Room), 424 Trapelo Road, Waltham, Mass.
3. Bids shall be submitted on Standard Form 21 (Bid Form - Construction Contract) prepared in accordance with Standard Form 22 (Instructions to Bidders). The bidder awarded the contract will be required to execute the standard contract form for construction contracts (Standard Form 23) with General Provisions, which set forth the contract clauses.
4. Bid Bonds: (Required only when the contract price exceeds \$25,000) 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 percent (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.
5. Payment and Performance Bonds: (Required only when the contract price exceeds \$25,000) Payment and performance bonds will be required in the amount shown by Par. SP-13 of the SPECIAL PROVISIONS.

DESCRIPTION OF WORK: The work consists of furnishing all plant, labor, materials, and equipment and performing all work in strict accordance with the specifications, drawings and schedules for the Construction of Ice Impoundment Weir, Lancaster, New Hampshire as follows:

Specifications entitled: LOCAL PROTECTION PROJECT
CONSTRUCTION OF ICE IMPOUNDMENT WEIR
LANCASTER, NEW HAMPSHIRE
Drawings as listed in Paragraph SP-3 of the SPECIAL PROVISIONS.
Schedules as set forth in the Bid Form.

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.

(G.H.N.)

SUPPLEMENT TO INVITATION FOR BIDS
(Construction Contract)

(Read the following in conjunction with INSTRUCTIONS TO BIDDERS-STD FORM 22)

1. Each bidder shall, upon request of the Contracting Officer, furnish a list of the plant available to the bidder and proposed for use on the work.

2. 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 prior to opening of bids. Failure to acknowledge all amendments may cause the rejection of the bid.

3. If the bidder, by checking the appropriate box provided therefor in this bid, has represented that he has employed or retained a company or person (other than a full-time bona fide employee working solely for the bidder) 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 the Bidder has previously furnished a completed Standard Form 119 to the office issuing this Invitation for Bids, he may accompany his bid with a signed statement, (a) indicating when such completed form was previously furnished, (b) identifying by number the previous invitation for bids or contract, if any, in connection with which such form was submitted, and (c) representing that the statements in such previously furnished form are applicable to this bid.

4. 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 and/or drawings 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. Copies of such amendments as may be issued will be furnished to all prospective bidders. If the revisions and amendments are of a nature which require 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 Division Engineer will enable bidders to revise their bids. In such cases, the amendment will include an announcement of the new date for opening bids.

5. The Government further reserves the right to make award on any or all schedules of any bids, 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".

SUPPLEMENT TO INVITATION FOR BIDS
(Construction Contract)

(Read the following in conjunction with INSTRUCTION TO BIDDERS-STD FORM 22)

6. Notice Regarding Buy American Act (Oct. 1966). 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 Office of the Secretary of Defense. 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 nondomestic construction material to be acceptable under this paragraph will cause rejection of the entire bid.

7. Affiliated Bidders. a. Business concerns are affiliates of each other when either directly or indirectly (i) one concern controls or has the power to control the other, or (ii) a third party controls or has the power to control both.

b. Each bidder shall submit upon request of the Government an affidavit containing information as follows:

(i) whether the bidder has any affiliates;

(ii) the names and addresses of all affiliates of the bidder; and

(iii) the names and addresses of all persons and concerns exercising control or ownership of the bidder and any or all of his affiliates, and whether as common officers, directors, stockholders holding controlling interest, or otherwise.

Failure to furnish such an affidavit promptly upon request may result in rejection of the bid.

8. Parent Company Statement. Bidders must execute the statement attached to and forming a part of the Bid Form furnishing information as to Parent Company and Employer Identification Number and submit one executed copy with the bid if the amount of the bid exceeds \$10,000. This requirement is an addition to the information required under the provisions of the Affiliated Bidders clause above.

SUPPLEMENT TO INVITATION FOR BIDS
(Construction Contract)

(Read the following in conjunction with INSTRUCTIONS TO BIDDERS--STD FORM 22)

9. Safety Requirements. a. Corps of Engineers Manual. Clause 54 of the General Provisions incorporates and makes a part of the contract the Corps of Engineers" Manual, EM 385-1-1, dated 1 June 1977, entitled "General Safety Requirements", as amended. Such requirements will be strictly enforced and adhered to by the Contractor. Those bidders who do not have a copy of this manual, or who are not aware of its contents, should familiarize themselves with its provisions by contacting the Resident Engineer at the site or by visiting the Division Office in Waltham, Mass. Copies of this manual will be furnished the successful bidder after contract award has been made.

b. OSHA Safety Standards. It is the Contractor's responsibility to be familiar and comply with the OSHA safety standards. OSHA standards are subject to the change and such changes may well affect the Contractor in his performance under the contract. It is the responsibility of the Contractor to acquaint himself with all such changes and the effective date of such changes. (EC 385-1-91)

10. AVAILABILITY OF SPECIFICATIONS, STANDARDS AND DESCRIPTIONS (1977 JUN). 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 Acquisition Management Systems and Data Requirements Control List, DOD Directive 5000.19-L, Volume II, 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 Telex No. 834295, Western Union No. 710-670-1685, or telephone (area code 215-697-3321) in case of urgency.

SUPPLEMENT TO INVITATION FOR BIDS
(Construction Contract)

(Read the following in conjunction with INSTRUCTION TO BIDDERS--STD FORM 22)

11. OMITTED.

12. Sets of half-size drawings and specifications will be furnished upon receipt of payment of \$1.00 per set. If individual half-size sheets are requested, they will be furnished at the rate of \$0.10 for each sheet requested, but with a minimum charge of \$1.00. The maximum charge for half-size individual sheets shall not exceed the charge for a full set of plans. Individual full-size sheets will be provided upon request to a bidder who feels that a larger print is necessary for take-off of detailed work. Full-size sheets will be furnished at the rate of \$0.50 per sheet with a minimum charge of \$1.00 and a maximum charge of five times the cost of a full set of half-size prints or \$25.00, whichever is less. No refund of the payment for prints will be made and the prints need not be returned to the Division Engineer. Additional copies of the specifications alone will be furnished an applicant at the rate of \$1.00 per copy. Payments shall be made by cash, check, or money order delivered to the Finance and Accounting Officer, Corps of Engineers, Department of the Army, 424 Trapelo Road, Waltham, Massachusetts 02154. Checks and money orders should be made payable to the "United States Treasury". If the project is cancelled or no award is made under the invitation, upon request, refund of the payment for the plans and specifications will be made upon return thereof to the issuing office, all charges prepaid.

13. Telephone inquiries relating to this procurement should be directed as follows:

New England Division, Corps of Engineers (617)	894-2400
Procurement of Plans and Specifications, Prospective Bidders' List, Bid Results and Award Information	Ext. 424
Technical Questions on Plans and Specifications	Ext. 263

14. Performance of Work by Contractor (Paragraph SP-11 of the SPECIAL PROVISIONS). Each bidder shall submit a description of the work which he will perform with his own organization (e.g., excavation, fills, stone protection, etc.), the percentage of the total work this represents, and the estimated cost thereof.

SUPPLEMENT TO INVITATION FOR BIDS
(Construction Contract)

(Read the following in conjunction with INSTRUCTIONS TO BIDDERS-STD FORM 22)

15. The following description is given to indicate the approximate scope of this work. The quantities given are preliminary and approximate and should not be used for bidding purposes.

The project consists of the construction of an ice-impoundment weir and associated dike on the Israel River. The weir consists of an earth and rock embankment with a steel sheet piling cut-off wall and includes four reinforced concrete sluiceways. The weir is protected from erosion by stone-filled gabion mattresses, covered by a layer of concrete. Principal quantities associated with the work include excavation (800 cy), impervious fill (1,000 cy), gravel fill and bedding (1,200 cy), stone protection (750 cy), gabions (700 cy), rock fill and crushed stone (625 cy), concrete (250 cy), and steel sheet piling (2,200 sf).

16. The estimated cost of the work is between \$100,000 and \$500,000.

17. 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 purpose 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.

18. NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY. To be eligible for award of a contract exceeding \$10,000 under this Invitation for Bids, the bidder must comply fully with the requirements, terms and conditions of the "Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity" attached at the end of the Supplement to Invitation for Bids.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL
EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

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

<u>Timetables</u>	<u>Goals for minority participation for each trade</u>	<u>Goals for female participation in each trade</u>
From 1 April 1978 until 31 March 1979		3.1%
From 1 April 1979 until 31 March 1980		5.0%
From 1 April 1980 until 31 March 1981		6.9%

NOTE: The goals and timetables for minority utilization, when available, will be provided by amendment to these specifications.

In the event the goals and timetables are not available by bid opening, they will be incorporated by modification to the contract.

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is Coos County, New Hampshire.

(8 May 78)

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VALUE ENGINEERING

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EARN DIVIDENDS
SUBMIT VECP'S
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U.S. ARMY CORPS OF ENGINEERS

NEW ENGLAND DIVISION

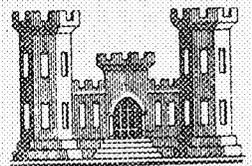


**Wear Your
HARD
HAT**

*"a
little care
makes
mishaps rare"*



**The Head You Save
WILL BE
YOUR OWN**



U.S. ARMY CORPS OF ENGINEERS

DIVISION 1 - GENERAL REQUIREMENTS

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DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1A - SPECIAL PROVISIONS

SP-1. COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK. a. The Contractor will be required to commence work under this contract within 15 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 not later than 01 November 1980. The time stated for completion shall include final cleanup of premises.

The foregoing completion date is based on the assumption that the successful bidder will receive the notice to proceed by 29 September 1979. The Government will extend the completion date by the number of calendar days after the above date that the Contractor receives the notice to proceed, except to the extent that the delay in issuance of the notice to proceed results from the failure of the Contractor to execute the contract and give the required performance and payment bonds within the time specified in the bid.

b. No work will be required at the site during the period between receipt of notice to proceed and 01 June 1980 inclusive and such period has not been considered in computing the time allowed for completion. The Contractor may, however, perform work during all or any part of this period upon given prior written notice to the Contracting Officer.

c. Upon receipt of notice to proceed, in lieu of actual construction at the site the Contractor will be required to place promptly all orders, award subcontracts, do necessary detailing and process required submission of materials, shop drawings and details to insure effective action when construction operations at the site may, or are required to commence.

d. Time Extension for Topsoiling and Seeding. In the event the contract completion date, as established in Subparagraph "a" above, is thirty (30) days or more after the limiting date established for seeding in the TECHNICAL PROVISIONS herein, the contract completion date for topsoiling and seeding will be the last date of the next succeeding period specified as acceptable for seeding.

SP-2. 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 Clause 5 of the GENERAL PROVISIONS of this contract entitled "Terminations for Default-Damages for Delay-Time Extensions", the amount(s) specified below.

a. Entire Work. For failure to complete the entire work, except topsoiling and seeding and planting the sum of \$230.00 dollars for each calendar day of delay.

(1) Submittals reviewed by Engineering Division, NED: One copy, each, to the Area Engineer, the Resident Engineer and the Construction Division, NED.

(2) Submittals reviewed by Resident Engineer: One copy, each, to the Area Engineer, the Construction Division and the Engineering Division, NED.

(3) Submittals reviewed by Area Engineer: One copy, each, to the Resident Engineer, the Construction Division and the Engineering Division, NED.

Blank copies of ENG Form 4025 will be furnished to the Contractor by the Contracting Officer.

d. It shall be the Contractor's responsibility to review all shop drawing submittals for completeness, accuracy, compliance with specifications and insure coordination of same with associated items of construction and all trades involved prior to submission to Contracting Officer for approval. These drawings shall be complete and detailed. The Contractor shall certify on the face of each ENG Form 4025, that each submittal transmitted therewith is correct and in strict conformance with the contract drawings and specifications. All proposed deviations requested by the Contractor shall be noted by him on the transmittal ENG Form 4025. The Contractor shall set forth in writing the reason for any deviations requested and shall annotate such deviations on the shop drawing. In the event the above requirements are not met, the submittal will be returned to the Contractor for corrective action. If approved by the Contracting Officer, each copy of the drawings will be identified as having received such approval by being so stamped and dated. The Contractor shall make any corrections required by the Contracting Officer. If the Contractor considers any correction indicated on the drawings to constitute a change to the contract drawings or specifications, notice as required under the Clause 3 of the GENERAL PROVISIONS entitled "Changes" will be given to the Contracting Officer. Two sets of all shop drawings will be returned to the Contractor and the remaining sets will be retained by the Contracting Officer. The approval of the drawings by the Contracting Officer shall not be construed as a complete check, but will indicate only that the general method of construction and detailing satisfactory. Approval of such drawings will not relieve the Contractor of the responsibility for any error which may exist as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work. (See Par. SP-30, DEVIATIONS FROM CONTRACT REQUIREMENTS).

e. It shall be the Contractor's responsibility to insure that all samples required to be submitted for approval are inspected to assure compliance with contract requirements before being submitted to the Contracting Officer. All samples shall be completely labeled to include product name, manufacturing source, name of project, transmittal number and shall also indicate the specification Section and paragraph for which the sample is being submitted.

f. Payment for materials incorporated into the work will not be allowed if required approvals have not been obtained.

SP-5. PHYSICAL DATA. Information and data furnished or referred to below are furnished for 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.

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

b. Weather Conditions. The monthly normal mean temperature and the monthly normal mean precipitation for the site may be obtained by the Contractor from the nearest U.S. National Weather Service Office.

c. Transportation Facilities. The Contractor shall make his own investigations on the use of municipal, State and Federal highways, roads, streets and bridges.

SP-6. RATES OF WAGES. The minimum wages, including basic hourly rates of pay and fringe benefits payments, applicable to laborers and mechanics performing work on this project are set forth in Predetermination Decision No. 79-NH-36 dated 10 July 1979 issued by the Secretary of Labor in accordance with the Davis-Bacon Act, GENERAL PROVISIONS, Clause 31. A copy of the above decision follows at the end of these SPECIAL PROVISIONS.

SP-7. WORK IN QUARANTINED AREA. The work called for by this contract involves activities in counties quarantined by 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 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 provisions 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.

SP-8 thru SP-10. OMITTED.

SP-11. PERFORMANCE OF WORK BY CONTRACTOR. The Contractor shall perform on the site, and with his own organization, work equivalent to at least thirty percent (30%) 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 in such percentage; and the Contracting Officer determines that it would be to the Government's advantage, the percentage of the 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.

SP-12. LAYOUT OF WORK. The Contractor shall lay out his work from Government established base lines and bench marks indicated on the drawings or established at the site 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 materials 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.

SP-13. PERFORMANCE AND PAYMENT BONDS. Within ten (10) 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 25A). Each form shall show the contract number to which the bond applies. The penal sums of such bonds will be as follows:

a. Performance Bond. The penal sum of the performance bond shall equal one hundred percent (100%) of the contract price. In accordance with Federal Tax Lien Act of 1966, the performance bond shall provide coverage for taxes imposed by the United States which are collected, deducted, or withheld from wages paid by the Contractor in carrying out the contract.

b. Payment Bond. (1) When the contract price is \$1,000,000 or less, the penal sum will be fifty percent (50%) of the contract price.

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

(3) 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.

SP-14. OMITTED.

SP-15. INSURANCE. Because of the complex nature of the work and possibility of property damage or bodily injury in the event of accident, it is advisable for the Contractor to properly protect himself against such an occurrence. Since the Contractor as an independent Contractor is fully responsible for acts of negligence or omission, it is not the policy of the Government to require such insurance in order to protect its interests. The Contractor, however, should consider insurance in appropriate types and amounts to safeguard his interest and those of third parties who may be affected. However, absence of specific requirement for insurance in these specifications is not to be construed as an admission that the Government assumes any risk, liability, claim or damage resulting from the Contractor's want of care or failure to properly perform his work.

SP-16 & SP-17. OMITTED.

SP-18. TIME EXTENSIONS. Notwithstanding any other provisions of this contract it is mutually understood that 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.

SP-19. CERTIFICATES OF COMPLIANCE. Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in six (6) copies. It shall be Contractor's responsibility to review all certifications before submissions are made to the Contracting Officer to insure compliance with the contract specification requirements and that the affidavit is properly executed prior to submission to the Contracting Officer. Each certificate shall be signed by an official authorized to certify in behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

SP-20 & SP-21. OMITTED.

SP-22. CONTRACT BID BREAKDOWN. The Contractor shall furnish within 10 days after date of award of contract, a breakdown of each lump sum bid. Partial Payments will be based on this breakdown. The Contractor's breakdown will be reviewed by the Contracting Officer to insure that costs are proportioned properly between early and late pay items. Any unbalanced items or other discrepancies will be revised by the Contracting Officer and the approved breakdown will be utilized as a basis for progress payments to the Contractor.

Item

- Preparation of Site
- Control and Diversion of Water
- Steel Sheet Pile Cut-Off Wall
- Concrete
- Wooden Stop Logs

SP-23 & SP-24. OMITTED.

SP-25. CONSTRUCTION SIGN. The Contracting Officer will furnish a construction sign to the Contractor within 10 calendar days after date of notice to proceed. The Contractor will be required to neatly print in block letters the name of the project at the top of the sign

and the name of his company following the words "Being Constructed By" in the spaces provided on the upper portion of the sign. Printing shall be in black exterior oil or enamel paint. The Contractor shall mount the sign at the work site in a location approved by the Contracting Officer within 15 days after the date of receipt of notice to proceed. No separate payment will be made for erecting and maintaining the sign and all costs in connection therewith will be considered a subsidiary obligation of the Contractor. Upon completion of the work, the sign shall be removed by, and disposed of by the Contractor.

SP-26. SAFETY SIGN. The Contractor shall construct a safety sign at a location directed by the Contracting Officer. The sign shall be 3 feet by 6 feet in size and shall conform to the requirements of Drawing No. STD-36, attached hereto. The sign shall be erected as soon as possible and within 15 calendar days after date of receipt of Notice to Proceed. The data required by the sign shall be corrected as necessary. No separate payment will be made for erecting and maintaining the safety sign and all costs in connection therewith will be considered a subsidiary obligation of the Contractor. The sign will remain the property of the Contractor. Previously used signs may be reused when satisfactorily reconditioned.

SP-27. ACCIDENT PREVENTION. a. Contractor's Proposals. The Contractor's proposals for effectuating the requirements of Clause 54, "Accident Prevention" of the GENERAL PROVISIONS shall be submitted in quintuplicate to the Resident Engineer as the Contracting Officer's representative.

b. Protective Headgear. All employees of the Contractor and other persons shall wear protective headgear (hard hats) at all times while in the work area(s). These work area(s) shall be all area(s) within the contract work limits.

c. No burning of brush or debris will be permitted in the area.

d. Electric Ground Fault. During execution of this contract, all power tools and temporary wiring connection to 15 and 20-ampere receptacles or outlets on single phase electric circuits throughout the project shall have approved ground fault interrupters protecting personnel. GFCI will operate on fault current of not more

than 5 milli-amperes, and will include isolating transformer and test buttons. Tests will be recorded daily and after each change in circuits at any distribution box or panel.

e. Reverse Signal Alarm. (1) All self-propelled construction equipment, except light service trucks, panels, pickups, station wagons, crawler-type cranes, power shovels, and draglines; whether moving alone or in combination, shall be equipped with a reverse signal alarm. The alarm shall be mounted on the rear of the equipment and shall be so protected or constructed as to withstand severe wear and tear, adverse weather and unfavorable environmental working conditions, and shall be certified by the manufacturer as fully meeting the following performance standards.

(a) The alarm shall produce a relatively pure tone which shall peak within the American Standards Association standard octave passband of 600 to 2400 cycles per second and shall produce a 0.2 to 0.15 second audible warning within the initial three (3) feet of backward movement of the vehicle on which it is mounted and at regular intervals, not to exceed three (3) seconds throughout the backward movement. The alarm shall automatically cut out when backward movement ceases. The sound intensity of the alarm shall range from and not exceed 90-100 db (decibels) at a horizontal distance of 5 feet from the alarm.

(b) Actuation of the alarm shall be automatic by direct connection to any part of the equipment that moves or acts in a manner distinctive only to the rearward movement of the vehicle with no manual controls of any kind between the source of actuation and the alarm. Where application of this requirement to specific types of equipment has impractical application, other means of actuation may be used upon written approval of the Contracting Officer.

(2) In addition to the use of the alarm, a signalman shall be provided when the point of operations is not in full and direct view of the vehicle, machine, or equipment operator.

SP-28. OMITTED.

