CITY OF FAIRHOPE

INVITATION TO BID

SEALED BIDS will be received by the City of Fairhope of Baldwin County, Alabama, in the City of Fairhope's City Services and Public Utilities Building located at, 555 South Section St. Fairhope, Alabama, until 10:00 A.M. Tuesday, August 20, 2024, and then publicly opened thereafter, for furnishing all labor and materials, and performing all work required by the City of Fairhope and described as follows:

Bid Number 24-062-2024-PWI-025
Stacks Gully Slope Stabilization Project
Public Works Project No. 2024-PWI 025

The City of Fairhope is requesting responses from qualified contractors to provide all labor, equipment, materials, and all incidentals necessary to construct approximately 125 linear feet (2225 square feet of wall face) of Mechanically Stabilized Earth (MSE) Retention Wall within a reach of Stacks Gully. The failing gully slope is located east of Mobile Street and south of 50 Fairhope Avenue, in Fairhope, Alabama. The work includes but is not limited to clearing & grubbing, erosion & sedimentation control, MSE wall construction, structural backfill, unclassified fill, grading, topsoil, solid sod and stabilization. This project is to be designed and contracted as a "turnkey" Public Works Project.

Bid documents will be posted on the City of Fairhope Website: www.FairhopeAL.gov or a copy may be obtained by e-mailing: Purchasing@FairhopeAL.gov. Specifications are on file and may be seen in the Purchasing Department of the City of Fairhope, Alabama, 555 S. Section Street. Prior to opening, Bid packages may be picked up at that location during normal operation, between 7:00 am and 4:00 pm local time.

Questions or comments pertaining to this bid must be presented in writing, sent as e-mail **t**o the attention of the Purchasing Manager, Erin Wolfe, 555 South Section St., Fairhope, AL 36532, e-mail: Purchasing@FairhopeAL.gov, by Friday, August 16, 2024, at 11:00 A.M. or will be forever waived.

There will be a **MANDATORY** pre-bid meeting on Thursday, August 15, 2024, at 10:00 A.M. at the City Services and Public Utilities Building located at 555 South Section Street, Fairhope, AL 36532.

The City of Fairhope is an Equal Opportunity Employer and requires that all **BIDDERS** comply with the Equal Employment Opportunity laws and the provisions of the CONTRACT Documents in this regard. The **CITY** also encourages and supports the utilization of Minority Business Enterprises on this and all public bids.

All bids must be on blank bid forms provided in the Bid Documents. All bids, with their guarantee (when required), must be enclosed in a sealed, opaque envelope, clearly identified on the outside as a "**Sealed Bid" with Item Name, Bid Number, City of Fairhope's Name and Address and CONTRACTOR's Name and Address**. Each bid must be in a separate envelope. Bids made out in pencil will not be accepted. Failure to observe the instructions contained herein will constitute grounds for rejection of your bid. The **City** reserves the right to accept or reject all bids or any portion thereof, and to waive informalities and to furnish any item of material or work to change the amount of the CONTRACT, whichever is in the best interest of the City of Fairhope.

No bids will be considered unless the **CONTRACTOR,** whether resident or non-resident of Alabama, is properly qualified to submit a proposal for this type of work in accordance with all applicable laws of the State of Alabama. Where applicable, this shall include evidence of holding a current license from the State Licensing board for General BIDDERS, Montgomery, Alabama, as required by Chapter 8 of Title 34, of the Code of Alabama, 1975. In addition, the Awarded Vendor, if non-resident of the State, and if a corporation, shall show evidence of having qualified with the Secretary of State to do business in the State of Alabama. **CONTRACTOR** must have a current business license or purchase a business license with the City of Fairhope prior to work performed. No bids shall be withdrawn for the period of thirty (30) days subsequent to the opening of proposals without the consent of the City of Fairhope, Baldwin County, Alabama. Once completed, a tabulation of the responsive and responsible bids will be available for public viewing by visiting the following web address: www.FairhopeAL.gov.