SP-29. PROJECT BULLETIN BOARD. The Contractor shall furnish, install, and maintain during the life of the project, a bulletin board approximately 3 feet high by 5 feet wide. The bulletin board shall be erected as soon as possible and within 15 days after the date of NOTICE TO PROCEED. It shall be mounted in a prominent place accessible to all employees, and as approved by the Contracting Officer. The bulletin board shall remain the property of the Contractor and shall be removed by him upon completion of the contract work. The following information, which will be furnished by the Government to the Contractor, shall be posted on the bulletin board and shall be maintained by the Contractor in easily readable condition at all times for the duration of the contract:

The schedule of minimum wage rates for the contract as required by Clause 31, "Davis-Bacon Act" of the GENERAL PROVISIONS, with the minimum wage rate poster.

SP-30. DEVIATIONS FROM CONTRACT REQUIREMENTS. Deviations from contract requirements will not be permitted, except under unusual circumstances. Submissions of shop drawings and materials will be assumed to be in conformance with plans and specifications, unless they contain an expressed declaration of a deviation, the reasons for it, and request for waiver.

SP-31. CONTRACTOR'S OPTIONS. The Technical Provisions may, by specific references, permit the Contractor to select optional materials, items, systems, or equipment. The use of options is subject to the following conditions:

a. Once an option has been selected and approved, it shall be used for the entire contract.

b. The Contractor will be required to coordinate his selection with the plans and specifications and to make all necessary adjustments without additional cost to the Government.

SP-32. GOVERNMENT FIELD OFFICE. The Contractor shall provide a trailer for the Government field office similar and approved equal to Crown Model CR-30 (8' x 26'). The trailer shall include as a minimum two (2) overhead shelves, a double desk with pedestal, a 36" x 92" plan table, a plan rack, one moveable office desk, chairs for all desks, an enclosed toilet, and one partition. Doors shall be provided with cylinder locks and six (6) keys shall be furnished to the Government. The Contractor shall provide all services and supplies in connection with maintaining the trailer including cleaning, janitorial services, heating, lighting, water supply and sanitary services. The trailer will be located by the Contractor where directed. No separate payment will be made for the trailer and all costs shall be included in the items comprising the bid schedule. The trailer, after completion of the work, will become the property of the Contractor and be removed from the site.

SP-33. OMITTED.

SP-34. 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.

SP-35. DEFINITION OF "SITE OF THE WORK" FOR PURPOSES OF THE PROVISIONS OF THE DAVIS-BACON ACT, 40 U.S.C. 276a. The Comptroller General of the United States, in Decision B-148076 dated 26 July 1963, issued an opinion which conflicts with the long established ruling of the Solicitor of Labor defining the "site of the work".

Pending resolution of this difference the Department of Defense position is to follow the ruling of the Solicitor of Labor that the "site of the work" refers to the site of the contract work and includes not only the limited physical area where the structure or improvement is erected or built but also certain other operations set up exclusively to furnish materials for the construction project. Accordingly, wages paid in connection with such operations shall be not less than the minimum wage rates, with appropriate adjustment for overtime hours, established by the Secretary of Labor and included in the contract. The Contractor must maintain complete payroll records for all employees working at these temporary facilities and must submit to the Contracting Officer weekly payrolls for said employees.

The tests to be used in determining whether such a facility is within the coverage of the Act are basically:

(1) whether the facility is temporary established virtually exclusively to meet the needs of the contract, or a series of contracts on an integrated project, rather than to serve the public generally; (2) whether the facility is located in the general area of the construction; and (3) whether the facility is integrated with the construction needs.

Any failure of the Contractor to comply with the above may, pursuant to Clauses 36 and 38 of the GENERAL PROVISIONS, result in the Government terminating the contract or withholding from the contract amount funds necessary to assure proper wage payment.

SP-36 & SP-37. OMITTED.

SP-38. CONTRACTOR QUALITY CONTROL. The Contractor shall provide and maintain an effective Quality Control Program that complies with Clause 40 of the GENERAL PROVISIONS entitled "Contractor Inspection System."

a. 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 ensure conformance to applicable specifications and drawings with respect to the materials, workmanship, construction, finish, functional performance, and identification. The quality control system shall be adequate to cover all construction operations, shall be keyed to the proposed construction sequence and shall include coordinating the work of the various trades. This control will be established for all construction except where the Technical Provisions of the contract provide for specific Government control by inspections, tests, or other means. The Contractor's quality control system shall provide continuing inspection of all work performed and submission to the Resident Engineer by the Contractor's Quality Control Representative of daily reports of inspection in duplicate signed by the person making the inspection.

b. Typical sample reporting forms for the various required operations, complete with typical types of required entries, are furnished as part of these specifications. The Contractor shall prepare similar forms in comparable detail for these and all other phases of the work as called for in each section of the Technical

Provisions. The Contractor's Quality Control Inspection report forms shall be submitted for and receive approval by the Government prior to the start of each phase of the work. Approved Quality Control inspection report forms will be furnished by the Contractor for use by each of the various trade supervisors (foremen), who will submit a completed form for each day's work. The Contractor is responsible for preparing and obtaining Government approval of forms, furnishing blank forms to supervisors and submitting completed forms daily to the Contracting Officer for all phases of work including those phases performed by subcontract.

c.(1) The Contractor's job supervisory staff may be used for quality control. The Contractor shall designate one of his staff as the Quality Control Representative. This man shall be responsible for the administration and performance of the Contractor's Quality Control Program. This responsibility includes the daily collecting of the individual trade supervisor's reports and monitoring these reports by taking appropriate follow-up action when required. The Quality Control Representative's report shall be submitted in a format similar to and with no less detail than that on the sample form which is furnished as part of this specification and is attached at the end of the Special Provisions. The various trade supervisor's reports shall be attached to and submitted with the Quality Control Representative's report. If, in the opinion of the Contracting Officer, work conditions will not permit the designated staff member to perform satisfactorily the quality control function the Contractor shall designate another member of his staff as the Quality Control Representative subject to the approval of the Contracting Officer.

(2) For items of work requiring a highly skilled and experienced type of inspection, the Contractor shall furnish the services of a competent erection and/or testing engineer to supervise and be responsible for the installation and testing of the equipment. These items of work and services of each engineer shall be as specified in the applicable Technical Provisions of the contract and the cost of same shall be included in the applicable contract bid items.

d.(1) Quality Control reports shall include, but not be limited to, information of the following type:

- (a) Quality of materials and workmanship
- (b) Statements similar to the following on the report for the day each new phase of construction is started:

1. Materials, equipment and shop drawings have been approved.

2. Results of required materials tests have been obtained and are satisfactory.

3. Required certificates of compliance have been obtained.

(c) Indications that the effect one phase of the work will have on another has been considered.

(2) Quality Control requires follow-up inspections daily for the duration of each type of construction. Consequently, daily reports should indicate not only that the work was started properly but that materials and workmanship continue to meet contract requirements.

(3) When trade supervisors (foremen) are capable of accomplishing only a check list type of inspection reporting, their reports must be supplemented by more detail in the Quality Control Representative's report.

e. 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 interrelationship of Contractor and Government inspection.

f. The Contractor shall furnish to the Government within fifteen (15) days after receipt of the Notice to Proceed a quality control plan which shall include the procedures, instructions, and forms 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 subcontractor's work.

(5) Test methods including, a specified, name of qualified testing laboratory to be used.

(6) Method of documenting quality control operation, inspection, and testing.

(7) A copy of a letter of direction to the Contractor's Quality Control Representative outlining his duties and responsibilities, and signed by a responsible officer of the firm.

(8) Accident prevention and safety practices.

g. Unless specifically authorized by the Contracting Officer, no construction will be started until the Contractor's quality control plan is approved.

h. If recurring deficiencies in an item or items being inspected indicate that the quality control system is not adequate, such corrective actions will be taken as directed by the Contracting Officer.

SP-39. NONCOMPLIANCE WITH QUALITY CONTROL PROVISIONS. Failure of Contractor to comply with requirements of Paragraph SP-38 shall be grounds for determination by the Contracting Officer that the Contractor is not prosecuting the work as required by the specifications. Approval of progress payment estimates will be withheld until such time as the Contractor complies with the provisions of said paragraph and an amount will be deducted from the contract price equal to the value of the services not furnished.

SP-40. SHOP DRAWINGS AND MATERIALS SUBMITTAL CONTROL DOCUMENT. Within 15 Days after receipt of notice to proceed, the Contractor shall submit to the Contracting Officer, in duplicate, submittal control document (ENG Form 4288) listing all submittal items. For example, those items listed will include shop drawings, manufacturer's literature, certificates of compliance, material samples, and guarantees. The scheduled need dates must be recorded on the document for each item for control purposes. In preparing the document adequate time (minimum of 15 days or more) will be allowed for review and approval and possible resubmittal. Scheduling shall be coordinated with the approved progress schedule. The Contracting Officer will supply ENG Forms 4288 to the Contractor to include the above information. The schedule shall not relieve the Contractor of his obligation to comply with all the specification requirements for the items on the schedule. The Contractor shall review the listing at least every 30 days and take appropriate action to maintain an effective system. Payment will not be made for any material or equipment which does not comply with contract requirements.

SP-41. OMITTED.

SP-42. DAMAGE TO WORK a. The responsibility for damage to any part of work to be performed under this contract shall be as set forth in Clause 12 of the GENERAL PROVISIONS entitled "Permits and Responsibilities." However, if the cofferdam(s) is constructed in accordance with plans and progress schedules approved by the Contracting Officer, but is overtopped by flood and such flood causes damage to the cofferdam or if any part of the permanent work is damaged by flood, earthquake, hurricane or tornado, which damage is not due to the failure of the Contractor to take reasonable precaution or to exercise sound engineering and construction practices in the conduct of the work, the Contractor will make the repairs ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices 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 damaged work, an equitable adjustment pursuant to Clause 3, Changes, of the GENERAL PROVISIONS, will be made as full compensation therefor.

b. The Contractor may, subject to approval of the Contracting Officer, or the Contracting Officer may order the Contractor to, flood or breach the cofferdam during a rise prior to, and in anticipation of, natural flooding due to overtopping. Such flooding or breach will be considered the same as though the cofferdam, if constructed in accordance with plans and progress schedules approved by the Contracting Officer, had been overtopped, in which event an equitable adjustment will be made for damages to the cofferdam and/or any part of the permanent work, as provided in a above.

SP-43. QUANTITY SURVEYS. a. The Contractor shall make such surveys and computations as are necessary to determine the quantities of work performed or placed during each period for which a progress payment is to be made. The Contractor shall also make original and final surveys. The Government will make such computations as are necessary to determine the quantities of work performed or finally in place. Unless waived by the Contracting Officer in each specific case, quantity surveys made by the Contractor shall be made under the direction of a representative of the Contracting Officer.

b. All original field notes, computations and other records of the Contractor for the purposes of layout, original, progress and final surveys shall be recorded in duplicating field books, the original pages of which shall be furnished promptly in ring binders to the representative of the Contracting Officer at the site of the work and shall be used by the Contracting Officer to the extent necessary in determining the proper amounts of progress and final payments.

SP-44 thru SP-46. OMITTED.

SP-47. BRAND NAMES. If items called for by this specification have been identified by a "brand name or equal" description, such identification is intended to be descriptive, but not restrictive, and is to indicate the quality and characteristics of products that will be satisfactory.

SP-48. OMITTED.

SP-49. PROTECTION OF EXISTING STRUCTURES AND UTILITIES. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, water mains, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the contract drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by the Contractor at his expense.

U. S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION

REQUEST FOR DETERMINATION
AND RESPONSE TO REQUEST

(Under certain conditions and Related Statutes)

FOR DEPARTMENT
OF LABOR USE

Response To Request

1. Use area determination issued for this area

2. The attached decision noted below is applicable to this project

Decision Number

79-NH-36

Date of Decision

7-10-79

Expires

11-6-79

Supersedes Decision Number

Approved

[Signature]

Director
Division of Construction
Wage Determinations
and Hour Division

Requesting Officer (Print name and signature)

[Signature]
STANLEY W. KULAK, Labor Relations Officer

Department, Agency, or Bureau

Dept of the Army, CoE, NED (Engr)

Phone Number
FIS-839-7249

617 894-2400X249

Date of Request

18 May 1979

Est. Advertising Date

28 June 1979

Est. Bid Opening Date

24 July 1979

Prior Decision
Number (if any)

None

Est. \$ Value of Contract
 Under 1/2 Mil. 1 to 5 Mil.
 1/2 to 1 Mil. Over 5 Mil.

Type of Work
 Bldg. Highway
 Resid. Heavy

Location of Project (city or other description)

LANCASTER

County

COOS

State

NEW HAMPSHIRE

Address to which wage determination should be mailed. Must be complete and include ZIP Code. (Print or type)

Department of the Army
Corps of Engineers
New England Division
424 Trapelo Rd
Waltham, MA 02154

Wage Survey by Agency Attached

YES NO

Wage Survey by Agency In Progress

YES NO

Description of Work (Be specific) (Print or type)

CONSTRUCTION OF LOCAL PROTECTION PROJECT - ICE
IMPOUNDMENT WEIR. Work involves: earth filled dike,
stone embankment, weir of earth & stone embankment, cut-
off sheet steel piling and reinforced concrete sluiceways,
excavation, topsoiling & seeding

(THIS REPLACES FORMS DB-11 & DB-11a)

CHECK OR LIST CRAFTS NEEDED
(Attach continuation sheet if needed)

- Asbestos workers
- Boilermakers
- Bricklayers
- Carpenters
- Cement masons
- Electricians
- Glaziers
- Ironworkers
- Laborers, (specify classes)
- Jackhammer Oper
- Chainsaw Oper
- Pipelayers

- Lathers
- Marble & tile setters, terra
workers
- Painters
- Piledrivermen
- Plasterers
- Plumbers
- Roofers
- Sheet metal workers
- Soft floor layers
- Steamfitters
- Welders—rate for craft
- Truck drivers
- Power equipment operators
(specify types)
- Crane, Gradall
- FEL, Backhoe
- Bulldozer
- Compressor Oper

Other crafts

COOS COUNTY, NEW HAMPSHIRE

4-NH-2-D

HEAVY CONSTRUCTION

BRICKLAYERS, CEMENT MASONS

CARPENTERS

ELECTRICIANS:

Contracts over 300,000

Contracts 300,000 or less

IRONWORKERS, Structural

LABORERS:

Laborers & Pipelayers

Pneumatic Tool Operators,

Drivers, Pavement Breakers

Blasters & Powdermen

PAINTERS:

Brush

Spray

PLUMBERS AND STEAMFITTERS:

North of U.S. Route 2, to include

Berlin and Groveton

South of Route 2

SHEET METAL WORKERS

WELDERS - receive rate prescribed
for craft performing operation to
which welding is incidental.

FOOTNOTE:

a. 3% of gross earnings to SAMSI

Basic Hourly Rates	Fringe Benefits Payments			
	H & W	Pensions	Vacation	Education and/or Appr. Tr.
\$ 8.89	.80	.60		.02
7.95	.65	.50		.01
10.70	.70	3%+.50		.02
7.00	.70	3%+.50		.02
10.15	1.00	1.00		.02
6.67	.60	.80		.10
7.17	.60	.80		.10
7.42	.60	.80		.10
7.30	.25			
8.80	.25			
10.75	.73	.55		.02
10.75	.73	.55		.02
9.92	.60 ^a	.60		.02

4-NH-2-D

TRUCK DRIVERS

Two Axle Equipment

Three Axle Equipment including
low beds

Special earth hauling equipment
other than conventional type on
the road trucks and semitrailers
trailer dumps

Basic Hourly Rates	Fringe Benefits Payments			
	H & W	Pensions	Vacation	Education and/or Appr. Tr.
\$ 5.21	.55	.40		
5.44	.55	.40		
5.67	.55	.40		

POWER EQUIPMENT OPERATORS:

4-NH-2-D

	Basic Hourly Rates	Fringe Benefits Payments			
		H & W	Pensions	Vacation	Education and/or Appr. Tr.
Power shovels, cranes, trucks, cranes, derricks, pile drivers, trenching machines, mechanical hoist pavement breakers, cement concrete pavers, draglines, hoisting engines, three drum machines, pumpcrete machines, elevating graders, shovel dozers, (when used for digging or loading), front end loaders (when used digging or loading), mucking machines (when used as in shafts and tunnels), shaft hoists, steam engines, backhoes, gradalls and cableways	\$10.07	1.10	1.00		.03
Room length including jib: Over 150 feet - additional \$.25 per hour Over 185 feet - additional \$.50 per hour Over 220 feet - additional \$.75 per hour Over 275 feet - additional \$ 1.00 per hour					
Master mechanics	10.87	1.10	1.00		.03
Graders, scrapers, more than 21 yds., struck and tandem scrapers	9.95	1.10	1.00		.03
Bulldozers, scrapers, 21 yds., struck or less, grout pumps, portable steam boilers, rollers, spreaders, asphalt pavers, locomotive and tampers, self-propelled or tractor drawn	9.95	1.10	1.00		.03
Mechanics, maintenance	9.95	1.10	1.00		.03
Pumps (1-3 grouped), compressors welding machine(s) (1-3 grouped) generators, lighting plants, heaters (power driven (1-5), siphons, pulsometers, concrete mixers, valves controlling permanent plant air or steam, conveyors, well point systems (operating and installing)	8.795	1.10	1.00		.03
Assistant Engineers (firemen)	9.41	1.10	1.00		.03
Oilers (other than truck, cranes and gradalls)	8.01	1.10	1.00		.03
Oilers on truck cranes and gradalls	8.09	1.10	1.00		.03

CONTRACTOR'S NAME
(Address)

DAILY CONSTRUCTION QUALITY CONTROL REPORT

Date 5 March 1974

Contract No: DACW33-73-C-0199

Description and Location of Work: As noted on attached sheets

WEATHER: (Clear) (P. Cloudy) (Cloudy); TEMPERATURE: 39° Min/ 61° Max; Rainfall 0 Inches

Contractor/Subcontractors and Area of Responsibility

- a. Federal Constr. Corp. - Excavation for and Placement of
- b. drainage canals; Placing concrete at Pumping
- c. Sta. No. 3 - Placing impervious & random fill
- d. for Dike Constr. - see attached reports
- e. Local Metal Products - Erection of struct. steel -
- f. Redi-Mix Concrete Co. - Concrete supplies
- 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.)

- A. Excavation for 72" drain - Excavation & placement of 48" drain
- placement of random & impervious fill - Dike Constr. Concrete
- placement of pumping Sta. No. 3
- E. Erection of struct. steel - Pumping Sta. No. 2
- F. Supplied by Redi-Mix Concrete

2. Results of Surveillance: (Include satisfactory work completed, or deficiencies with action to be taken. Refer to Spec. Section No. and particular Para. No.)

Local metal products was directed to touch up newly installed
steel - per Spec. Sect. 9-Para. 9-3.2 - Federal Constr. Corp.
was directed to re-compact area of dike fill - unsatisfactory
test.

3. Tests Required by Plans and or Specifications Performed and Results of Tests:

- a. Zinc Chromate Primer for struct. steel has been approved per
submittal # 009-003 - 12/12/73.
- b. Compaction tests by Corps of Engineers proved unsatisfactory -
Re-Compaction required.
- c. Concrete mix approved per transmittal No. 003-003
11/31/73 - Slump and Concrete Cylinders taken
- d. _____

*To be used as forwarding cover for quality control reports of various trades and clarification or enlargement of their reports.

4. Verbal Instructions Received: (List any instructions given by Government personnel on construction deficiencies, retesting required, etc., with action to be taken.)

Resident Engineer informed the undersigned that cold weather has been forecasted for the next few days. Concrete protection might be required.

5. Remarks: (Cover any conflicts in plans, specification, or instructions.)

Field painting of struct. steel to begin week of 3/11/74. The contract specs. were reviewed with the subcontractor's painting foreman to clarify particulars relative to the painting requirements.

6. Safety Inspection: (Report violations noted; corrective instructions given; and corrective actions taken.)

Men installing pipe in trench for 48" line, wet and without shoring.
Foreman requested to pump water out of trench 9 feet deep for 48" pipe line and to shore and brace the sides of the trench.
Foreman said he had no pump, so trench was filled up to face of pipe.

JOHN FORMAN, SAFETY
Contractor's 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.

FRED JOHNSON Q.C.R.
Contractor Quality Control Representative

FEDERAL CONSTRUCTION COMPANY, INC.

DAILY QUALITY CONTROL REPORT

Date 5 March 1974

Contract No. <u>DRAW 53-73-C-0199</u>	Project: <u>Shifting Dunes Local Protection Project Maine</u>	Item # <u>88, 89, 90</u>
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Description of work: EXCAVATION & FILL
 Location: Excavation - Sta. 8+00 to Sta. 12+50
Random fill - Sta. 6+50 to Sta. 8+00
Impervious fill - Sta. 8+00 to Sta. 9+00

Check One: On site
 Off site

Contractor: Prime Sub _____ Supplier _____
 (Name) (Name)

- Following Checked for (List)
- EXCAVATING TO REQUIRED LINE AND GRADE (Specify location and grade) Excavation - to elev. 98.50
Fill - Impervious - to elev. 105.00
 - PROPER STORAGE OF REUSABLE MATERIAL
 - PROPER DISPOSAL OF WASTE MATERIAL Unsuitable material to Spoil Pile
 - GRADING TO CORRECT LIMITS Etc. to elev. 98.50[±] Sta. 8+00 to 12+50
 - PROPER SHAPING OF SUBGRADE (Indicate area and elevation)
 - COMPACTION EQUIPMENT TO MEET SPECIFICATIONS D-7 Dozer - Sheepfoot Roller
 - MAXIMUM LAYER OF THICKNESS NOT EXCEEDED Random - 8" Impervious - 6"
 - UNIFORM APPEARANCE OF STONE PROTECTION (Specify thickness of stone protection and area of deviation from specifications)
 - NO FILL PLACED UNTIL APPROVED BY CONTRACTING OFFICER
 - SOFT AND YIELDING MATERIALS CORRECTED (Indicate Area & elevation) Unsuitable material removed from elev. 102.0 to elev. 98.5 between Sta. 9+00 and 9+45.

Items Inspected By:
Mike THOMAS Supt.
 Signature & Title

Approval is limited to one of the following:
 Check One: Project Superintendent
 Project Engineer
 Quality Control Representative

Items Approved By:
FRED JOHNSON QCR
 Signature & Title

SAMPLE
FEDERAL CONSTRUCTION COMPANY, INC.

DAILY QUALITY CONTROL REPORT

Date 5 March 1974

Contract No. <u>DRAW 33-73-C-0199</u>	Project: <u>Shifting Banes Local Protection Project Maine</u>	Item # <u>34</u>
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Description of work: CONCRETE AND REINFORCING STEEL FORMING & PLACING On Site Off Site

Location: Pumping Sta. No. 3
Foundation

Contractor: Prime Sub Supplier Redi-Mix Concrete Co.
(Name) (Name)

Following Checked for (list)

- NO SEGREGATION IN PLACING (Method of Placement) 8 cy Transit Mixed
- VERTICAL DROPS NOT TO EXCEED 5 FT. Additional Concrete Chute used
- FOUNDATION FREE OF ICE AND WATER (Dewatering Method) 1-3" Submersible Pump
- FOUNDATION CLEAN BEFORE PLACING All foreign material removed, wood, etc.
- CONCRETE IN 1.5 FT. LIFTS 3 lifts of 1.5' ea. Placed
- VIBRATORS IN USE (Specify type of vibrator) 5" spud at 6000 cycles/min
- CONSTRUCTION JOINTS CLEAN (Specify method of cleaning) cleaned with water pressure
- PROPER TYPE OF FINISH Screed finish on foundation concrete. Joint
- CURING DONE PROPERLY (Specify method of curing) 7-Day Moist Curing + 50° F
- FORMS & GRADES CHECKED (Indicate location within structure) to elev. 105.60 Concrete placed
- FORMS OILED approx. 2 hrs. prior to placement of concrete
- PROPER CLEARANCE OVER EMBEDDED ITEMS 4" of concrete - in contact w/ ground
- LAPPING & SPLICING PERFORMED PROPERLY (Specify min. Re-Bar Lap) 24 Bar dia. 24" Lap #8 Bar

Items Inspected By:
FRANK Blake, Supt.
Signature & Title

Items Approved By:
Fred Johnson, P.E.
Signature & Title

Approval is limited to one of the following:

- Check One: Project Superintendent
- Project Engineer
- Quality Control Representative

DAILY QUALITY CONTROL REPORT

Date 5 March 1974

Contract No. <u>DRCW 33-73-C-0199</u>	Project: <u>Shifting Dunes Local Protection Project</u>	Item # <u>109</u>
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Description of work: ERECTION OF STRUCTURAL STEEL Check One: On Site Off Site

Location: Pumping Station No. 2

Contractor: Prime Sub Lace Metal Co. Supplier _____
(Name) (Name)

Following Checked for (list) See Supplier Material Register
 DIMENSIONAL TOLERANCE (Specify tolerances) for Beams & Col. tolerances
 WELDING PROCEDURES & QUALITY (Specify weld procedures & Name of Welder) See

Remarks

PAINT PREPARATION (Specify spec. section & paint system and coat-number or film thickness.)
Contractor field prepared spots and field primed with approved Zinc Chromate Primer - 1 coat.

Remarks: Bolted connections throughout - Bolts checked for min. torque - Col. anchor bolts field - 1800^{ft#} Specs. 1750^{ft#} (Clip & Connections field 1000^{ft#} Para. 9-7.2 900^{ft#} Measurements taken from Col. line 1A - Sect. B

Items Inspected By:
Fred Nesville, Supt.
Signature & Title

Approval is limited to one of the following:
 Check One: Project Superintendent
 Project Engineer
 Quality Control Representative

Items Approved By:
Fred Nesville, Supt.
Signature & Title

DIVISION 2 - SITE WORK

SECTION 2A - SUBSURFACE INVESTIGATIONS

1. GENERAL.

1.1 Investigations. The physical conditions indicated on the drawings and in the specifications are the result of site investigations by surveys and core borings. The locations at the site where subsurface investigations were performed are shown on the contract drawings. Inspectors field logs are appended to this section. The subsurface data included in these specifications supersedes any previous presentations of same.

1.2 Examination of Samples. The explorations and surveys were performed by the Government. Materials obtained from the subsurface explorations are available for examination at the Foundations and Materials Branch, U.S. Army Engineer Division, New England, 424 Trapelo Road, Waltham, MA., 02154, Telephone No. 617-894-2400, Ext. 367. Two days advance notice is required by F&M Branch so that samples can be removed from storage and set up for examination.

1.3 Classification of Soil Samples. The classification of soil samples is in accordance with Drawing No. NEDGL 61-5C, "Unified Soil Classification" attached at the end of this section.

1.4 Interpretation. Subsurface investigation data is provided only for information and the convenience of the Contractor. The data shown on the boring logs is for the specific locations indicated only and no assurance is given that these conditions are representative of conditions between borings or areas adjacent thereto.

1.4.1 The responsibility lies with the Contractor to interpret excavation conditions that may affect his work. It is expressly understood that the Government will not be responsible for any interpretation or conclusion drawn from the subsurface information furnished the Contractor.

NEDGL 61-50

UNIFIED SOIL CLASSIFICATION
(Including Identification and Description)

Major Divisions	Group Symbols	Typical Names	Field Identification Procedures (Excluding particles larger than 3 in. and bonding fractions on estimated weight)	Laboratory Classification Criteria			
Coarse-grained Soils More than half of material is larger than the 200 sieve size (For visual classification, the 1/4-in. sieve may be used as equivalent to the No. 4 sieve size) (More than half of coarse fraction is smaller than the 200 sieve size)	Gravels (L, 1/16 in. or no fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.	$C_u = \frac{D_{60}}{D_{10}}$ Greater than 4 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for GW			
		GP	Poorly graded gravels, or gravel-sand mixtures, little or no fines.		Alongberg limits below "A" line with PI less than 6 Above "A" line with PI between 6 and 7 are borderline cases requiring use of dual symbols		
	Sands with Fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.	Nonplastic fines or fines with low plasticity (for identification procedures see ML below).	$C_u = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for SW		
		GC	Clayey gravels, gravel-sand-clay mixtures.	Plastic fines (for identification procedures see CL below).		Alongberg limits above "A" line with PI greater than 7 Limits getting in between with PI between 4 and 7 are borderline cases requiring use of dual symbols	
	Clean Sands (Little or no sand)	SW	Well-graded sands, gravelly sands, little or no fines.	Wide range in grain size and substantial amounts of all intermediate particle sizes.	$C_u = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for SW		
		SP	Poorly graded sands or gravelly sands, little or no fines.	Predominantly one size or a range of sizes with some intermediate sizes missing.		Alongberg limits above "A" line or PI less than 4 Alongberg limits above "A" line with PI greater than 7	
	Sands with Fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures.	Nonplastic fines or fines with low plasticity (for identification procedures see ML below).	Less than 5% More than 5% to 12% (Determine percentages of gravel and sand from grain-size curve. Depending on percentage of fines/fraction smaller than No. 200 sieve, dual water-pneumated tests are described as follows.)		
		SC	Clayey sands, sand-clay mixtures.	Plastic fines (for identification procedures see CL below).		Alongberg limits above "A" line with PI greater than 7 Limits getting in between with PI between 4 and 7 are borderline cases requiring use of dual symbols	
	Fine-grained Soils More than half of material is smaller than No. 200 sieve size (The No. 200 sieve size is about the smallest)	Silts and Clays Liquid limit is less than 50		Identification Procedures on Fraction Smaller than No. 40 Sieve Size Dry Strength (Crushing characteristics) Disintegrability (Reaction to shaking) Toughness (Consistency near PL)			<p align="center">PLASTICITY CHART For laboratory classification of fine-grained soils</p>
			ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clays, silts with slight plasticity.	None to slight	Quick to slow	
CL			Inorganic clays of low to medium plasticity, granular clays, sandy clays, silty clays, lean clays.	Medium to high	None to very slow	Medium	
OL			Organic silts and organic silty clays of low plasticity.	Slight to medium	Slow	Slight	
MH			Organic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	Slight to medium	Slow to none	Slight to medium	
CH			Inorganic clays of high plasticity, fat clays.	High to very high	None	High	
OH			Organic clays of medium to high plasticity, organic silts.	Medium to high	None to very slow	Slight to medium	
Highly Organic Soils	PT	Peat and other highly organic soils.	Readily identified by color, odor, spongy feel and frequently by fibrous texture.				

(1) **Boundary classifications:** Soils possessing characteristics of two groups are designated by combinations of group symbols. For example GW-GC, well-graded gravel-sand mixtures with clay binder.
 (2) All sieve sizes on this chart are U. S. standard.

NOTE
 For further information on Unified Soil Classification, refer to "The Unified Soil Classification System," Volumes 1 and 2, Technical Memorandum No. 2-357, published by U. S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. File copies may be examined at Headquarters, U. S. Army Engineer Division, New England, 424 Trapelo Road, Waltham, Massachusetts, Building 161, Foundation and Materials Branch.

FIELD LOG OF TEST BORING

Elevation Top of Boring 281.7 M.S.L. Hammer Wt. 10" Boring Started 12/26/18
 Total Overburden Drilled 27.3 Feet Hammer Drop 350
 Elevation Top of Rock Water table M.S.L. Casing Left above Boring Completed 12/27/18
 Total Rock Drilled _____ Feet Subsurface Water Data 3 Page 3
 Elevation Bottom of Boring _____ M.S.L. Obs. Well None
 Total Depth of Boring 27.3 Feet Drilled By C. E. Finnerty
 Core Recovered _____ % No. Boxes _____ Mfg. Des. Drill OP-5
 Core Recovered _____ Ft. _____ Diam. _____ In. Inspected By: C. Lynch
 Soil Samples _____ In. Diam. _____ No. Classification By: _____
 Soil Samples 2 1/2" In. Diam. 5 No. 16 Classification By: Anthony J. Zappala

DEPTH	CORE/SAMPLE			BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	IN.	NO.	DEPTH RANGE			
1.2	5-1	3 1/2	00	1	Rough 2 1/2" ID x 5.0' soil sample from	LT Brown silty sand (SM) upper wood
			12			
2.5	5-2	2 1/2	12	40	from 0.0 to 5.0' & took sample	dk Brown silty sand (SM) types wood & large cobbles
			25			
4.1	5-3	2 1/2	25	306	Note remained open & clean to 3.0'	grey silty sandy gravel (GM)
			10			
5.0	5-4	2 1/2	10	62		
			11			
5.0	5-5	2 1/2	11	61	Rough 2 1/2" ID x 5.0' liquid sample from	Brown to grey silty gravelly sand (SM)
			12			
10.0	5-6	2 1/2	12	145	from 5.0 to 10.0' & took sample	Till like
			10.0			
10.0	5-6	2 1/2	10.0	162	Jared with 0.0 to 10.0'	
			10.0			

GENERAL REMARKS: Boring located 120' off the edge of river side inland the edge of the Asseal River. 5.0' west of Brook in large Boulder area.

DEPTH	CORE/SAMPLE		BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE			
12.0	J11 20/2 2"	2"	16.0 10 171	Drove 2" ID x 5.0 solid sample from from 10.0 to 12.0 + 250 blows no further penetration	Bluish grey gravelly silty sand (sh) till in place
15.0	J5-A wash 2"	2"	12.0 To wash 150 Chop	washed & chopped w/ 2" wash spoon from 12.0 to 15.0 settled NTC over spoon to 15.0 -	Blue grey sandy wash + small sample from end of wash spoon same material as 10-12'
20.0	J10 20/2 2"	2"	15.0 33 33 63 124	Drove 2" ID x 5.0 solid sample spoon from 15.0 to 20.0 settled NTC over spoon to 20.0 & took sample	Same material or slightly gravelly
23.4	J12 20/2 2"	2"	20.0 30 123 104	Drove 2" ID x 5.0 S.S. spoon from 20.0 to 21.2 + 100 blows No further penetration took sample -	
24.2	J14 None 2"	2"	23.4 23.2 24.0	washed & chopped 21.2 to 24.3 unable to penetrate below 24.3	grey silty sandy gravel (sh) 11/11 wash greyish white
24.3	Bottom of Exploration @ 24.3 depth sufficient				

FIELD LOG OF TEST BORING

Elevation Top of Boring 891.7 M.S.L. Hammer Wt. 350 Boring Started 10/21/78
Total Overburden Drilled 25.0 Feet Hammer Drop 18
Elevation Top of Rock None M.S.L. Casing Left None Boring Completed 11/1/78
Total Rock Drilled None Feet Subsurface Water Data 3 Page 3
Elevation Bottom of Boring 856 M.S.L. Obs. Well None
Total Depth of Boring 25.0 Feet Drilled By C. E. Linnerty
Core Recovered _____ % No. Boxes _____ Mfg. Des. Drill CP-5
Core Recovered _____ Ft. _____ Diam. _____ In. Inspected By C. Lynch
Soil Samples 2 1/2 in. Diam. 5 No. Classification By _____
Soil Samples 2 1/4 in. Diam. 9 No. Classification By Anthony J. Goffe

DEPTH	CORE/SAMPLE		BLOWS P.S.F. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE			
			0.0	dig w/ pick Crow Bar 2' - 2.5' from 0.5 to 2.5'	Rocks & Boulders
2.5			1	Drive 2 1/2" ID x 5.0 solid sample spoon	
	J-1	2 1/2"	22	From 2.5 to 5.0	Brown silty sandy gravel (GM) wet
3.9			39	Hole open & clean to 5.0	
	J-2	2 1/2"	29		grey silty gravelly
5.0			50	Drive 2 1/2" ID x 5.0 solid sample spoon	Sand (SM) till like moist
	J-3	2 1/2"	70	From 5.0 to 9.4	
	J-4	2 1/2"	88	Jetted N x C over spoon to 9.4 & took sample	
8.8			88	washed & shipped 9.4 to 10.0	grey silty sandy gravel (GM) till
10.0			100		grey sandy wash

GENERAL REMARKS: Boring Located in front
of old concrete Abutment on large Boulder
Apex Extending into River (to side)

DEPTH	CORE/SAMPLE		BLOWS PER FT.	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS	
	NO.	SIZE				DEPTH RANGE
150	5-8 2"	2"	100	87	Drove 2" ID core Solid Sample upon 10.0 to 15.0 + 100 blows bouncing bit over - Jetter NX to from 9.4 to 15.0 took sample	gray silty sandy gravelly w/ large cobbles
			105	88		
			110	163		
			115	201		
150	5-9 2"	2"	150	Ran	drilled thru cobbles cob & boulders from 15.0 to 18.0 using NX bit off #49 R53 5.0 sec. bit - Drill time 22 min drill only grey & sandy in cob. Non 3.0 Rec 13 4370	Cobbles & Boulders 5-7 wash from bit cob - grains Gravelly grey silty sand (sm)
			180	437		
200	5-10 2"	2"	180	16	Drove 2" ID x 5.0 Solid Sample upon 18.0 to 20.0. Series NX to over spoon to 16.5 took sample	gray gravelly silty sand (sm)
			200	89		
			200	47		
250	5-11 1 1/2"	1 1/2"	200	64	Csg sprung @ 16.5' Reduced Hole 0.0 to 20.0 to BXTC Drove 1 1/2" ID x 5.0 Solid Sample upon from 20.0 to 25.0 & took sample	Depth Sufficient Bottom of Exploration @ 250'
			210	93		
			220	94		
250			250	95		

FIELD LOG OF TEST BORING

Co-ordinates: N _____ E _____

Elevation Top of Boring 863.7 M.S.L. Hammer Wt. 140 Boring Started 1/3/78
 Total Overburden Drilled 20.0 Feet Hammer Drop 15
 Elevation Top of Rock Unknown M.S.L. Casing Left None Boring Completed 1/6/78
 Total Rock Drilled None Feet Subsurface Water Data 3 Page 3
 Elevation Bottom of Boring 863.7 M.S.L. Obs. Well None
 Total Depth of Boring 20.0 Feet Drilled By C. F. Linnerty
 Core Recovered _____ % No. Boxes _____ Mfg. Des. Drill DP-5
 Core Recovered _____ Ft. _____ Diam. _____ in. Inspected By C. Linnerty
 Soil Samples 2 in. Diam. 3 No. Classification By _____
 Soil Samples 7 in. Diam. 13 No. Classification By Anthony J. Zappala

DEPTH	CORE/SAMPLE		BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO	SIZE			
0.0					
10.0				Large w/ coarse sand Estimated Boulders Size: 0.0-2.0	Rocks & Boulders
2.2					
2.2	1	2 1/2	5	Draw 2 1/2" ID x 5.0" Solid Sample Spoon from 2.2 to 5.0 & take Sample. Hole open & clear to 5.0	Brown Silty Sandy gravel (Gm) in mat
4.1					
4.1	2	2 1/2	39		grey gravelly silty sand (Gm) 2 1/2" dia
5.0					
5.0			15	Draw 2" ID x 5.0" Solid Sample Spoon from 5.0 to 10.0	
10.0			82	rotted 1 1/2" over Spoon to 10.0 is take sample	Till in Plug 5.0 to 10.0
15.0			145		
19.6			196		
20.0			200		

GENERAL REMARKS: Boring located at beginning
of old railway between two large piles
of Boulders.

DEPTH	CORE/SAMPLE			BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
12.0	5-8 2012	2"	10.0	85	Drove 2" ID X 5.0 SS. Spoon from 10.0 to 12.0 + 100 blows bouncing Refusal	Same mtrl Till in Plug
	5-8R		2.0	189		
15.0	5-9	2"	2.0	150	washed & chopped w/ 2" wash spoon thru cobbles & till 12.0 to 15.0. Jetter N x recover spoon to 15.0 & rec. cobbles in wash spoon	grey sandy wash w/ cobbles then from wash spoon
	5-9R		15.0	150		
18.0	5-10 2012	2"	15.0	47	Drove 2" ID X 5.0 SS Spoon from 15.0 to 18.0 + 100 blows Bouncing Refusal - Took Sample -	grey generally Silty Sand w/ Till in Plug - w/ numerous large cobbles -
	5-10R		18.0	202		
20.0	5-11 2012	2"	18.0	wsb	washed & chopped thru cobbles & till w/ 2" wash spoon from 18.0 to 20.0. 3 jars of mtrl recovered from wash spoon	depth sufficient
	5-11R		20.0	chop		
	Bottom of Exploration @ 20.0					

DIVISION 2 - SITE WORK

SECTION 2B - PREPARATION OF SITE.

1. GENERAL
2. CLEARING
3. GRUBBING
4. TELEPHONE POLE RELOCATION
5. REMOVAL OF CONCRETE ABUTMENT
6. PAYMENT

1. GENERAL.

1.1 Scope.

1.1.1 Clearing and Grubbing. The work covered by this section consists of furnishing all labor, equipment and materials and performing all work required to clear and grub areas within the limits specified herein as required for construction of the various project features and to clear other tree areas as directed or otherwise approved by the Contracting Officer. The work also includes the disposal of all cleared and grubbed materials and the filling of all grubbing holes, as specified herein.

1.1.2 Access to Work Areas. All excavation, fill, grading, or other work and temporary facilities necessary to provide or maintain access to, or drainage of, any area being used in connection with the work will be considered incidental to site preparation.