INVITATION TO BID
NO. 24-062-2024-PWI-025
STACKS GULLY SLOPE STABILIZATION PROJECT

CITY OF FAIRHOPE PUBLIC WORKS
PROJECT NO. 2024-PWI 025

CITY OF FAIRHOPE
SHERRY SULLIVAN, MAYOR

TABLE OF CONTENTS

ITEM I
INVITATION AND INSTRUCTIONS TO BIDDERS

1.00 **BID INVITATION**

Notice is hereby given that the **City of Fairhope ("CITY")** will receive bids on the project described herein. Qualified **BIDDERS** are invited to bid on this CONTRACT.

1.01 **BID NO.:** **24-062-2024-PWI-025**
NAME: **Stacks Gully Slope Stabilization Project**
PROJECT NO.: **2024-PWI 025**

1.02 **SUMMARY**

The City of Fairhope is requesting responses from qualified contractors to provide all labor, equipment, materials, and all incidentals necessary to construct approximately 125 linear feet (2225 square feet of wall face) of Mechanically Stabilized Earth (MSE) Retention Wall within a reach of Stacks Gully. The failing gully slope is located east of Mobile Street and south of 50 Fairhope Avenue, in Fairhope, Alabama. The work includes but is not limited to clearing & grubbing, erosion & sedimentation control, MSE wall construction, structural backfill, unclassified fill, grading, topsoil, solid sod and stabilization. This project is to be designed and contracted as a "turnkey" Public Works Project.

1.03 **BID DEADLINE**

Bids will be received until **10:00 A.M. local time, Tuesday, August 20, 2024,** at the City Services and Public Utilities Building, 555 South Section St., Fairhope, Alabama, and publicly opened shortly thereafter.

1.04 **AVAILABILITY OF DOCUMENTS**

Bid Documents may be obtained on the City's website at www.FairhopeAL.gov/departments/purchasing/bids or at the City Services and Public Utilities Building, 555 South Section Street., Fairhope, Alabama. One set of Bid Documents can be obtained free of charge.

1.05 **INQUIRIES**

Questions or comments pertaining to this bid must be presented in writing, sent as e-mail to the attention of the Purchasing Manager, Erin Wolfe, 555 South Section St., Fairhope, AL 36532, e-mail: Purchasing@FairhopeAL.gov, by Friday, August 16, 2024, at 11:00 A.M. or will be forever waived.

1.06 **SITE EXAMINATION**

There will be a **MANDATORY pre-bid meeting** on Thursday, August 15, 2024, at 10:00 A.M. at the City Services and Public Utilities Building, located at 555 South Section Street, Fairhope, AL 36532. This **MANDATORY** pre-bid meeting will serve as an opportunity for potential bidders to engage project stakeholders, review plans and ask questions.

The City of Fairhope will not furnish any labor, material, or supplies unless specifically stated in the CONTRACT Documents. **BIDDERS** must be properly licensed to perform the work as outlined in the Scope of Work. Awarded Vendor must have a current business license or purchase a business license with the City of Fairhope prior to bid being awarded.

Except for CONTRACTS funded in whole or in part by funds received from a federal agency, preference shall be given to resident **BIDDERS** on the same basis as the nonresident **BIDDERS** state awards CONTRACT to Alabama **BIDDERS b**idding under similar circumstances. Therefore, non-resident **BIDDERS** shall submit with their bid a written opinion of an attorney at law licensed to practice law in the non-resident **BIDDERS** state of domicile as to preferences granted by that state to entities doing business in that state when letting public contracts.

1.07 **BID SECURITY**

Bids shall be accompanied by a Bid Security equal to 5% (percent) of the bid price, but in no event more than $10,000.00. Bid Security shall be in the form of a Bid Bond or a cashier's check payable to The City of Fairhope. No Bid Security is required on bids less than $10,000.00.

1.08 **PERFORMANCE ASSURANCE AND INSURANCE**

The **BIDDER** to whom award is made shall provide a Performance Bond equal to 100% of the CONTRACT Amount and a Labor and Material Bond equal to 50% of the CONTRACT amount.

The accepted **BIDDER** shall also provide insurance as required in ITEM V.

1.09 **DURATION OF OFFER**

Bids maybe withdrawn in written or telegraphic request received from **BIDDER** prior to the time fixed for opening. No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the consent of the City Council of the City of Fairhope.