1.1.3 Telephone Pole Relocation. This section also covers the coordination of the relocation of the existing telephone pole on the right bank of the Israel River.

1.1.4 Removal of Concrete Abutment. This section covers the removal and disposal of the concrete abutment located on the right bank of the Israel River.

1.2 Locations to be Cleared and Grubbed.

1.2.1 Locations to be cleared and grubbed include all areas at the site of all new permanent works, graded areas, areas of excavations required for construction of project items, and stockpile areas, together with a 10-foot strip measured horizontally beyond and/or contiguous thereto or to the limits of the work areas, whichever is the least distance, for the foundation areas for structures and for all other fill areas.

1.3 Disposition of Materials.

1.3.1 Burning of materials and debris from clearing or other operations will not be permitted.

1.3.2 Title to Materials. Title to all debris and other materials specified in this section to be removed from the site and disposed of is vested in the Contractor upon receipt of notice to proceed.

1.3.3 Disposal. Cleared and grubbed materials, debris and other items specified to be removed from the site may be placed in an approved local land fill location in accordance with local, State and Federal regulations. However, the Contractor may at his option salvage for his own use any materials or other items specified to be removed from the site and not required in the new work.

2. CLEARING. The clearing operation shall consist of the complete removal of all obstructions, rubbish and other debris above the ground surface. Clearing includes the satisfactory felling, trimming and disposal of all trees and vegetation (except grass) together with down timber, snags, brush, and rubbish and other objectionable material occurring within the limits of the areas to be cleared. Trees in areas to be grubbed may be cut off at any height above the ground surface convenient for grubbing operation. Where grubbing is not required, trees and brush shall be removed flush with or below the adjacent ground surface. Clearing shall be done to the minimum extent necessary for construction operations. Trees outside a construction area shall have their branches trimmed as directed. Limbs and branches to be trimmed shall be neatly cut close to the hole of the tree or main branches. Cuts more than 1-1/2 inches in diameter thus made shall be painted with an approved tree wound paint. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing and construction operations by the erection of barriers or by such other means as the circumstances require.

2.1 Clearing for the Contractors Convenience. Clearing will not be required outside the limits specified below; however, upon approval of the Contracting Officer, minor selected additional clearing for the Contractor's convenience will be permitted within the limits of rights-of-way indicated on the contract drawings. Within these areas of additional clearing, removal of trees over 3 inches in diameter measured 6 inches above ground, shall only be as directed in writing by the Contracting Officer. Any trees damaged or removed, other than as specified herein, shall be replaced at the Contractor's expense. It is the intent of these specifications that the Contractor in performing clearing, as permitted for his convenience, shall exercise the greatest

care that no clearing other than that absolutely required to accommodate Contractor operations shall be performed in order to preserve to the maximum extent, consistent with good construction methods, the maximum screening and aesthetic benefits to be obtained from preserving existing lines and groups of trees. Clearing outside of the rights-of-way shown on the drawings will not be permitted.

3. GRUBBING. Grubbing shall consist of the below ground removal and disposal of all stumps, roots larger than 1-1/2 inches in diameter, matted roots and buried logs. All top and lateral roots over 1-1/2 inches in diameter shall be removed to a depth of 1-1/2 feet below the stripping line in areas to be stripped and to a depth of 1-foot below the ground surface in grubbing areas not to be stripped. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surfaces of the ground unless otherwise indicated or directed.

4. TELEPHONE POLE RELOCATION. The existing telephone pole and above and below ground cable located on the right bank of the Israel River shall be relocated by the New England Telephone Company to a point outside of the permanent work, as shown on the contract drawings. The Contractor shall coordinate his work and make all arrangements with the New England Telephone Company for the relocation. The telephone company shall be given a minimum of 30 days notice on the work required. All underground cable and any ducts shall be removed from the area of the dike and to a minimum distance of 5-feet beyond the landside toe. All telephone company and other costs in connection with the relocation shall be paid by the Contractor. Arrangements for the relocation may be made with Mr. Wayne Marshall, Tel. (603) 788-4797 or (603) 524-9850, New England Telephone Company, Bission Avenue, Laconia, New Hampshire.

5. REMOVAL OF CONCRETE ABUTMENT. The concrete abutment located on the right bank of the Israel River shall be removed to the extent necessary to complete the permanent work as shown on the contract drawings. Concrete materials removed shall become the property of the Contractor and shall be removed from the project site.

6. PAYMENT. All costs in connection with clearing, and grubbing operations, the telephone pole relocation and the removal and disposal of the concrete abutment from the river bank, as specified in this section, shall be included in the contract lump sum price for Item No. 1, "Preparation of Site."

DIVISION 2 - SITE WORK

SECTION 2C - CONTROL AND DIVERSION OF RIVER

- | | |
|--|----------------------------|
| 1. SCOPE | 6. STAGED DIVERSION SCHEME |
| 2. GENERAL | 7. RESPONSIBILITY |
| 3. SUBMITTALS BY THE CONTRACTOR | 8. MEASUREMENT AND PAYMENT |
| 4. TIME PERIOD OF CONSTRUCTION | |
| 5. EMERGENCY BREACHING AND REMOVAL OF COFFERDAMS | |

1. SCOPE. The work covered in this section consists of furnishing all plant, labor and materials and performing all work in connection with the control and diversion of the Israel River. This consists of excavation for the diversion channel, constructing and removing temporary cofferdams, placing and removing temporary stone protection, installing and removing steel sheet piling and bracing and filling all excavation areas as required for the control and diversion of the river.

2. GENERAL. The contract drawings indicate schematically a means by which the Israel River flows can be controlled and diverted during construction. The Contractor may follow the procedure outlined or may develop his own, except as specified below. If the Contractor selects the scheme shown on the drawings, such scheme shall be designed in detail by a Registered Professional Engineer and shall meet the requirements shown on the contract drawings and specified in these specifications.

3. SUBMITTALS BY THE CONTRACTOR. If the Contractor elects to use the scheme shown on the contract drawings, he shall submit shop drawings indicating the details and time frame of the construction. Should the Contractor elect to develop his own plan, he shall engage the services of a Registered Professional Engineer experienced in this type of work to develop a plan for control of the river and submit the plan to the Contracting Officer for review 30 days in advance of work which requires control of the river. The Contractor's submittals shall be sufficiently detailed to show the manner of construction, type of material and size of components.

4. TIME PERIOD OF CONSTRUCTION. The Contractor shall schedule all construction, requiring control and diversion of the river, during the summer construction period, 1 June through October, which is the period of normally low river flows. During the winter and spring seasons, November through May, the river channel shall be free of all obstructions associated with the Contractor's diversion works and other construction operations.

5. EMERGENCY BREACHING AND REMOVAL OF COFFERDAMS. During all time periods, when diversion systems are in operation, the Contractor shall provide and maintain at the site suitable equipment for the breaching of cofferdams and removal of equipment for the passage of flood flows. The breaching and removal of cofferdams, in the event of potential flooding, shall be done only at the direction of, or with the approval of, the Contracting Officer.

6. STAGED DIVERSION SCHEME.

6.1 Stage I Diversion. The Stage I construction plan, shown on the contract drawings, provides for a trapezoidal diversion channel with a minimum bottom width of 30 feet and an upstream cofferdam to elevation 883 ft. msl. This plan will divert an estimated 20% chance summer season (June thru October) peak flow in the order of 1,200 cfs. An estimated 20% all season peak flow in the order of 4,000 cfs.

6.2 Stage II Diversion. During Stage II, flow through three completed sluiceways and one foot over the top of dam will produce a capacity of approximately 1,000 cfs with the upstream cofferdam to elevation 885 ft. msl (1 ft. above top of dam).

7. RESPONSIBILITY. The Government will be responsible for the repair, restoration or replacement of concrete, reinforcing steel, forms anchored in place, fills, and excavations within the excavation lines indicated, damaged by failure or overtopping of the temporary cofferdams or diversion channels constructed to the capacities and minimum elevations indicated in Paragraph 6. The Contractor will be responsible for any damage to items associated with his diversion works. See Paragraph SP-42. The Contractor shall be responsible for all damages resulting from the overtopping of temporary cofferdams and channels departing in quality, or discharge capacity provided for in Paragraph 6, unless the departure has otherwise been approved by the Contracting Officer.

8. MEASUREMENT AND PAYMENT. Separate measurement will not be made for the work covered in this section of these specifications. Payment for the work covered in this section shall constitute full compensation for all costs in connection with the design, construction, maintenance, and removal of cofferdams, all excavations outside the excavation lines for permanent structures, fills, flumes, sand bags, temporary stone protection, steel sheet piling (including sheeting left in place), dewatering of cofferdamed areas, repair or reconstruction of all temporary and permanent work damaged as the result of overtopping of cofferdams or lack of cofferdams, except as otherwise specified in paragraph SP-42 of the SPECIAL PROVISIONS, and for all other work and materials specifically for the control and diversion of water. Payment will be made at the contract lump sum price bid for Item No. 2, "Control and Diversion of River."

DIVISION 2 -- SITEWORK

SECTION 2D -- EXCAVATION

1. SCOPE
2. GENERAL
3. CONSTRUCTION, SHEETING, SHORING AND BRACING
4. TEMPORARY DRAINS, PUMPING AND DEWATERING
5. MEASUREMENT AND PAYMENT

1. SCOPE. The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, materials and appliances and of performing all operations in connection with all excavations in accordance with this section of the specifications and contract drawings. Removal of the concrete abutment on the right bank of the Israel River is covered in Section, PREPARATION OF SITE.

2. General. Excavation shall consist of the removal and disposal of all material of any description from within the lines, grades, slopes and limits indicated on the drawings, specified herein or directed in the field. Excavation shall include all required stripping and the grading of side slopes, ditches and open areas as directed.

2.2 Disposal. The disposal of an excavated material shall include its haul to a project feature, stockpile or an off-site spoil area provided by the Contractor. Disposal shall also include the placement of an excavated material in a stockpile and its excavation and haul therefrom.

2.3 Side Slope Stability. The Contractor shall be responsible for producing and maintaining the stability of the side slopes of all excavations.

2.4 Unsuitable Foundation Materials. When and as directed, the Contractor shall excavate below the grades and limits shown on the drawings to remove unsuitable foundation materials.

2.5 Classification of Excavation. Excavation will not be classified and all materials within the areas to be excavated shall be removed regardless of their nature. The materials to be removed consist of sod, earth, boulders, stone protection, timbers debris, concrete and all other materials encountered.

2.6 Disposal of Excess and Unsuitable Materials. The disposal of excavated materials shall be as directed. To the extent necessary, all suitable excavated materials shall be utilized in the construction of random fill in accordance with the applicable provisions of Section

FILLS. The Contracting Officer shall be the sole judge as to the suitability of a material, or a load of material, for the use as random fill.

2.7 Stripping. Stripping shall consist of the removal of surficial materials judged by the Contracting Officer to be unsatisfactory for use as foundation materials or for use in the construction of random fills including loose boulders resting on the surface. Stripping shall be limited in depth so as to remove only these surficial materials considered to be unsatisfactory. All topsoil shall be salvaged to the extent available for topsoiling operations.

2.8 Grading. Dikes, weir and other required areas shall be graded in accordance with the sections and grades indicated on the drawings. Shoulders, ditches, side slopes, and other designated areas shall be shaped, trimmed and dressed in a neat and workmanlike manner to the lines and grades shown on the drawings or directed in the field. All soft or yielding material or other unsuitable material in the subgrade shall be removed and replaced with suitable compacted fill material.

2.9 Stockpiling. The Contractor shall stockpile materials from the required excavations as required for the execution of work. The Contractor may stockpile Contractor-furnished materials subject to prior approval and at no additional cost to the Government. All stockpiles shall be constructed in approved areas which have been cleared, grubbed and graded. The construction of a stockpile at a location where, in the opinion of the Contracting Officer, its presence will affect the stability of an excavation slope or face or will deface the landscape, will not be permitted. Stockpiled materials not used in the permanent work shall become the property of the Contractor and shall be removed from the project site, unless otherwise directed. Prior to completion of the contract, all stockpiled areas shall be cleaned and graded as directed.

2.10 Excavations for concrete structures to be founded on earth shall be done in the dry to the bottom dimensions and depths shown on the drawings except as otherwise specified herein. Excavation beyond the indicated side limits will be permitted as necessary for dewatering operations and for the maintenance of stable side slopes. Special care shall be taken to avoid disturbing the foundation soil for a concrete structure. To this end, the bottom 12 inches of the excavation shall be deferred until immediately prior to the erection of the forms for the structure. Excavation below the grades shown on the drawings shall be done as and to the extent directed to remove unsuitable foundation material. Any over-depth excavation shall be filled as directed either with concrete of the strength specified for the structure in accordance with the applicable provisions of Section, CONCRETE, or compacted gravel

fill in accordance with the applicable provisions of Section, EARTH AND, ROCK FILLS. Overdepth excavation and the filling thereof, when directed, will be paid for at the applicable contract unit prices for excavation, fill and concrete. No payment will be made for additional work and materials for filling an overdepth excavation if such excavation was not directed. The Contractor shall maintain any foundation soil considered suitable by the Contracting Officer in a firm condition by controlling seepage and ground water, by restricting construction operations in its vicinity or by other approved means. If, in the opinion of the Contracting Officer, a suitable foundation soil becomes soft for any reason, the softened material shall be removed and the resulting overdepth excavation filled at no additional cost to the Government as specified above.

3. CONSTRUCTION, SHEETING, SHORING AND BRACING.

3.1 General. The Contractor shall be responsible for the protection of workmen, unfinished work and existing structures and utilities from the dangers of caving and slides. If considered necessary by the Contracting Officer, the installation of sheeting, shoring and bracing at any location and at no additional cost to the Government will be directed.

3.2 Construction Sheeting shall not be removed where such removal, in the opinion of the Contracting Officer, may cause the settlement of a structure. All voids behind any sheeting left in place shall be filled to the satisfaction of the Contracting Officer.

3.3 Construction, sheeting, shoring and bracing shall be installed in a safe and workmanlike manner in accordance with the requirements of the Corps of Engineers Manual, "General Safety Requirements," and shall be placed in such a way as to afford ample clearance for construction and ready inspection of the permanent work. Shoring, sheeting and bracing to be removed shall be removed upon completion of the permanent work or as soon as the construction does not require their use.

3.4 Construction sheeting directed to be left in place shall be either steel or wood. When it is known wood sheeting is to be left in place, it shall be brushed or dipped to provide a creosote-treated wood conforming to the requirements of Federal Specification TT-C-655 and Int. Am-2, "Creosote, Technical Wood Preservative (for) Brush, Spray or Open Tank Treatment."

4. TEMPORARY DRAINS, PUMPING AND DEWATERING. The Contractor shall maintain all work sites and areas adjacent thereto in a well-drained

condition. Temporary drains and ditches, as required, shall be constructed by the Contractor at no additional cost to the Government. The Contractor shall dewater and maintain in a dry condition the foundation and excavation areas for the various features of work to the extent required by this and other sections of the specifications. The Contractor shall be responsible for furnishing and operating adequate dewatering systems to permit excavation and construction in the dry where specified and to stabilize excavation slopes. Over excavation caused by material made unstable by improper dewatering will be removed and replaced at the Contractor's expense. Payment for the above described work shall be included in the applicable payments for excavations for materials, except as described in Section, CONTROL AND DIVERSION OF WATER.

5. MEASUREMENT AND PAYMENT

5.1 Unclassified Excavation.

5.1.1 Measurement. The quantity of unclassified excavation, as defined in paragraph 2 above, to be paid for will be the total volume in cubic yards of materials satisfactorily removed and disposed of in accordance with the contract plans and specifications. Areas within which unclassified excavation is to be done shall be surveyed after clearing. All measurements will be based on this survey regardless of any changes which may occur in the surveyed areas during prosecution of the work. Measurement will be made between the ground surface as indicated by this survey and the required excavation lines on the drawings, specified herein or directed in the field. Where excavation extends to grades which are not definitely established on the contract drawings or which are governed by conditions encountered during excavation; a survey shall be made thereafter to determine the actual bottom grades for payment purposes.

5.1.2 Payment. Unclassified excavation, measured in accordance with the provisions of paragraph 5.1.1 above, will be paid for at the contract unit price per cubic yard for Item No. 3, "Unclassified Excavation." Such payment shall constitute full compensation for all work in connection with stripping, excavation, grading, drainage, hauling, dust control, stockpiling, excavation and hauling from stockpiles, the removal of unsuitable and excess materials from the site and all other work specified herein in connection with unclassified excavation. Such payment shall also constitute full compensation for clean-up not paid for under other items.

DIVISION 2 - SITE WORK

SECTION 2E - EARTH AND ROCK FILLS

- | | |
|--|---|
| 1. SCOPE | 7. MOISTURE CONTROL |
| 2. APPLICABLE PUBLICATIONS | 8. COMPACTION OF FILL MATERIALS |
| 3. GENERAL REQUIREMENTS | 9. DUMPED FILLS |
| 4. MATERIALS | 10. CONSTRUCTION OF CRUSHED
STONE FILL |
| 5. PREPARATION OF FOUNDATION | 11. MEASUREMENT |
| 6. PLACEMENT OF MATERIALS FOR
COMPACTED FILLS | 12. PAYMENT |

1. SCOPE. The work covered by this section consists of furnishing all plant, labor, equipment, appliances and certain specified fill materials and of performing all operations in connection with the construction of all types and classes of fills.

2. APPLICABLE PUBLICATIONS. The procedures in the following publication of the American Society for Testing and Materials shall be used, as applicable, for sampling fill materials:

D 75-71 Sampling Aggregates

The applicable procedures prescribed in Department of the Army Engineer Manual 1110-2-1906, November 30, 1970, Laboratory Soils Testing, shall be used in determining the gradation and plasticity characteristics of fill materials.

3. GENERAL REQUIREMENTS.

3.1 General. The term "fill" as used in this section includes all types of fills, backfills and refills constructed as specified. The various fill zones shall be constructed to the lines, grades and cross-sections indicated on the drawings or defined in the specifications unless otherwise directed. Each fill zone shall extend to the actual bottom and side slopes of an excavation regardless of the locations of the payment or excavation lines indicated on the drawings or defined in the specifications. Compacted fills shall be constructed by placing the fill material in layers and compacting each layer as specified. Except as otherwise specified, the ground water and surface water levels shall be controlled so as not to adversely affect fill materials during placement or compaction operations. No fill material shall be placed upon a surface of frozen material nor shall snow, ice or frozen materials be incorporated into any fill. The Contractor shall maintain and protect all excavations, foundation areas and fills in completed and uncompleted portions of the work in a satisfactory condition at all times until final completion and acceptance of all work under the contract.

3.2 Sequence. The Contractor shall plan the sequence of work covered herein with that of work covered in other sections of the specifications so as to minimize damage due to all causes, including floods; to comply with the requirements of the specifications; and to permit all phases of work to be done according to schedules.

3.3 Haul Roads. Haul roads shall be located and constructed as approved by the Contracting Officer. They shall be designed to maintain the intended traffic, to be free-draining and shall be maintained in good condition throughout the contract period, unless otherwise directed by the Contracting Officer. Visibility shall be maintained on all haul roads through control of dust by watering, palliatives or other approved methods. The Contractor may not use materials from the required excavations for the construction of haul roads except those materials specifically designated as excess and unsuitable materials. No separate payment will be made for the construction of haul roads or other work incidental thereto, the cost of which will be considered as a subsidiary obligation of the Contractor. The haul road from the Contractor's storage area to the completed weir shall be left in place at the completion of the contract work.

3.4 Operational Restrictions. No fill material shall be placed against concrete until the concrete has been in place at least 14 days. No fill material shall be placed against the sides of an uncompleted reach or section of any cast-in-place concrete structure without prior approval. Except as otherwise specified herein, fills on both sides of sluice gate structures, sheet piling and appurtenant structures shall be constructed concurrently at such rates that the top levels of the fills are within 24 inches of each other at all times prior to completion. No heavy equipment such as bulldozers, tractors, trucks, graders, shall be operated within 3 feet measured horizontally, of the outer surface of the sluice gate structures and sheet piling.

4. MATERIALS.

4.1 General.

4.1.1 Sources. Material for the construction of random fills shall be obtained from the required excavations for the project. Materials for the construction of all other fills shall be furnished by and at the expense of the Contractor. The Contracting Officer shall be the sole judge of the suitability of any material for use as a fill material regardless of its source.

4.1.2 Processed Materials. Crushed stone and rock fill materials shall be commercially processed. Gravel fill materials may be commercially processed. At least 30 days prior to the initial placement of a commercially processed material, the Contractor shall submit to the Contracting Officer for approval, the locations of the

proposed sources of the material and the names of the processing firms. Upon delivery to the site, commercially processed fill material will be examined and, at the option of the Contracting Officer, may be sampled and tested by, and at the expense of the Government to determine its conformity to the specified requirements. Any commercially processed material placed in the permanent work which does not meet the specified requirements shall be removed and replaced with satisfactory material at no additional cost to the Government.

4.1.3 Oversize Stones. The maximum permissible size stone for impervious fill material to be compacted by a tractor shall be a stone with a maximum dimension of 8 inches. The maximum permissible size stone for any fill material to be placed in a restricted area, as defined in paragraph 8, shall be a stone with a maximum dimension of 3 inches. Except as otherwise specified herein, the maximum permissible stone size in any other fill material shall be a stone with a maximum dimension equal to the specified spread thickness of a layer of that material. Material for use in the construction of a dumped fill zone shall contain no stone too large to be placed in the zone or of more than 1/2 cubic yard in volume.

4.1.4 Removal of Oversize Stones. The Contractor shall remove oversize stones from random fill material either prior to or during its placement. Except as otherwise specified herein, the Contractor shall remove oversize stones from all other fill materials prior to their delivery to the site. The removal of oversize stones from impervious fill material during placement will be permitted if such removal is to be done by hand labor during spreading or if the quantity of oversize stone in material to be compacted by a tractor is so small that removal with a rock rake is practicable in the opinion of the Contracting Officer. Oversize stone removed during the placement of any fill material shall be placed in piles on the fill surface and then loaded and removed from the project site.

4.2 Random Fill Material. Material for the construction of random fills shall consist of material obtained from the required excavations. The material shall be free of stumps and debris, and shall not contain cinders, ashes, topsoil, sod, roots, and organic soils such as muck or peat in quantities considered objectionable by the Contracting Officer.

4.3 Impervious Fill Material.

4.3.1 Characteristics. Material for the construction of impervious fill shall consist of a well-graded natural unprocessed soil containing sand and silt or clay sizes and meeting other requirements stated herein. The material shall not contain organic matter, vegetation, sod, roots, debris or frozen soil. Oversize stone as

defined in paragraph 4.1.3, shall be removed from otherwise satisfactory material as specified in paragraph 4.1.4. The material as delivered shall be homogeneous and shall contain no pockets of soil not meeting the specified requirements. Impervious fill materials shall be reasonably well-graded within the following limits.

<u>Sieve Size</u> <u>(U.S. Standard)</u>	<u>Percent Passing</u> <u>By Dry Weight</u>
6-inch	100
3-inch	85-100
No. 4	60-95
No. 40	35-75
No. 200	20-50

4.4 Gravel Fill Material. Material for the construction of gravel fills shall consist of sand, gravel or crushed stone composed of tough durable particles. It shall be reasonably free from thin, flat and elongated pieces and shall contain no organic matter or soft, friable particles in quantities considered objectionable by the Contracting Officer.

The requirements for approval of the soundness and durability of gravel bedding materials specified in paragraph 3 of Section, STONE PROTECTION AND GRAVEL BEDDING shall be applicable to gravel fill material. The material shall be reasonably well graded within the following limits.

<u>Sieve Size</u> <u>(U.S. Standard)</u>	<u>Percent Passing</u> <u>By Dry Weight</u>
6-inch	100
1-inch	50-85
No. 4	30-65
No. 16	15-40
No. 200	0-5

In addition, not more than 3 percent, by dry weight, of the component passing the No. 4 sieve shall consist of particles finer than 0.01 millimeters.

4.5 Crushed Stone Fill Material. Crushed stone fill shall consist of crushed stone or screened gravel and shall be composed of hard, durable and sound particles furnished by and at the expense of the Contractor. The requirements for approval of the soundness and durability of gravel bedding materials specified in Section STONE PROTECTION shall be applicable to crushed stone materials. The material shall be well-graded within the following limits:

Sieve Size (U.S. Standard)	Percent Passing By Dry Weight
2-inch	100
1-1/2 inch	90-100
1-inch	20-55
3/4 inch	0-15
3/8 inch	0-5

4.6 Rock Fill. Rock fill shall be furnished by the Contractor and shall consist of hard, durable and sound quarried rock fragments furnished by and at the expense of the Contractor. The material shall be a well-graded mixture ranging in size from 4 to 8 inches. No stone shall have a minimum dimension less than 3 inches. The requirements for approval of the soundness and durability of stone protection materials specified in Section STONE PROTECTION AND GRAVEL BEDDING shall be applicable to rock fill materials.

5. PREPARATION OF FOUNDATION.

5.1 Existing Materials. The foundation areas for all fills to be constructed on existing materials shall be excavated or stripped as specified in Section, EXCAVATION. No fill material shall be placed in any foundation area until the area has been inspected and approved. No foundation area will be approved unless it is free of all mud, debris, stumps, concrete masonry fragments and other similar material. All foundation areas, except those for dumped fills shall be dry and free of water at the surface during placement of fill material thereon.

5.2 Drainage Fills. Immediately prior to the placement of crushed stone or gravel fill materials in an excavation for the stilling basin of the weir, the bottom of the excavation shall be cleaned and its side slopes shall be trimmed as specified in Section, EXCAVATION. During the placement of the initial layer of gravel fill in the bottom of the stilling basin for the weir, the trench will be dewatered so that the maximum depth of water therein is less than one foot.

6. PLACEMENT OF MATERIALS FOR COMPACTED FILLS.

6.1 General. No material for a compacted fill shall be placed in an inundated fill or foundation area. No fill material shall be placed on previously compacted fill material which in the opinion of the Contracting Officer has been affected detrimentally by frost or freezing water until the affected surface material has been loosened, conditioned and reconstructed to the depth directed in the manner specified herein for the construction of the applicable type of compacted fill.

No fill material shall be placed in an area within which compaction equipment is being operated. Layers of fill material to be compacted shall be placed and spread over areas of sizes sufficient to permit the operation of the compaction equipment in an orderly pattern. Special care shall be taken to prevent the contamination of layers of gravel, crushed stone and rock fill materials with soil or other material during placement and compaction. Any of these fill materials that become contaminated shall be removed and replaced with suitable uncontaminated material at no additional cost to the Government.

6.2 Sequence.

6.2.1 Dike Fills. Except as otherwise specified or directed, the compacted fill zones of the dike shall be constructed by placing and spreading the fill materials in nearly horizontal layers extending over the full widths of the zones and in reaches long enough to provide working areas of sufficient size to allow compaction and spreading operations to proceed simultaneously in separated portions of the areas. Adjoining compacted fill zones shall be constructed concurrently so that the whole top surface of a reach of dike under construction will be approximately horizontal and even at all times regardless of the number of such zones in the dike section.

6.2.2 Other Compacted Fills. Compacted fills along sluice way and sheet pile walls and in excavation areas for concrete structures shall be constructed by placing and spreading layers of fill material to the full width of the area to be filled. The construction shall extend longitudinally as far as restrictions, bracing, cofferdam areas and the rate of wall and other construction will permit. To the extent possible, layers of material for compacted fills along walls and around structures shall be placed horizontally. In no event shall a layer to be compacted be placed with a slope too steep for proper operation of the compaction equipment. Compacted gravel fill and compacted rock fill above Elevation 877.0 shall be placed after the steel sheet pile cut-off wall is installed.

6.3 Spreading.

6.3.1 Materials for compacted fills shall be spread with bulldozers or other approved equipment or by hand to form uniform loose layers of the following thicknesses except as otherwise specified herein. Restricted areas are defined in paragraph 8.3 herein.

<u>Material</u>	<u>Maximum Loose Layer Thickness in Inches</u>	
	<u>General</u>	<u>Restricted Areas</u>
Impervious Fill Material	8	4
Gravel Fill Material	8	4
Rock Fill Material	8	8

6.3.2 Fill materials shall be spread in restricted areas by hand shoveling in horizontal layers as directed.

7. MOISTURE CONTROL. Impervious and gravel fill materials shall be placed at moisture contents which will allow proper operation of hauling and compaction equipment without excessive rutting or dust.

8. COMPACTION OF FILL MATERIALS.

8.1 Equipment. Compaction equipment shall conform to the following requirements and shall be used as prescribed in subsequent paragraphs.

8.1.1 Heavy Tractor. A "heavy tractor" to be used for compacting fill material shall be a standard commercial make crawler-type tractor weighing not less than 35,000 pounds and exerting a tread pressure of not less than 9 pounds per square inch. The tractor shall be equipped with standard width treads.

8.1.2 Light Tractor. A "light tractor" to be used for compacting fill material shall be a standard commercial make crawler-type tractor weighing between 7,500 and 12,000 pounds and having a width of 5-1/2 feet or less, measured between the outside edges of the crawler tracks.

8.1.3 Vibratory Roller. A vibratory roller shall be a unit designed for the compaction of soil or rock by vibration and shall be the product of a manufacturer nationally recognized for the design and production of such equipment. The roller shall have a double drum having a width of 25 inches or more. The roller shall weigh more than 1,700 pounds and shall be self-propelled with forward and reverse speeds.

8.1.4 Plate Vibrator. A plate vibrator shall be an approved plate surface vibrator designed for the compaction of soils by vibration and the product of a manufacturer nationally recognized as a specialist in the design and manufacture of such equipment. The surface contact plate shall be between 18 and 21 inches in width.

8.2 Compaction, General.

8.2.1 When the moisture content and condition of a spread layer of fill material is satisfactory, the lift shall be compacted as follows:

<u>FILL TYPE</u>	<u>COMPACTION</u>
Comp. Impervious Fill	At least 3 coverages of the tread of the heavy tractor or 6 coverages of the tread of the light tractor.

FILL TYPE

COMPACTION

Comp. Gravel Fill

At least 6 coverages of the tread of the light tractor or at least 3 passes of the vibratory roller.

Comp. Rock Fill

At least 6 coverages of the tread of the light tractor or at least 3 passes of the vibratory roller.

8.2.2 A pass of a roller shall consist of one coverage of the entire lift to be compacted with the specified roller. The equipment shall be operated so that the strip being traversed by the roller shall overlap the rolled adjacent strip not less than one (1) foot. Special care shall be exercised to assure the required compaction of the fill materials on the outer slopes of dikes and weir and at the junction of fill zones.

8.2.3 If in the opinion of the Contracting Officer, the desired compaction of any portion of a layer of compacted fill material is not secured by the minimum number of roller passes or tractor coverages specified, additional complete passes or coverages shall be made over the surface area of such designated portion until the desired compaction has been obtained.

8.3 Compaction in Restricted Areas. A restricted area is hereby defined as a horizontal area of a fill zone at any elevation within which compaction of the layers of fill material cannot be accomplished with tractors or rollers as specified in paragraph 8.2.1 herein, due to space limitations or an area within which the operation of tractors, rollers and spreading equipment is prohibited by the provisions of paragraph 3.4 herein. Each layer of impervious, rock and gravel fill in a restricted area shall be compacted by at least 4 coverages of the active contact face of the plate vibrator.

8.4 Special Compaction for Gravel Fill Material. Compacted gravel fill and gravel bedding materials beneath gabions which are placed on steep slopes may be placed to its full layer thickness in one operation. The surface of this material shall be compacted by pushing, or dropping the bucket of a gradall, backhoe or similar equipment until the surface is firm and unyielding. The layer of compacted gravel fill in the bottom of the stilling basin trench may be placed to its full layer thickness in one operation and may be placed without dewatering to the extent and in accordance with paragraph 5.2 herein. The surface of the layer shall be compacted by the specified tractor or roller traveling lengthwise of the trench.

9. DUMPED FILLS. Dumped fills may be constructed without spreading or compaction. Placement shall be done in a manner that will not cause segregation. Dumped fill material may be placed

without dewatering the foundation area. Oversize stones as defined in paragraph 4.1.3 herein, shall be removed from dumped fill material prior to its placement.

10. CONSTRUCTION OF CRUSHED STONE FILL. The construction of crushed stone shall be coordinated with that of the adjacent and overlying fill zones. Crushed stone fill shall be placed to the specified lines so as to provide the required layer thickness. The full thickness of the layer shall be constructed in one operation and in such a manner to avoid displacing the underlying material. Compaction will not be required.

11. MEASUREMENT.

11.1 Fills. The fills covered in this section of the specifications will be measured for payment as the volumes of fills in cubic yards computed from the applicable limits and payment lines indicated on the drawings, defined herein or otherwise established by the Contracting Officer. Where applicable, excavation payment lines as defined in Section, EXCAVATION, shall be the limits for measurement for the fills covered herein. The measurements shall not include the volumes of materials placed outside the excavation lines shown on the drawings or outside the limits defined herein. The limits of fills which are not sufficiently definite for measurement as shown on the drawings or as defined herein and which depend upon field conditions, availability of random fill material, topography and other conditions will be determined by field surveys.

11.2 Additional Rolling for Compaction. Additional rolling for compaction will be measured for payment on the basis of the actual number of hours, with no allowance for down or standby time, the compaction equipment is operated in accomplishing the compaction performed in accordance with paragraph 8.2.3, herein.

12. PAYMENT.

12.1 Fills. The various types of fill satisfactorily constructed and measured in accordance with paragraph 11.1 herein will be paid for at the applicable contract unit price per cubic yard for the following payment items:

- Item No. 4, "Crushed Stone Fill"
- Item No. 5, "Gravel Fill"
- Item No. 6, "Rock Fill"
- Item No. 7, "Random Fill"
- Item No. 8, "Impervious Fill"

Such payments constitute full compensation for all work in connection with the preparation of foundation for fills, spreading, harrowing,

conditioning for moisture, compacting, removal of oversize stones and objectionable material, dewatering not covered in other sections of these specifications and all other work required for the construction, protection and maintenance of the partial or completed fill zones covered herein exclusive of compensation for the excavation and stockpiling of random fill materials from excavations and stockpiles at the project site. Such payments for all fills other than random fills shall also constitute full compensation for furnishing acceptable fill materials from off site sources and delivering them to the project site in sufficient quantity for the construction of the various fill.

12.2 Additional Rolling for Compaction. Additional rolling for compaction will be paid for at the contract unit price per hour for Item No. 9, "Additional Rolling for Compaction" measured as specified in paragraph 11.2 above. Such payment shall constitute full payment for all work and equipment in connection with additional rolling.

DIVISION 2 - SITE WORK

SECTION 2F -- WIRE MESH GABIONS

1. SCOPE
2. APPLICABLE PUBLICATIONS
3. MATERIALS
4. FOUNDATIONS PREPARATION
5. INSTALLATION
6. MEASUREMENT AND PAYMENT

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 and installation of gabions at the embankment weir. The Contractor shall furnish, assemble and fill with approved stones, heavily galvanized, P.V.C. coated steel wire mesh baskets, in accordance with this section of the specifications and the contract drawings.

2. APPLICABLE PUBLICATIONS. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto:

2.1 Federal Specifications.

QQ-W-461G Wire, Steel, Carbon (Round, Bare, and Coated)

2.2 American Society for Testing and Materials (ASTM).

A 90-69 Weight of Coating on Zinc-Coated Iron or Steel Articles

A 239-73 Locating the Thinnest Spot in Zinc (Galvanized) Coating on Iron or Steel Articles by the Preece Test (Copper Sulfate Dip)

C 23-69 Operating Light and Water Exposure Apparatus (Carbon ARC Type) for Exposure of Nonmetallic Materials

3. MATERIALS.

3.1 Gabion Fabrication. Gabions shall be manufactured in such a manner that their sides, ends, lid and diaphragms can be assembled to form rectangular units of the specified dimensions. Gabions shall be a single unit construction. The front, base, back and lid shall

be woven into a single unit. The ends and diaphragm(s) shall be factory connected to the base. All perimeter edges of the mesh forming the gabion shall be securely wired so that the joints obtained have at least the same strength as the wire mesh itself.

3.2 Gabion Dimensions. The gabions shall be supplied as specified, in various lengths and heights. The length shall be multiples (2, 3 or 4) of the horizontal width. The horizontal width shall not be less than 3 feet. However, all gabions furnished by the manufacturer shall be of a uniform width.

3.3 Wire Mesh. Mesh openings shall be hexagonal in shape and uniform in size, measuring approximately 3-1/4 inches by 4-1/2 inches. All mesh joints shall be flexible and triple twisted to prevent unravelling.

3.4 Galvanizing. All steel wire used shall be galvanized having a minimum amount of zinc coating of 0.80 oz./sq. ft. of uncoated wire surface, and complying with Federal Specifications QQ-W-461 Finish 5, Class 3. The weight of the zinc coating shall be determined by ASTM test designation A 90. The uniformity of coating shall equal or exceed four-one minute dips by the Preece Test, ASTM test designation A 239.

3.5 P.V.C. Coating. All galvanized steel wire shall be additionally coated with a minimum of 0.015 inches of black P.V.C. which shall be suitable to resist destructive effects of immersion in acidic, salt or polluted water, exposure to ultra violet light and abrasion, and retain these characteristics after a period of not less than 3,000 hours under test in accordance with ASTM Test Designation G 23.

3.6 Mesh Wire. The diameter of the steel wire mesh shall be 0.1181 inches after galvanization.

3.7 Selvedge Wire. The diameter of the selvedge wire, running through all the edges (perimeter wire), shall be 0.1535 inches (U.S. Gage No. 101) after galvanization.

3.8 Lacing Wire. The diameter of the wire, necessary for assembling the gabion units shall be 0.0866 inches (U.S. Gage No. 13) after galvanization.

3.9 Tolerances. All wire gauges are subject to a tolerance of ± 2.50 percent of manufactures stated specifications.

3.10 Tensile Strength of all wire used for gabions and lacing wire shall range from 60,000 to 75,000 psi in accordance with Federal Specifications (QQ-W-461, Class 3).

3.11 Load and Elongation Tests shall be conducted in accordance with Federal Specifications (QQ-W-461, Class 3).

3.12 Submittals. The Contractor shall submit certificates of compliance in accordance with the SPECIAL PROVISIONS stating that the gabions, wire mesh, selvage wire and lacing meet or exceed the requirements specified herein and signed by an authorized representative of the manufacturer.

3.13 Stone Fill. Stone fill for filling gabions shall meet all the requirements for rock fill material with a size range from 4 to 8 inches without skip gradation. No stone shall have a minimum dimension less than 3 inches. In addition to the submission of quarried samples for approval of soundness and durability, a representative sample shall be submitted to the Contracting Officer for approval of gradation prior to delivery to the site. The size of the sample shall be a minimum volume of 4 cubic feet. All tests samples shall be obtained by the Contractor and delivered at his expense to the Government Laboratory at Waltham, Massachusetts at least 30 days in advance of the time when the placing of stone is expected to begin. All testing of the initial proposed material will be made by the Government and at its expense. Any retesting and all testing of subsequent sources due to the initially proposed sources failing to meet the requirements of these specifications will be done by the Government at the Contractor's expense.

3.14 Pipe Sleeves for weep holes shall consist of plastic (polyvinylchloride) pipe, shall be 6 inches in nominal diameter and 15 inches long.

4. FOUNDATIONS PREPARATION shall be as specified for stone protection and gravel bedding in Section STONE PROTECTION AND GRAVEL BEDDING.

5. INSTALLATION.

5.1 General. Gabions shall be assembled and erected according to the manufacturer's instruction. The initial assembly and erection shall be done under the supervision of an authorized representative of the gabion manufacturer. Construction experience has shown that the P.V.C. coating on gabion wire mesh and lacing wire has split during the manipulation of assembly, when the materials were assembled after having been stored in freezing temperatures. In order to preserve the ductility of the P.V.C. coated mesh and lacing wire during basket assembly and stone filling, baskets shall be assembled and filled only when the atmospheric temperature has not been below 35° for 10 hours, and the temperature in the shade is not less than 40°F, immediately prior to application.

5.2 Assembling. Gabions are usually supplied folded flat, tied in pairs and packed in bundles. Single gabions shall be removed from the bundle, unfolded flat on the ground, and all kinks and bends flattened. The gabions shall be assembled individually in the field, by erecting the sides, ends and diaphragms, ensuring that all creases are in the correct positions and the tips of all sides are level. The lacing procedure shall be in accordance with the manufacturer's instructions with alternating single and double loops at intervals of not more than five (5) inches.

5.3 Placement. The assembled gabions shall be placed in their proper location as shown on the contract drawings and all adjoining empty gabions shall be laced along the perimeter of all their contract surfaces in order to obtain a monolithic structure. Care should be taken to insure that gabions on slopes are laced at top and bottom. To facilitate this operation, subassemblies consisting of many gabions, may be assembled on land and then placed in their proper location and then the subassemblies laced along the perimeter of all contact surfaces. Gabions shall be constructed in the dry.