1.10 **EQUAL OPPORTUNITY**

The City of Fairhope is an Equal Opportunity Employer and requires that all **BIDDERS** comply with the Equal Employment Opportunity laws and the provisions of the CONTRACT Documents in this regard. The City of Fairhope also encourages and supports the utilization of Minority Business Enterprises on this and all public bids.

1.11 **BID SUBMISSION AND PREPARATION**

Sealed Bids, signed, executed, and dated, will be received by the City of Fairhope as noted in section 1.03 above. Submit one copy of the executed offer on the Bid Form provided, signed, and with the required Bid Security. **The bid shall be enclosed in a sealed opaque envelope approximately 9x12 inches or larger, clearly identified on the outside** as a **SEALED BID** with **the BID NAME, BID NUMBER, CITY'S NAME AND ADDRESS, CONTRACTOR'S NAME AND ADDRESS.**

Forms furnished, or copies thereof, shall be used, and strict compliance with the requirements of the invitation, these instructions, and the instructions printed on the forms is necessary. Special care should be exercised in the preparation of bids. **BIDDERS** must make their own estimates of the facilities and difficulties attending the performance of the proposed CONTRACT, including local conditions, uncertainty of weather, and all other contingencies. All designations and prices shall be fully and clearly set forth. The proper space in the bid and guaranty forms shall be suitably filled in.

Fill in all blanks on the bid form with non-erasable ink or type. Erasers or other changes must be explained or noted over the signature of the **BIDDER.**

The Bid Form may have a Contingency Allowance listed. Add this amount to the Base Bid to derive the Total Bid. The Contingency Allowance covers unforeseen conditions and shall not be used by the **BIDDER** without the written authorization of the **CITY**. At the conclusion of the project, the unused portion of the Contingency Allowance shall revert to the **CITY**.

Each bid must give the full business address of the **BIDDER** and must be signed by him with his usual signature. Bids by partnerships must furnish the full names of all partners and must be signed with the partnership name by one of the members of the partnership, or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed with the legal name of the corporation followed by the name of the State of Incorporation and by the signature and designation of the president, secretary, or other person authorized to bind it in the matter. The name of each person shall also be typed or printed below the signature. A bid by a person who affixes to this signature the word "president," "secretary," "agent," or other designation without disclosing his principal, may be held to be the bid of the individual signing. When requested by the **CITY** satisfactory evidence of the authority of the officer signing in behalf of the corporation shall be furnished.

Each project will be bid separately unless otherwise expressly requested in the CONTRACT document. Combination bids, that is bids on separate projects lumped together as a single bid or on all or none basis, will not be accepted unless the CONTRACT document expressly requests or permits same.

1.12 BID INELIGIBILITY

Bids that contain irregularities of any kind may be declared unacceptable at the discretion of the **CITY**. The **CITY** may waive any irregularities and may reject any or all bids. Bids received after the deadline will be returned to the **BIDDER** unopened.

1.13 CONTRACT TIME

The **BIDDER** agrees to The City of Fairhope ("Owner") to construct approximately 125 linear feet (2,225 square feet of wall face) of Mechanically Stabilized Earth (MSE) Retention Wall within a reach of Stacks Gully The work shall be completed 120 calendar days (no exceptions for holidays) following a 15 day Notice to Proceed Period.

1.14 INQUIRIES/ADDENDA

All Addenda are part of the CONTRACT Documents. Include resultant costs in the Bid. Addenda will be issued by E-MAIL and posted on the City's website: www.FairhopeAL.gov. It is the responsibility of the **BIDDER** to verify that all Addenda have been received.

Questions or comments pertaining to this bid must be presented in writing, sent via email Purchasing@FairhopeAL.gov by Friday, August 16, 2024, at 11:00 A.M. or will be forever waived.

1.15 BID ACCEPTANCE

Bid with lowest Total Bid amount from a responsive and responsible **BIDDER** may be accepted if within the CONTRACT Budget. In the event that alternates are listed on the Bid Form, the lowest combination of Total Bid and Alternate Bids accepted by the **CITY** shall be the accepted bid. Alternates shall be awarded in the order in which they are listed on the Bid Form.