5.3.1 The following method applies to three (3) foot high gabions. Once the gabion units are laced together, they shall be stretched to effective alignment. This operation shall be carried out after several empty gabion units have been positioned. The first gabion shall be partially filled to provide the necessary anchorage. Any stretching shall be carried out using a come along or other means of at least one ton capacity. While under tension, the gabion joints shall be carefully controlled against possible unravelling.

5.4 Filling. The gabion units shall be carefully filled by earth handling equipment such as backhoe, gradall, crane, etc. Care shall be taken when placing stone material to assure that P.V.C. coating will not be broken or damaged. The maximum height from which stone may be dropped into the basket units shall be 36 inches. Manual adjustment shall be made during filling operations to prevent undue voids.

5.4.1 Gabions shall be filled in layers no more than one foot at a time. For gabion units in excess of 18 inches in thickness a minimum of two connecting wires shall be placed between each layer in all cells. All connecting wires shall be looped around two mesh openings and the wire terminals shall be securely twisted to prevent their loosening.

5.4.2 The cells in any row shall be filled in stages so that local deformation may be avoided. That is, at no time shall any cell be filled to a depth exceeding one foot more than the adjoining cell.

5.4.3 Along all exposed gabion faces, the outer layer of stone shall be carefully placed by hand, in order to ensure proper alignment and a neat, compact square appearance.

5.4.4 The last layer of stone shall be levelled with the top of the gabion to allow proper closing of the lid and provide an even surface that is uniform in appearance. Each cell shall be slightly overfilled to allow for future settlement. The lids shall be stretched tight over the fillings, using crow bars or lid closing tools, until the lids meet the perimeter edges of the front and end panels. The lid shall then be tightly laced along all edges, ends and diaphragms in accordance with the gabion manufacturer's recommendations.

5.5 Cutting and Folding Mesh. Where shown on the drawings or as otherwise directed by the Contracting Officer, or where a complete gabion unit cannot be installed because of space limitations the gabion mesh shall be cut, folded and wired together to suit existing site conditions. The mesh must be cleanly cut and the surplus mesh cut out completely or folded back and neatly wired to an adjacent gabion face. The cut edge of the mesh shall be securely laced together with lacing wire in the manner described above for assembling. The assembling installation, filling and lid closing of the reshaped gabions shall be as specified above in paragraph 5.

5.6 Pipe Sleeves shall be installed at the locations shown on the drawings.

6. MEASUREMENT AND PAYMENT. The gabions at the embankment weir will be measured as the total volumes of stone filled gabions in place computed from the applicable lines, grades, thickness and limits shown on the drawings or as modified by the Contracting Officer. Payment will be made at contract price per cubic yard for Item No. 10, "Wire Mesh Gabions." Such payment shall constitute full compensation for furnishing materials including pipe sleeves, fill, assembling, labor, equipment and all other work incidental to the construction of gabion baskets.

DIVISION 2 -- SITE WORK

SECTION 2G - STONE PROTECTION AND GRAVEL BEDDING

- | | |
|-----------------------------|----------------|
| 1. SCOPE | 7. MEASUREMENT |
| 2. APPLICABLE PUBLICATIONS | 8. PAYMENT |
| 3. MATERIALS | |
| 4. FOUNDATION PREPARATION | |
| 5. SEQUENCE OF CONSTRUCTION | |
| 6. PLACEMENT AND TOLERANCES | |

1. SCOPE. The work covered by this section consists of furnishing all plant, labor, equipment, and materials and of performing all operations in connection with the construction of sections and layers of all classes of stone protection and gravel bedding, all in accordance with the contract drawings and specifications.

2. APPLICABLE PUBLICATIONS. The procedures in the following publication of the American Society for Testing and Materials shall be used, as applicable, for sampling materials:

D 75-71 Sampling Aggregates

The applicable procedures prescribed in Department of the Army Engineer Manual 1110-2-1906, November 30, 1970, Laboratory Soils Testing, shall be used in determining the gradation characteristics of materials.

3. MATERIALS.

3.1 General. Materials for gravel bedding and stone protection shall be approved materials furnished by the Contractor. Stone protection materials may be stockpiled in approved areas at the project site. Gravel bedding materials shall not be stockpiled at the project site without prior approval. Such approval will be given only for small stockpiles of gravel bedding materials which must be readily available in small quantities. All stockpile areas shall be cleared, stripped and graded as directed prior to placement of materials therein. The placement of materials in stockpiles and their excavation and hauling therefrom shall be done in a manner that will prevent segregation and will assure the placement of well graded materials. The Contractor shall be responsible for furnishing, delivering to site, and placing stone protection and gravel bedding materials meeting all applicable requirements specified herein. Any stone protection or gravel bedding material placed in the permanent work which does not meet all applicable specified requirements shall be removed and replaced with acceptable material at no additional cost to the Government. The placement or breaking of individual oversize, or otherwise

unsuitable, stone in stone protection material after its delivery to the project site will not be permitted.

3.2 Approval of Quality. The sources from which the Contractor proposes to obtain materials for the production of gravel bedding and stone protection materials shall be selected well in advance of the time when these materials will be required in the work. Suitable samples of processed or natural materials, as applicable, from sources shall be submitted to the Contracting Officer for approval of the soundness and durability of the rock, gravel particles and sand particles. Quarried samples shall be representative of the whole quarry and include materials from distinctive strata and beds suitably identified by numbers and quarry name. Submission of quarried samples shall designate each sample and its location within the quarry and include available geologic descriptions, records and methods of testing, and history of use in similar construction. Rock samples shall consist of one or more pieces, each piece weighing a minimum of 20 pounds. All samples shall be obtained by the Contractor and delivered at his expense at a time which will allow a period of 30 days for testing and investigations. Unless otherwise directed at time of sampling, each sample shall be delivered by Contractor to the Government's Laboratory at 424 Trapelo Road, Waltham, Massachusetts. Sampling of the materials shall be done at the source by Contractor at his own expense and in the presence of a representative of the Contracting Officer. The samples shall be subjected to such tests as are necessary to determine the quality of the material unless suitable test reports and/or service records are available that are satisfactory to the Contracting Officer. The Contracting Officer shall be the sole judge as to the acceptability of a material. Tests to determine the suitability of the rock, gravel and sand materials may include, as applicable, petrographic analysis, specific gravity, abrasion, adsorption, sulfate soundness, wetting and drying, and freezing and thawing. All tests will be made by or under the supervision of the Government and at its expense except as noted below. Any retesting and all testing of subsequent sources due to the initially proposed source failing to meet the requirements of the specifications will be done by the Government at the Contractor's expense. The approval of the material exposed at the source, and service records, shall not relieve the Contractor, in any way, of the responsibility of placing a material which meets the requirements specified herein. Approval of a sample of material for soundness and durability from a source shall not be construed as approval of all materials or that the stones of stone protection materials produced using material from that source will have satisfactory quality, shape characteristics and sizes after processing and placement. The right is reserved to reject, at any time, any or all portions of the materials in a source or produced using the materials from that source when such materials are unsuitable in the opinion of the Contracting Officer.

3.3 Stone Protection Material.

3.3.1 All stone protection material shall consist of hard, durable and sound stones produced by processing quarried blasted rock. The materials shall not contain boulders or cobbles from soil or gravel deposits or earth, roots, debris or similar materials. Each stone shall have a density of not less than 162 pounds per cubic foot based on the saturated surface dry specific gravity determined in accordance with ASTM Designation C 97. The stones shall be of such quality that their performance is assured under all conditions to which they will be subjected. The stones shall be irregular and angular in shape and shall be free from open or incipient cracks, seams, structural planes of weakness or other defects that would tend to increase unduly their deterioration from natural causes and from handling and placing. No stone in the material shall have its long dimension exceeding 3 times its short dimension. Of stone protection material, at least 90% of the stones, by number shall have at least 75% of their surface areas relatively flat.

3.3.2 Stone Protection. Stone protection material shall consist of hard, durable, and sound quarried rock fragments furnished by and at the expense of the Contractor. The material shall be well graded between the maximum and minimum size permitted. The maximum shall be a stone weighing between 600 and 900 pounds. The minimum size stone permitted shall be that just retained on a 2-inch screen. No more than 10 percent, by dry weight, of the material shall pass a 2-inch screen.

3.4 Gravel Bedding Materials. Gravel bedding materials shall consist of sand, gravel or crushed stone composed of tough, durable particles and shall be reasonable free of thin, flat and elongated pieces. The materials shall contain no organic matter or soft friable particles in quantities considered objectionable by the Contracting Officer. The materials shall be reasonably well graded within the limits specified below.

<u>Sieve Size</u> <u>(U.S. Standard)</u>	<u>Percent Passing</u> <u>By Dry Weight</u>
6-inch	100
1-inch	50-85
No. 4	30-65
No. 16	15-40
No. 200	0-5

In addition, not more than 3 percent, by dry weight, of the component passing the No. 4 Sieve shall consist of particles finer than 0.01 millimeters.

4. FOUNDATION PREPARATION. The surface areas upon which gravel bedding and stone protection materials are to be placed shall be trimmed and dressed to conform to the lines, grades and cross-sections shown on the drawings, or as modified, to within the tolerances specified herein. For surfaces produced by excavation and upon which gravel bedding material is to be placed, the tolerances from the specified lines and grades shall be plus 2 inches and minus 4 inches for dry areas and plus 2 inches and minus 12 inches for surfaces below water. For surfaces of impervious fills, upon which gravel bedding material is to be placed, the tolerances shall be plus and minus 2 inches from the specified lines and grades except that neither extreme of these tolerances will be allowed over a continuous area greater than 200 square feet. For surfaces of gravel bedding upon which stone protection materials are to be placed, the tolerances shall be as specified in paragraph 6 of this section. Immediately prior to the placement of any gravel bedding or stone protection material, the surface upon which it is to be placed will be inspected and no material shall be placed thereon until the surface has been approved.

5. SEQUENCE OF CONSTRUCTION. The Contractor shall plan the sequence of construction of the work covered herein with the work covered in this and other sections of the specifications to insure minimum damage due to all causes including high river flows and stream erosion, to partially completed portions of fills, channel side slopes, earth structures, concrete structures, gravel bedding and stone protection and to comply with the requirements in this and other sections of the specifications. Layers of gravel bedding and stone protection shall be constructed concurrently with the adjoining compacted impervious fill section of a dike. The construction of the compacted impervious section shall not proceed more than 4 feet vertically above the top of the adjoining gravel bedding layer and not more than 6 feet vertically above the top of the stone protection as applicable. Construction of stone protection on fill and excavation slopes shall start at the toe of the slope and progress up the slope. The Contractor shall maintain the portions of gravel bedding and stone protection until accepted, and any material displaced by any cause shall be replaced at his expense.

6. PLACEMENT AND TOLERANCES.

6.1 General. Sections and layers of stone protection and gravel bedding shall be constructed to the lines and grades and in the areas shown on the drawings or modified by the Contracting Officer, within the tolerances specified herein. The Contractor shall organize his operations so as to minimize erosion of gravel bedding material during and after placement.

6.2 Gravel Bedding.

6.2.1 Gravel bedding material shall be placed and spread uniformly on surface areas prepared as specified below and in paragraph 4 herein so as to provide, in one operation, a layer with the thickness shown on the drawing or as directed. Except as otherwise specified, the tolerances for the surface of a gravel bedding layer or section shall be plus and minus 2 inches from the specified grades or lines except that neither of these tolerances will be allowed over a continuous area greater than 200 square feet. The tolerances below the water surface for the surface of a sloping gravel bedding layer extending below the final invert grade shall be plus 6 inches and minus 2 inches from the specified lines. The placement and spreading of the gravel bedding material by methods which will tend to segregate particle sizes will not be permitted. Where the edge of a layer of stone protection abuts the edge of a layer of topsoil, the stone protection shall be placed by hand to form a neat straight line. Gravel bedding disturbed prior to or during placement of the overlying material shall be repaired before proceeding with the work.

6.3 Stone Protection.

6.3.1 Stone protection materials shall be placed on surfaces of bedding material, prepared as specified in paragraph 6.2 above, in such a manner as to avoid segregation and to produce a well graded mass of stone with the minimum practicable percentage of voids and with uniform appearance of the exposed surface in the stone protection layer or section. The full thickness of the layer shall be constructed in one operation and in such a manner as to avoid displacing the underlying material. The stone protection material, after placement at any point, shall conform to the gradations specified in paragraph 3 of this section. Placement by dumping into chutes, pushing by bulldozers, or by other methods likely to cause segregation or breakdown of materials will not be permitted. Breaking of individual pieces in place either by blasting or mechanical methods will not be permitted.

6.3.2 The finished surfaces of stone protection above the river level shall be trimmed to the extent necessary and the stones shall be arranged by hand and with a backhoe or similar equipment. The finished surface for stone protection shall have a uniform appearance of well graded material free of pockets of small stones and clusters of large stones. No bulldozers, shovels, cranes or similar equipment will be permitted to operate on the outer surface of any stone protection layer.

6.3.3 The finished surfaces for stone protection layers above elevation 878.0 shall be within a tolerance of plus or minus 6 inches from the specified lines and grades provided that either extreme of

this tolerance is not continuous over an area greater than 200 square feet. Below elevation 878.0 the finished surfaces of all stone protection layers shall be within a tolerance of 0 to plus 18 inches from the specified lines.

7. MEASUREMENT.

7.1 Stone Protection and Gravel Bedding. Stone protection and gravel bedding to be paid for will be measured as the total volumes computed from the applicable lines, grades, thickness and limits shown on the drawings or as modified by the Contracting Officer. The lower limits of stone protection and gravel bedding layers which are not definite on the drawings and depend upon field conditions or topography shall be determined by surveys made immediately prior to the placement of material.

8. PAYMENT.

8.1 Stone Protection and Gravel Bedding. Stone protection and gravel bedding measured in accordance with paragraph 7 above, will be paid for at the applicable contract unit price per cubic yard for Item No. 11, "Stone Protection," and Item No. 12, "Gravel Bedding." Such payment shall constitute full compensation for furnishing material, processing, stockpiling, placing, repairs, maintenance, preparation of foundations, control of water, testing not paid for under other items, and all other work incidental to the construction of the stone protection and gravel bedding layers and sections as specified.

DIVISION 2 - SITE WORK

SECTION 2H - STEEL SHEET PILING

1. SCOPE
2. APPLICABLE PUBLICATIONS
3. SUBMITTALS
4. MATERIALS
5. INSTALLATION
6. PAYMENT

1. SCOPE. The work covered by this section consists of furnishing all plant, equipment, labor and materials and performing all operations in connection with the installation of permanent steel sheet piling in accordance with these specifications and applicable contract drawings. Sheeting shall be installed prior to placement of compacted gravel and rock fills above Elevation 877.0. This section does not cover furnishing and installing steel sheating to be used for the control or diversion of the Israel River.

2. APPLICABLE PUBLICATIONS. The following American Society for Testing and Materials (ASTM) standards of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto:

A 328-75a Steel Sheet Piling

3. SUBMITTALS.

3.1 Equipment Descriptions. The Contractor shall submit complete descriptions of pile driving equipment, including hammers, extractors, protecting caps and other appurtenances to the Contracting Officer for approval prior to commencement of work.

3.2 Certificate. The Contractor shall furnish the Contracting Officer a certificate showing that piling furnished has the required interlock strength as determined by test results of two representative test specimens, approximately 3 inches long, per heat. The certificate shall indicate piling type, dimensions and section properties. Piling shall not be delivered to the site prior to the receipt by the Contractor of a written approval from the Contracting Officer.

4. MATERIALS. Steel for sheet piling shall conform to the requirements of ASTM A 328. Sheet piling, including special fabricated sections, shall be of the type indicated on the drawings, have a nominal web thickness of not less than 3/8-inch and be of a design such that when in place they will be continuously interlocked throughout their entire length. All piling shall be provided with standard pulling holes located approximately 4 inches below the top of the pile, unless otherwise shown or directed. Piling shall have the properties equivalent to those listed in the following table:

PROPERTIES OF SECTIONS

Type of Section	Nominal Web Thickness (Inches)	Section Modulus Per Lin Ft of Wall (In)	Weight Per Sq Ft of Wall (Lbs)	Weight Per Lin Ft of Pile (Lbs)	Minimum Interlock Strength in Tension (Lbs Per Lin In)
PSA 23	3/8	2.4	23	30.7	12,000

5. INSTALLATION.

5.1 Pile Driving Hammers. The hammer used shall have a delivered energy suitable for the total weight of the pile and the character of the subsurface materials. Impact pile drivers and low frequency vibratory pile drivers may be used and shall be of the smallest practicable size for the work.

5.2 Placing and Driving.

5.2.1 Placing. Piling shall be carefully located as shown on the drawings or as directed by the Contracting Officer. Piles shall be placed in a plumb position with each pile interlocked with adjoining piles for its entire length, so as to form a continuous diaphragm throughout the length of each run of wall. Interlocks shall be properly engaged with the thumb of each pile gripped by the thumb and finger of the adjacent pile. All piles shall be placed as true to line as possible. Suitable temporary wales or guide structures shall be provided to insure that the piles are driven to correct alignment.

5.2.2 Driving. All piles shall be driven, jettted or excavated, or a combination of these methods, to the pile tip elevations shown on the contract drawings. Should the Contractor choose to excavate to install sheeting, the excavation shall be backfilled to grade with dumped gravel fill material before the piles are driven. Adequate precautions shall be taken to insure that piles are installed plumb. Piles installed out of interlock with adjacent piles or otherwise damaged shall be removed and replaced with new undamaged piles at the Contractor's expense. Piles shall not be driven within 100 feet of concrete less than 7 days old.

6. PAYMENT. All costs in connection with furnishing and installing steel sheet piling for the weir seepage cut off wall, as shown on the contract drawings and specified in this section, shall be included in the contract lump sum price bid for Item No. 13, "Steel Sheet Pile Cut-Off Wall". Should the Contractor choose to excavate to install steel sheet piling, all costs in connection with furnishing and installing gravel fill prior to driving sheeting shall also be included in the above lump sum price.

DIVISION 2 - SITE WORK

SECTION 21 - TOPSOILING AND SEEDING

- | | |
|-----------------------------------|------------------------------|
| 1. APPLICABLE PUBLICATIONS | 7. INSTALLATION |
| 2. SOURCE INSPECTIONS | 8. TURF ESTABLISHMENT PERIOD |
| 3. SUBMITTALS | 9. FINAL ACCEPTANCE |
| 4. DELIVERY, STORAGE AND HANDLING | 10. RETREATMENT OF AREAS |
| 5. ENVIRONMENTAL PROTECTION | 11. MEASUREMENT AND PAYMENT |
| 6. MATERIALS | |

1. APPLICABLE PUBLICATIONS. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto.

1.1 Federal Specifications (Fed. Spec.)

O-F-241D Fertilizers; Mixed, Commercial

1.2 U.S. Department of Agriculture Federal Seed Act of August 9, 1939:

53 Stat. 1275 Rules and Regulations

2. SOURCE INSPECTIONS.

2.1 Topsoil. The source of Contractor furnished topsoil will be inspected by the Contracting Officer to determine the acceptability of the topsoil and the depth to which it is to be stripped.

3. SUBMITTALS.

3.1 Certificates of Conformance or Compliance. Before delivery, notarized certificates attesting that the following materials meet the requirements specified, shall be submitted for approval:

- (1) Seed
- (2) Fertilizer

3.2 Certified Laboratory Test Reports. In addition to the submittal of certificates specified herein, certified copies of the reports of all tests listed below and required in referenced publications for the following materials shall be submitted for approval:

- (1) Off-site Topsoil -- for pH

The testing shall have been performed by an independent laboratory approved by the Contracting Officer within six months of submittal of reports for approval.

3.3 Manufacturer's Literature. Manufacturer's literature on the following materials shall be submitted.

(1) Hydro-Mulch (If used))

4. DELIVERY, STORAGE, AND HANDLING.

4.1 Delivery.

4.1.1 The Contractor shall notify the Contracting Officer of the delivery schedule in advance so material may be inspected upon arrival at the job site. Unacceptable material shall be removed from the job site immediately.

4.1.2 During delivery, seed shall be protected from drying out and contamination.

4.1.3 Fertilizer and lime shall be delivered to the site in the original, unopened containers bearing the manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance of the State and Federal laws. In lieu of containers, fertilizer and lime may be furnished in bulk and a certificate indicating the above information shall accompany each delivery.

4.2 Storage.

4.2.1 Seed, lime, and fertilizer shall be kept in dry storage away from contaminants.

4.2.2 Storage of materials shall be in areas designated or as approved by the Contracting Officer.

5. ENVIRONMENTAL PROTECTION. All work and Contractor operations shall comply with the requirements of Section ENVIRONMENTAL PROTECTION.

6. MATERIALS.

6.1 Seed. Seed shall be State-certified seed of the latest season's crop and shall be delivered in original sealed packages bearing the producer's guaranteed analysis for percentages of mixtures, purity, germination, weedseed content, and inert material. Seed shall be labeled in conformance with U.S. Department of Agriculture rules and regulations under the Federal Seed Act and applicable State seed laws. Seed that has become wet, moldy, or otherwise damaged will not be acceptable. On-site seed mixing shall be done only in the presence of the Contracting Officer. Seed mixtures shall be proportioned by weight as follows:

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>PERCENT BY WEIGHT IN MIXTURE</u>	<u>MINIMUM PERCENTAGE PURITY</u>	<u>MINIMUM PERCENTAGE GERMINATION</u>
Agrostis alba	Redtop	10	80	80
Festuca rubra var.	Creeping Red Fescue	50	97	80
Lolium perenne	Perennial Rye- grass	10	98	90
Lotus corniculatus	Birdsfoot Trefoil	30	80	80

Note: Weed seed shall not exceed 1.0% of total mixture by weight.

6.2 Topsoil.

6.2.1 Topsoil shall be the existing surface soil stripped and stockpiled on the site.

6.2.2 If additional topsoil is required, it shall be furnished by the Contractor and shall be a natural, friable soil representative of productive soils in the vicinity. It shall be obtained from well-drained areas and shall be free of admixture of subsoil and foreign matter or objects larger than one inch in any dimension, toxic substances, and any material or substance that may be harmful to plant growth. The pH range shall be 6.0 to 7.0. Topsoil that does not meet this pH range shall be amended by the addition of pH adjusters.

6.3 pH Adjusters.

6.3.1 Lime shall be agricultural limestone containing not less than 90 percent of total carbonates and shall be ground to such fineness that at least 50 percent will pass a 100-mesh sieve and at least 98 percent will pass a 20-mesh sieve.

6.4 Fertilizer. Fertilizer shall be commercial grade, free flowing, uniform in composition and shall conform to applicable State and Federal regulations. Granular Fertilizer shall conform to Fed. Spec. O-F-241, Type I, Level 3, and shall bear the manufacturer's guaranteed statement of analysis. Granular fertilizer shall contain a minimum percentage by weight of 5% nitrogen (of which 50 percent shall be organic), 10% available phosphoric acid, and 10% potash.

6.5 Mulch.

6.5.1 Straw shall be stalks from oats, wheat, rye, barley, or rice that are free from noxious weeds, mold, or other objectionable material. Straw shall be in an air-dry condition and suitable for placing with blower equipment.

6.6 Water. Water shall contain no elements toxic to plant life and shall be obtained at no additional expense to the Government.

7. INSTALLATION.

7.1 General. The following areas shall be topsoiled, seeded and mulched and otherwise treated as required by this section of these specifications.

(1) Areas as indicated on the drawings

(2) Existing areas of vegetation disturbed by the Contractor due to the construction of new and permanent structures, or grading operations, when such areas are not indicated on the drawings or specified to be topsoiled and seeded or seeded only or to receive other finish, shall be restored by topsoiling and seeding as specified in this section. These areas shall be treated at no additional cost to the Government, the cost thereof being subsidiary to the applicable items of work involved.

(3) Areas not indicated on the drawings but which fall within the meaning of Clause 49 of the GENERAL PROVISIONS. These areas shall be treated at no additional cost to the Government.

(4) Areas disturbed by the Contractor including areas falling outside the limit of work lines, areas within the limit of work lines where no work is indicated on the drawings, and areas used for the convenience of the Contractor, including haul roads, storage areas, borrow areas, access roads, field office sites, parking areas, stockpile areas and areas of similar use, unless specifically exempted in writing by the Contracting Officer. These areas shall be treated at no additional cost to the Government.

7.2 Tillage. After the areas required to be seeded, have been brought to the grades as specified, they shall be thoroughly tilled to a depth of at least 3 inches by scarifying, disking, harrowing, or other approved methods. All debris and stone larger than one inch remaining on the surface after tillage shall be removed.

7.3 Topsoiling. Prior to placing topsoil the subgrade shall be scarified to a 2-inch depth for bonding of topsoil with subsoil. The topsoil shall be evenly spread to a minimum depth of 6 inches. Topsoil shall not be spread when frozen or excessively wet or dry. Irregularities in finished surfaces shall be corrected to eliminate depressions. Finished topsoil areas shall be protected from damage by vehicular or pedestrian traffic. Seeding shall be accomplished only when areas are brought to finished grade.

7.4 Application of Fertilizer and pH Adjusters.

7.4.1 Fertilizer shall be applied at the rate of 25 pounds per 1000 square feet. In addition, the Contractor shall adjust soil acidity and add soil conditioners as specified for suitable topsoil under paragraph 6.2 "Topsoil."

7.4.2 All fertilizers and pH adjusters shall be incorporated into the soil to a depth of at least 2 inches and may be incorporated as part of the tillage.

7.5 Planting Season and Conditions: Planting shall be done with the following dates:

(1) Seed shall be sown from 01 May to 15 June for spring planting and from 15 August to 15 September for fall planting.

Planting shall not be done when the ground is frozen, snow covered, or in an unsatisfactory condition for planting. If special conditions exist that may warrant a variance in the above planting dates or conditions, a written request shall be submitted to the Contracting Officer stating the special conditions and proposed variance.

7.6 Seeding.

7.6.1 Seed shall be broadcast by approved sowing equipment at the rate of 4 pounds per 1,000 square feet. One half of the seed shall be sown in one direction, and the remainder shall be sown at right angles to the first sowing. The seed shall be covered to an average depth of 1/4 inch by means of spike-tooth harrow, cultipacker, or other approved device.

7.6.2 Immediately after seeding, the entire area shall be firmed with a roller not exceeding 90 pound for each foot of roller width. If seeding is performed with a culipacker-type seeder or if seed is applied in combination with hydromulching, rolling may be eliminated.

7.6.3 Mulch shall be evenly spread at the rate of one 70 pound bale per 1,000 square feet. The mulch shall be anchored by either a mulch twine, or netting.

7.7 Protection of Seeded Areas. Immediately after seeding, the area shall be protected against traffic or other use by erecting barricades, as required, and placing approved signs at appropriate intervals until final acceptance.

7.8 Restoration and Clean-Up. Excess and waste material shall be removed daily. When turfing in an area has been completed the area shall be cleaned of all debris and excess material. Where existing turf areas have been damaged during turfing operations the Contractor shall restore the areas to their original condition at his expense.

8. TURF ESTABLISHMENT PERIOD.

8.1 General.

8.1.1 The turf establishment period will be in effect for 45 days after seeding is completed.

8.1.2 The Contractor shall be responsible for the establishment and proper care of a stand of turf over the entire seeded area.

8.2 Maintenance During the Establishment Period.

8.2.1 The Contractor shall provide the following maintenance: mowing, removal of excess clippings, eradicating weeds, watering, fertilizing, overseeding and any other operation necessary to promote the growth of grass.

9. FINAL ACCEPTANCE

9.1 General. Final inspection and acceptance will be at the end of the turf establishment period. Acceptance will be based upon a satisfactory stand of turf.

10. RETREATMENT OF AREAS. The Contractor shall be responsible for retreating areas where washouts or other destruction of previously applied treatment occur because of rainfall or winds, provided that all work required by this contract. Retreatment shall consist of reapplication of seed, fertilizer and mulch as required for original application of these specifications.

11. MEASUREMENT AND PAYMENT

11.1. Topsoiling, Seeding and Mulching.

11.1.1 Measurement. Except as specified above, topsoiling, seeding and mulching will be measured for payment on the basis of the number of square yards of topsoiling, seeding and mulching or materials acceptably placed.

11.1.2 Payment for topsoiling, seeding and mulching will be made at the contract unit prices per square yard for Item No. 15, "Topsoiling and Seeding." The contract price shall include all costs of salvaging existing topsoil from excavation, furnishing all additional required topsoil from off-site sources, loading, hauling, spreading topsoil, grading, tillage and all labor, equipment and incidentals necessary to complete the turfing; and shall include all costs of finish grading, preparation of seedbed, application of fertilizer, lime and mulch materials, establishment, necessary repairs, and incidentals necessary to complete the seeding.

DIVISION 2 SITE WORK

SECTION 2J - ENVIRONMENTAL PROTECTION

- | | |
|---|--|
| 1. SCOPE | 7. PROTECTION OF ENVIRON-
MENTAL RESOURCES |
| 2. QUALITY CONTROL | 8. POST CONSTRUCTION CLEAN UP |
| 3. FEDERAL, STATE AND LOCAL LAWS,
REGULATIONS AND PERMITS. | 9. RESTORATION OF LANDSCAPE
DAMAGE |
| 4. SUBMITTALS | 10. MAINTENANCE OF POLLUTION
CONTROL FACILITIES |
| 5. SUBCONTRACTORS | 11. PAYMENT |
| 6. NOTIFICATION | |

1. SCOPE. This section covers prevention of environmental pollution and damage as a result of construction operations under this contract and for those measures set forth in other Technical Provisions of these specifications. For the purpose of this specification, environmental pollution and damage 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, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual aesthetics, noise, solid waste, radiant energy and radioactive materials, as well as other pollutants.

2. QUALITY CONTROL. The Contractor shall establish and maintain quality control for environmental protection of all items set forth herein. The Contractor shall record on daily reports any problems in complying with laws, regulations and ordinances and corrective action taken.

3. FEDERAL, STATE AND LOCAL LAWS REGULATIONS, AND PERMITS. The Contractor shall be responsible for obtaining any necessary licenses and permits applicable to his operations. He shall also be responsible for having knowledge of any Federal State and local laws, codes and regulations concerning environmental protection, pollution control and abatement that are applicable to the proposed operations and the requirements imposed by those laws, regulations and codes.

4. SUBMITTALS. The Contractor shall submit an environmental protection plan in accordance with provisions as herein specified.

4.1 Environmental Protection Plan shall include but not be limited to the following:

(1) Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs,

vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, archeological and cultural resources.

(2) Procedures to be implemented to provide the required environmental protection and to comply with applicable laws, regulations and codes.

(3) Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.

(4) Methods and materials for restoring landscape features damaged or destroyed during construction operations outside the limits of the approved work areas.

4.2 Implementation. The Contractor shall submit in writing the above Environmental Protection Plan within 15 calendar days after the date of receipt of notice to proceed. Approval of the Contractor's plan will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants and other environmental protection measures.

5. SUBCONTRACTORS. Assurance of compliance with this section by subcontractors will be the responsibility of the Contractor.

6. NOTIFICATION. The Contracting Officer will notify the Contractor in writing of any observed noncompliance with applicable Federal, State or local laws or regulations, permits and other elements concerning environmental protection. The Contractor shall, after receipt of such notice, inform the Contracting Officer of proposed corrective action and take such action as may be approved. If the Contractor fails 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 time extensions shall be granted or costs or damages allowed to the Contractor for any such suspension.

7. PROTECTION OF ENVIRONMENTAL RESOURCES. The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The Contractor shall confine his activities to areas defined by the drawings and specifications. Environmental protection shall be as stated in the following subparagraphs.

7.1 Protection of Land Resources. Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the Contractor's work area. The Contractor shall not remove, cut, deface, injure, or destroy land resources including trees,

shrubs, vines, grasses, top soil, and land forms without special permission from the Contracting Officer. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized.

7.1.1 Protection of Landscape. Trees, shrubs, vines, grasses, land forms and other landscape features to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques.

7.1.2 Reduction of Exposure of Unprotected Erodible Soils. Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils.

7.1.3 Temporary Protection of Disturbed Areas. Such methods as necessary shall be utilized to effectively prevent erosion. Runoff from the construction site shall be controlled by construction of diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses, and any measures required by area-wide plans approved under paragraph 208 of the Clean Water Act.

7.1.4 Location of Field Offices, Storage and Other Contractor Facilities. The Contractors' field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or if not shown, as approved by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only on approval by the Contracting Officer.

7.1.5 Temporary Excavations and Embankments for plant and/or work areas shall be controlled to protect adjacent areas from spoils.

7.1.6 Disposal of Solid Wastes. Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. All handling and disposal shall be conducted to prevent contamination.

7.1.7 Disposal of Discarded Materials. Discarded materials other than those which can be included in the solid waste category will be handled as directed by the Contracting Officer.

7.2 Preservation and Recovery of Historical, Archeological and Cultural Resources. Existing historical, archeological and cultural resources within the Contractor's work area will be so designated by

the Contracting Officer and precautions taken to preserve all such resources as they existed at the time they were pointed out to the Contractor. If during construction activities the Contractor observes unusual items that might have historical or archeological value, such observations shall be reported as soon as practicable to the Contracting Officer.

7.3 Protection of Water Resources. The Contractor shall keep construction activities under surveillance, management and control to avoid pollution of surface and ground waters. Special management techniques as set out below shall be implemented to control water pollution by the listed construction activities which are included in this contract.

7.3.1 Cofferdam and Diversion Operations. The Contractor shall plan his operation and perform all work necessary to minimize adverse impact or violation of the water quality standard for the Israel River. Construction operations for dewatering, shall be controlled at all times to limit the impact of water turbidity on the habitat for wildlife and impacts on water quality for downstream use.

7.3.2 Stream Crossings shall be controlled during construction. Crossings shall provide movement of materials or equipment which do not violate water pollution control standards of the Federal, State or local government.

7.4 Protection of Fish and Wildlife Resources. The Contractor shall keep construction activities under surveillance, management and control to minimize interference with, disturbance to and damage of fish and wildlife.

7.5 Protection of Air Resources. The Contractor shall keep construction activities under surveillance, management and control to minimize pollution of air resources. All activities, equipment, processes, and work operated or performed by the Contractor in accomplishing the specified construction shall be in strict accordance with the State of Massachusetts, General Laws Chapter 111, as amended, and all Federal emission and performance laws and standards. Ambient Air Quality Standards set by the Environmental Protection Agency shall be maintained for all construction operations and activities. Special management techniques as set out below shall be implemented to control air pollution by the construction activities which are included in the contract.

7.5.1. Particulates Control. The Contractor shall maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause the air pollution standards mentioned in paragraph 7.5 above to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type or other methods

will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated at such intervals as to keep the disturbed area damp at all times. The Contractor must have sufficient competent equipment available to accomplish this task. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

7.5.2 Hydrocarbons and Carbon Monoxide. Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to Federal and State allowable limits at all times.

7.5.3 Odors. Odors shall be controlled at all times for all construction activities, processing and preparation of materials.

7.6 Protection of Sound Intrusions. The Contractor shall keep construction activities under surveillance, and control to minimize damage to the environment by noise. The Contractor shall use methods and devices to control noise emitted by equipment.

8. POST CONSTRUCTION CLEAN UP. The Contractor shall clean up all areas used for construction.

9. RESTORATION OF LANDSCAPE DAMAGE. The Contractor shall restore all landscape features damaged or destroyed during construction operations outside the limits of the approved work areas. Such restorations shall be in accordance with the plan submitted for approval by the Contracting Officer. This work will be accomplished at the Contractor's expense.

10. MAINTENANCE OF POLLUTION CONTROL FACILITIES. The Contractor shall maintain all constructed facilities for the duration of the contract or for that length of time construction activities create the particular pollutant.

11. PAYMENT. No separate payment or direct payment will be made for the cost of the work covered under this section, and such work will be considered as a subsidiary obligation of the Contractor.

DIVISION 3 - CONCRETE

SECTION 3A - CONCRETE

- | | |
|----------------------------|---|
| 1. SCOPE OF THE WORK | 8. JOINTS |
| 2. APPLICABLE PUBLICATIONS | 9. FINISHING |
| 3. MATERIALS | 10. CURING AND PROTECTION |
| 4. PROPORTIONING | 11. FORMS |
| 5. BATCHING AND MIXING | 12. FURNISHING AND PLACING
STEEL REINFORCEMENT |
| 6. CONVEYING | 13. EMBEDDED ITEMS |
| 7. PLACING | 14. MEASUREMENT AND PAYMENT |

1. SCOPE. The work covered by this section consists of furnishing all material and equipment, and performing all labor for the manufacture, transporting, placing, finishing, and curing of concrete in these specifications.

2. APPLICABLE PUBLICATIONS. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto:

2.1 American Society for Testing and Materials (ASTM) with
Corresponding CRD Standard Indicated Where Available.

A 615 76a	Deformed and Plain Billet Steel Bars for Concrete Reinforcement
C 31-69 (1975)	Making and Curing Concrete Test Specimens in the Field
C 33-78	Concrete Aggregates
C 39-72	Compressive Strength of Cylindrical Concrete Specimens
C 94-78a	Ready-Mixed Concrete
C 143-74 (CRD-C 5)	Slump of Portland Cement Concrete
C 150-78a	Portland Cement
C 172-71 (1977)	Fresh Concrete
C 231-78 (CRD-C 41)	Air Content of Freshly Mixed Concrete
C 494-77a (CRD-C 87)	Chemical Admixtures for Concrete
C 75-71 (1978)	Aggregates, Sampling

D 1752-67 (1978)
(CRD-C 509)

Preformed Sponge Rubber and Cork
Expansion Joint Fillers for Concrete
Paving and Structural Construction

2.2 U.S. Army, Corps of Engineers, Handbook for Concrete and
Cement (CRD).

CRD-C 13-66

Air-Entraining Admixture for
Concrete

CRD-C 300-77

Membrane-Forming Compounds for
Curing Concrete

2.3 U.S. Department of Commerce National Bureau of Standards
(NBS) Product Standard.

PS-1-74

For Construction and Industrial
Plywood

3. MATERIALS.

3.1 Cement shall be portland cement and shall conform to
appropriate specifications listed below:

3.1.1 Portland Cement. ASTM C 150, Type I or II including
false set requirements.

3.2 Aggregates. Fine aggregate will conform to the grading
requirements of ASTM C 33 and coarse aggregates shall conform to the
grading requirements of ASTM C 33 sizes 467 and 67.

3.3 Admixtures to be used, when required or permitted shall
conform to the appropriate specification listed below:

3.3.1 Air-entraining admixture CRD-C 13.

3.3.2 Water-reducing or retarding admixtures ASTM C 494, Type
A, B or D.

3.4 Water. Water used in mixing and curing concrete shall be
fresh, clean, and free from sewage, oil, acid, alkali, salt, or
organic matter.

3.5 Membrane-forming Curing Compound. Membrane-forming curing
compound shall conform with CRD-C 300 and shall be non-pigmented
containing a fugitive dye.

3.6 Joint Sealant. Joint sealant shall be hot or cold applied,
made specifically for sealing exterior joints in concrete against
moisture infiltration.

3.7 Expansion Joint Filler Strips, Premolded. Expansion joint strips shall be sponge rubber commercially used in concrete paving or construction, 3/8-inch thick conforming to the requirements of ASTM D 1752, Type I.

3.8 Reinforcement. Deformed steel bars conforming to the requirements of ASTM A 615, grade 40.

4. PROPORTIONING.

4.1 Strength. Specified compressive strength f_c' shall be 3000 psi at 28 days.

4.2 Maximum Water - Cement Ratio. Maximum water cement ratio shall be 0.42.

4.3 Nominal Maximum size coarse aggregate shall be 1-1/2 inches except 3/4 inch nominal maximum size coarse aggregate shall be used when any of the following conditions exist: the narrowest dimension between sides of forms is less than 7-1/2 inches, the depth of the slab is less than 4-1/2 inches or when the minimum clear spacing between reinforcing is less than 2 inches.

4.4 Air Content as determined by ASTM C 231 shall be 5.0 ± 1.5 percent except that when the nominal maximum size coarse aggregate is 3/4 inch it shall be 6.0 ± 1.5 percent.

4.5 Slump. The slump shall be determined in accordance with ASTM C 143 and shall not exceed 3 inches.

4.6 Concrete Proportioning. Trial design batches and testing requirements for various qualities of concrete specified shall be the responsibility of the Contractor. Samples of approved aggregates shall be obtained in accordance with the requirements of ASTM D 75. Samples of materials other than aggregate shall be representative of those proposed for the project and shall be accompanied by manufacturer's test reports indicating compliance with applicable specified requirements. Concrete mixture proportions shall be submitted for approval. The proportions of all ingredients and nominal maximum coarse aggregate size that will be used in the manufacture of each quality of concrete shall be stated. Proportions shall indicate weight of cement and water and weights of aggregates in a saturated surface-dry condition. The submission shall be accompanied by test reports from a laboratory complying with ASTM E 329 attesting that proportions thus selected will produce concrete of the qualities indicated. No substitution shall be made in the source or type of materials used in the work without additional tests to show the new materials and quality of concrete are satisfactory.

4.7 Construction Testing.

4.7.1 General. The Contractor shall be responsible for sampling and testing aggregates and concrete to determine compliance

with the specifications. The Contractor shall provide facilities and labor as may be necessary for procurement and testing of representative test samples. Samples of aggregates will be obtained at the point of batching when directed by the Contracting Officer. Concrete will be sampled and tested as specified below and in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143 and ASTM C 231, respectively, and taken with each set of strength specimens when directed by the Contracting Officer. Compression test specimens will be made and cured in accordance with ASTM C 31 and compression test specimens tested in accordance with ASTM C 39. Samples for strength tests of concrete placed each day will be taken not less than once each day, nor less than once for each 5,000 square feet of surface area of one side of slabs or walls. Three specimens will be made from each sample, two will be tested at 28 days for acceptance and one will be tested at 7 days for information. The acceptance test results will be the average of the strengths of the two specimens tested at 28 days. Tests shall be performed by a commercial testing laboratory complying with requirements of ASTM E 329. All test results shall be submitted to the Contracting Officer for approval as soon as they become available.

4.7.2 Evaluation and Acceptance. The strength of the concrete will be considered satisfactory so long as the average of all sets of three consecutive test results equal or exceed the required specified strength f_c' and no individual test result falls below the specified strength f_c' by more than 200 pounds per square inch. Structural analysis or additional testing may be required at the Contractor's expense when the strength of the concrete in the structure is considered potentially deficient. Concrete work judged inadequate by structural analysis or by results of tests shall be reinforced with additional construction as directed by the Contracting Officer or shall be replaced at the Contractor's expense.

5. BATCHING AND MIXING. Batching, mixing and delivery shall conform to the requirements of ASTM C 94.

6. CONVEYING. Concrete shall be conveyed from mixer to forms as rapidly as practicable, by methods which will prevent segregation or loss of ingredients. All conveying equipment and methods shall be subject to approval.

7. PLACING.

7.1 General. Concrete shall be worked into the corners and angles of the forms and around all reinforcement and embedded items without permitting the materials to segregate. Concrete shall be placed within thirty minutes after it has been mixed except when conveyed by agitating equipment. When concrete is truck mixed or when a truck mixer or agitator is used for transporting concrete

mixed by a concrete plant mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours after introduction of the cement to the aggregates except when the concrete temperature exceeds 35°F, the discharge shall be completed within 45 minutes. When the length of haul makes it impossible to deliver truck mixed concrete within these time limits, batching of cement and a portion of the mixing water shall be delayed until the truck mixer is at or near the construction site. Not more than 80 percent of the water and all other materials except cement shall be batched at the distant batch plant and transported to the cement batcher without mixing. Concrete shall be placed within 15 minutes after it has been discharged. It shall be placed on clean, damp surfaces free from water, ice, frost, mud, debris or objectionable coatings. Water jetting shall be used to clean the rock surfaces upon which the concrete will be placed. Concrete shall be consolidated with the aid of mechanical vibrating equipment supplemented by handspading and tamping. Vibrating equipment shall be of the internal type and shall at all times be adequate to properly consolidate all concrete. All concrete placing equipment and methods shall be subject to approval. Care shall be exercised to avoid placing concrete on the plastic pipes previously set into the forms. Concrete shall be carefully vibrated and tamped beneath and around the pipes.

7.2 Lifts in Concrete. All concrete shall be deposited in maximum horizontal layers approximately twelve (12) inches in thickness unless otherwise authorized or directed.

8. JOINTS.

8.1 Installation. Joint locations and details shall be as shown on the drawings. In no case shall any fixed metal be continuous through an expansion or contraction joint.

8.2 Expansion Joints. Premolded filler strips shall have oiled wood strips secured to the top thereof and shall be accurately positioned and secured against displacement to clean, smooth concrete surfaces. The wood strips shall be slightly tapered, dressed and of the size required to install filler strips at the desired level below the finished concrete surface and to form the groove for the joint sealant or seals. Material used to secure premolded fillers and wood strips to concrete shall not harm the concrete and shall be compatible with the joint sealant or seals. The wood strips shall not be removed until after the concrete curing period. After removal of the wood strip the groove shall be thoroughly cleaned of all laitence, curing compound, foreign materials, protrusions of hardened concrete and then filled approximately flush with joint sealant so as to be slightly concave after drying.

8.3 Contraction Joints. Contraction joints shall be true to line, 1/8 inch wide, and of depth equal to approximately 1/4 of the slab thickness. Joints shall be sawed or formed by inserting fiber-board strips of the required dimensions after placing concrete. Joints in permanently exposed slabs shall be filled with joint sealant.

8.3.1 Joints with Field-Molded Sealant. Joints shall not be sealed when the sealant, air or concrete temperature is less than 40°F. Bond breaker and back-up material shall be installed where required. Joints shall be primed and filled flush with joint sealant in accordance with the manufacturer's recommendations.

9. FINISHING.

9.1 Formed Surfaces. Formed surfaces shall be left with the texture imparted by the forms except defective surfaces shall be repaired as follows. Within 24 hours after form removal, all fins and loose materials shall be removed and surface defects including tie holes shall be remedied. All unsound concrete shall be removed from defective areas. Defective areas larger than 36 square inches and deeper than steel or 4 inches shall be delineated in a rectangular shape by a saw cut a minimum depth of 1 inch and repaired with concrete replacement. Minor honeycomb and holes left by the removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry pack mortar. If chipping is necessary the edges shall be perpendicular to the surface or slightly undercut. As determined by trial mixtures, the cement used in the mortar or concrete for all surfaces permanently exposed to view shall be a blend of portland cement and white cement properly proportioned so that the final color when cured will be the same as adjacent concrete. Temperature of the concrete, ambient air, replacement concrete or mortar during remedial work including curing shall be above 50°F. The prepared area shall be dampened, brush-coated with a neat cement grout or with an approved epoxy resin, and filled with mortar or concrete. The mortar shall consist of 1 part cement to 2-1/2 parts fine aggregate. The quantity of mixing water shall be the minimum necessary to obtain a uniform mixture. The mortar shall be remixed without addition of water until it obtains the stiffest consistency that will permit placing. Mortar shall be thoroughly compacted in place and struck off to adjacent concrete. Replacement concrete shall be drier than the usual mixture and thoroughly tamped into place and finished. Forms shall be used if required. Metal tools shall not be used to finish permanently exposed surfaces. The patched areas shall be cured for seven days.

9.2 Unformed Surfaces.

9.2.1 All unformed surfaces other than slabs or grade with concrete exposed in the completed work, shall have a wood float

finish without additional mortar and shall be true to elevation as shown on the drawings.

9.2.2 Slab Finishes. Slab shall be finished to a true plane with no deviation exceeding 1/4 inch when tested with a 10 foot straightedge.

Surfaces shall be screeded and darbled or bullfloated to bring the surface to the required finish level with no coarse aggregate visible. No cement or mortar shall be added to the surface during the finishing operation. The concrete, while still green but sufficiently hardened to bear a man's weight without deep imprint, shall be floated to a true and even plane. Floating may be performed by use of hand or power driven equipment. Hand floats shall be made of magnesium or aluminum.

10. CURING AND PROTECTION.

10.1 Moist Curing. All concrete shall be cured by an approved moist curing method for a period of not less than seven (7) days when Type I cement is used and fourteen (14) days when Type II cement is used or receive membrane curing as specified below. All concrete shall be adequately protected from damage at all times.

10.2 Membrane Curing. Concrete may be cured with an approved curing compound in lieu of moist curing. A non-pigmented type curing compound, containing a fugitive dye, conforming to CRD-C 300 with the reflective requirements waived will be used. In hot weather, concrete cured with the non-pigmented type shall be shaded from the direct rays of the sun for the first 3 days of the curing period. The curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. The surfaces shall be thoroughly moistened with water and the curing compound applied as soon as free water disappears. The curing compound shall be applied in a 2-coat continuous operation by approved motorized power-spraying equipment and at a uniform coverage of not more than 400 sq. ft. per gallon for each coat. Concrete surfaces which have been subjected to rainfall within 3 hours after curing compound has been applied shall be resprayed by the method and at the coverage herein specified. All concrete surfaces on which the curing compound has been applied shall be adequately protected for the duration of the entire curing period from pedestrian and vehicular traffic and from any other cause which will disrupt the continuity of the curing membrane.

11. FORMS.

11.1 Material. Forms shall be composed of tongue-and-groove or shiplap lumber, plywood conforming to NBS Product Standards PS-1 exterior type, grade B-B plyform, tempered concrete form hardboard or steel. Steel lining on wood sheathing will not be permitted. The

type, size, shape, quality and strength of all materials of which the forms are made shall be subject to approval.

11.2 Construction. Forms shall be true to line and grade, mortartight and sufficiently rigid to prevent objectionable deformation under load. The form surfaces shall be smooth, free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints shall be chambered and, unless otherwise indicated, all exposed edges shall be chambered. Internal ties shall be so arranged that when the forms are removed all metal will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structure.

11.3 Coating. Forms for exposed surfaces shall be coated with a nonstaining form oil, which shall be applied shortly before concrete is placed. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling, immediately before the placing of concrete, except that in freezing weather oil shall be used.

11.4 Removal. Forms shall not be removed without approval. All form removals shall be accomplished in such a manner as to prevent injury to the concrete. Forms shall not be removed in less than 24 hours. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

12. FURNISHING AND PLACING STEEL REINFORCEMENT.

12.1 General. The Contractor shall furnish, cut, bend and place all steel reinforcement as indicated on the drawings or otherwise required. All reinforcement shall be, when surrounding concrete is placed, free from loose, flakey rust and scale, and free from oil, grease, or other coating which might destroy or reduce its bond with the concrete. All placing shall be in accordance with shop drawings furnished or approved.

12.2 Cutting and Bending. Steel reinforcement may be mill or field bent. All bending shall be in accordance with standard approved practice and by approved machine methods.

12.3 Quality. The steel reinforcement shall conform to the requirement of Paragraph 3.8.

12.4 Spacing of Bars. The spacing of bars shall be as shown on the contract drawings.

12.5 Relation of Bars to Concrete Surfaces. The minimum cover for all main reinforcement shall be 3-inches.

12.6 Supports. All reinforcement shall be secured in place by the use of metal or concrete supports, spacers or ties, as approved.

12.7 Shop Drawings. Shop detail drawings and placing drawings for reinforcing steel shall be submitted for approval in accordance with the requirements of SPECIAL PROVISIONS. Material shall not be fabricated or delivered to the site before the approved shop drawings have been received by the Contractor.

13. EMBEDDED ITEMS. Before placing concrete, care shall be taken to determine that all plastic pipe is firmly and securely fastened in place in the forms. The embedding of wood in concrete will be permitted only when specifically authorized or directed.

14. PAYMENT. All costs in connection with furnishing and placing reinforcing steel and concrete, as specified in this section and shown on the contract drawings, shall be included in the contract lump sum price bid for Item No. 14, "Concrete".

14.1 Expansion and Contraction Joints. No separate payment will be made for expansion and contraction joints, and all costs in connection therewith shall be included in the contract lump price for concrete.

1.3.1 Members shall be standard grade or No. 2 grade in conformance with the National Grading Rule for Dimension Lumber established in conformance with Section 10 of Prod. Std. PS 20.

1.4 Sizes. Lumber sizes shall conform to Prod. Std. PS 20 and shall be surfaced on four sides. Size references are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

1.5 Moisture Content. At the time pressure treated lumber is delivered and when installed in the work, the moisture content shall be 25% maximum.

1.6 Delivery and Storage. Materials shall be delivered to the site in undamaged condition, stored in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.

1.7 Shop Drawings. Shop drawings of timber stop logs shall be submitted for approval in accordance with the SPECIAL PROVISIONS. Shop drawings shall indicate materials, details of construction, methods of fastening, and erection details.

2. PRODUCTS.

2.1 Preservative Treatment.

2.1.1 General. To the extent indicated below, wood members shall be preservative-treated by pressure methods and so marked in accordance with the American Wood Preservers Bureau Standards.

2.1.2 Treatment shall be with water-borne salts and shall conform to the requirements of Fed. Spec. TT-W-571. The minimum net retention of water-borne preservatives shall be as specified below.

<u>Preservative</u>	<u>Fed. Spec.</u>	<u>Minimum Net Retention lb. per cubic foot</u>
Chromated copper arsenate, Type I	TT-W-550	Dry salt 0.75
Acid copper chromate	TT-W-546	Dry salt 1.00
Ammoniacal copper arsenate	TT-W-549	Dry salt 0.45

Treated wood shall be air-dried or kiln-dried to the moisture content specified above and marked with the word "Dry."

Lumber sawed or cut after treatment shall have the cut surfaces well brush-coated with the same preservative that was used at the plant.

3. EXECUTION.

3.1 Workmanship. All work shall be erected plumb, level and true to line in accordance with the details shown on the contract drawings. Members shall be closely fitted and rigidly secured in place. The Contractor shall check all conditions and verify all dimensions before proceeding with the work.

3.2 Field Tests. The Contractor shall furnish and make a trial installation of the stop logs at each sluiceway complete as specified herein and as shown on the contract drawings. Each stop log system shall be straight in appearance, and true to line and grade. Timbers that are found to be crooked, warped, or otherwise damaged or unsuitable shall be removed from the site and replaced with straight undamaged items at no additional cost to the Government. Upon completion of the trial installation, all stop logs shall be delivered to storage at the town of Lancaster at a location to be determined by the Contracting Officer.

4. PAYMENT. All costs in connection with furnishing, installing and field testing pressure treated wood stop logs, as specified in this section and shown on the contract drawings, shall be included in the contract lump sum price bid for Item No. 16, "Wooden Stop Logs."

BID FORM
(CONSTRUCTION CONTRACT)

Invitation No. DACW33-79-B-0031

*Read the Instructions to Bidders (Standard Form 33)
This form to be submitted in duplicate*

DATE OF INVITATION

79 AUGUST 01

NAME AND LOCATION OF PROJECT

LOCAL PROTECTION PROJECT
ISRAEL RIVER
CONSTRUCTION OF ICE IMPOUNDMENT WEIR
LANCASTER, NEW HAMPSHIRE

NAME OF BIDDER (Type or print)

(Date)

TO: Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Mass. 02154

In compliance with the above-dated invitation for bids, the undersigned hereby proposes to perform all work for Construction of Ice Impoundment Weir, Israel River, Lancaster, New Hampshire in strict accordance with the General Provisions, specifications, schedules, drawings, and conditions, for the following amount(s)

See Attached UNIT PRICE SCHEDULE

NOTE: The work will be awarded as a whole to one bidder.
Supplement to Bid Form, Page 1, attached hereto, forms a part of this bid.

The undersigned agrees that, upon written acceptance of this bid, mailed or otherwise furnished within calendar days (30 calendar days unless a different period be inserted by the bidder) after the date of opening of bids, he will within 10 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, if required, on Government standard forms with good and sufficient surety.

The undersigned agrees, if awarded the contract, to commence the work within *
 calendar days after the date of receipt of notice to proceed, and to complete the work within
 * calendar days after the date of receipt of notice to proceed.

* See Paragraph SP-1 of the specifications.

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):

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) with residential addresses

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:

Division Engineer
 New England Division, Corps of Engineers
 424 Trapelo Road
 Waltham, Mass. 02154

Bids may be delivered in advance to the Bids Receiving Desk in Bldg. 111 at the above address or delivered directly to the Contracting Officer in Bldg. 100 (Conference Room) just prior to the bid opening.

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

UNIT PRICE SCHEDULE

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
1	Preparation of Site	1	Job	L.S.	\$ _____
2	Control and Diversion of River	1	Job	L.S.	_____
3	Unclassified Excavation	600	C.Y.	_____	_____
4	Crushed Stone Fill	125	C.Y.	_____	_____
5	Gravel Fill	750	C.Y.	_____	_____
6	Rock Fill	400	C.Y.	_____	_____
7	Random Fill	100	C.Y.	_____	_____
8	Impervious Fill	1,000	C.Y.	_____	_____
9	Additional Rolling for Compactions	10	Hour	_____	_____
10	Wire Mesh Gabions	670	C.Y.	_____	_____
11	Stone Protection	750	C.Y.	_____	_____
12	Gravel Bedding	450	C.Y.	_____	_____
13	Steel Sheet Pile Cut-Off Wall	1	Job	L.S.	_____
14	Concrete	1	Job	L.S.	_____
15	Topsoiling and Seeding	900	S.Y	_____	_____
16	Wooden Stop Logs	1	Job	L.S.	_____
ESTIMATED TOTAL					\$ _____

REPRESENTATIONS
AND CERTIFICATIONS
(Construction Contract)
(For use with SF 19 and 21)

REFERENCE (Enter name 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) 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 and Revisions).

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 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 bidder) 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.) See paragraph 3 to Supplement to Invitation for Bids.

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 set 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 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 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 ~~unless it is determined 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. ~~PREVIOUS CONTRACTS AND COMPLIANCE REPORTS.~~ The offeror represents that 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	MAIN OFFICE ADDRESS (No., Street, City, State, and ZIP Code)
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(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
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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.

8. CLEAN AIR AND WATER CERTIFICATION (1977 Jun). (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:

(a) Any facility to be utilized in the performance of this proposed contract is is not listed on the Environmental Protection Agency List of Violating Facilities.

(b) 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.

(c) He will include substantially this solicitation certification, including this paragraph (c), in every nonexempt subcontract.

REPRESENTATIONS AND CERTIFICATIONS (STD FORM 19-B)(Continued)

MINORITY BUSINESS ENTERPRISE (1976 OCT)

The offeror represents that he () is, () is not, a minority business enterprise. A minority business enterprise is defined as a "business, at least fifty percent (50%) of which is owned by minority group members or, in case of publicly owned businesses, at least fifty-one percent (51%) of the stock 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. (ASPR 7-2003,74)

HANDICAPPED ORGANIZATIONS (1978 FEB)

The offeror certifies that he is /___/ is not /___/ an organization eligible for assistance under section 7 (h) of the Small Business Act (15 USC 636). An offeror certifying in the affirmative is eligible to participate in any resultant contracts hereunder or any part thereof as if it were a small business concern as elsewhere defined in the solicitation. An organization to be eligible under section 7(h) of the Small Business Act must be one which is organized under the laws of the United States or any state, operated in the interest of handicapped individuals, the net income of which does not inure in whole or part to the benefit of any shareholder or other individual; which complies with any applicable occupational health and safety standard prescribed by the Secretary of Labor; which, during the fiscal year in which it bids upon a set-aside, employs handicapped individuals for not less than 75 percent of the manhours required for the production or provision of commodities or services, and can qualify under the additional criteria prescribed in Section 118.11, SBA Rules and Regulations, 13 CFR 118.11.

NOTE: A handicapped individual, to be eligible for assistance under section (7) (h) of the Small Business Act (15 USC 636) must remain a small business concern during the term of the ensuing contract. Such eligible handicapped individuals offering on this procurement need only certify under paragraph 1, SF 33.

(Section 502 of PL 95-89, Section 15 of the Small Business Act (15 USC 644))

EQUAL EMPLOYMENT COMPLIANCE (1973 SEP)

By submission of this offer, the offeror represents that, to the best of his knowledge and belief, except as noted below, up to the date of this offer no written notice such as a show cause letter, a letter indicating probable cause, or any other written notification citing specific deficiencies, has been received by the offeror from any Federal Government agency, or representative thereof that the offeror or any of its divisions or affiliates or known first-tier subcontractors is in violation of any of the provisions of Executive Order 11246 of September 24, 1965, as amended, or rules and regulations of the Secretary of Labor (41 CFR Chapter 60) and specifically as to not having an acceptable affirmative action compliance program or being in noncompliance with any other aspect of the Equal Employment Opportunity Program. It is further agreed that should there be any change (i) in the offeror's status or circumstances between this date and the date of expiration of this offer or any extension thereof, or (ii) during any contract or extension thereof, resulting from this solicitation, the Contracting Officer will be notified promptly.

DAR (ASPR) 7-2003.14(b)(3)

SUPPLEMENT TO BID FORM
(Construction Contract)

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.

In case of error in the extension of prices, the unit price will govern.

The bidder warrants that he has available or under his control plant of the character and in the amount required to complete the proposed work within the specified time.

It is hereby warranted that in the event award is made to the bidder, there will be furnished under this contract, or used in the performance of the work covered by this contract, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States, except as noted below or otherwise indicated in this bid or authorized in the invitation.