1.16 BIDDERS INTERESTED IN MORE THAN ONE BID

If more than one bid is offered by any one party, by or in a name of his clerk, partner, corporation in which he has a substantial interest, or in which he is an officer, or other person, all such bids may be rejected. A party who has quoted prices on materials to a **BIDDER** is not thereby disqualified from quoting prices to other **BIDDERS** or from submitting a bid directly for the materials or work. The **CITY** reserves the right to determine in its discretion whether the provisions of this clause have been violated by any **BIDDER.**

1.17 ERRORS IN BIDS

BIDDERS or their authorized agents are expected to examine the maps, drawings, specifications and all other instructions pertaining to the work, which will be open to their inspection. Failure to do so will be at the **BIDDER'S** own risk. In case of error, in the extension of prices, the unit price will govern.

1.18 CONTRACT AND BOND

The **BIDDER** to whom award is made must, when requested, enter into written CONTRACT on the standard form as set out herein, with satisfactory security in the amount required, within the period specified, or, if no period be specified, within 15 days after the required forms are presented to him for signature.

1.19 COLLUSION

If there is any reason for believing that collusion exists among the **BIDDERS** any or all bids may be rejected, and those participating in such collusion may be barred from submitting bids on the same or other work with the **CITY**.

1.20 SUBLETTING OR ASSIGNING OF CONTRACT

Limitations: The CONTRACTOR shall not sublet, assign, transfer, convey, sell, or otherwise dispose of any portion of the CONTRACT, his right, title or interest therein, or his power to execute such CONTRACT, to any person, firm or corporation without written consent of the **CITY**, and such written consent shall not be construed to relieve the **BIDDER** of any responsibility for the fulfillment of the

CONTRACT. Unless otherwise stipulated in the proposal or special provisions, the **BIDDER** shall perform with his own organization, and with the assistance of workmen under his immediate superintendence and reported on his payroll, all CONTRACT work of a value not less than 50 percent of the total CONTRACT amount, except that any items designated in the CONTRACT as "Specialty Items" so performed by SUB-CONTRACT may be deducted from the total CONTRACT amount before computing the amount of work required to be performed by the B**IDDER** with his own organization.

SUB-CONTRACTOR'S Status:

A **SUB-CONTRACTOR** shall be recognized only in the capacity of an employee or agent of the **CONTRACTOR** and the **CONTRACTOR** will be responsible to the **CITY** for all of the **SUB-CONTRACTOR's** work, including failures or omissions; and his removal may be required by the Project Manager, as in the case of an employee.

1.21 **PROSECUTION OF WORK**

The **BIDDER** shall prosecute the work continuously and diligently in the order and manner set out in his schedule as approved by the **CITY**. He shall provide sufficient satisfactory materials, labor, and equipment to ensure that the work will be completed in a satisfactory manner within the time specified in the CONTRACT.

Should the **BIDDERS** fail to maintain a satisfactory rate of progress, the **CITY** may require that additional forces and/or equipment be placed on the work to bring the project up to schedule and maintain it at that level.

Should the **BIDDER** fail to furnish sufficient satisfactory equipment and/or labor for maintaining the quality and progress of the work at satisfactory level, the **CITY** may withhold all estimates that may become due until satisfactory quality and progress are maintained; or the CONTRACT may be annulled.

ITEM II
SCOPE OF WORK AND SPECIFICATIONS

Bid Number 24-062-2024-PWI-025
Stacks Gully Slope Stabilization Project
Public Works Project No. 2024-PWI 025

SLOPE STABILIZATION VIA CONSTRUCTION OF A MSE RETAINING WALL:

This work shall include furnishing all labor, equipment, materials and all incidentals necessary to construct approximately 125 linear feet (2,225 square feet of wall face) of Mechanically Stabilized Earth (MSE) Retention Wall within a reach of Stacks Gully. The failing gully slope is located east of South Mobile Street and south of 50 Fairhope Avenue, in Fairhope, Alabama. The work includes but is not limited to clearing & grubbing, erosion & sedimentation control, MSE wall construction, structural backfill, unclassified fill, grading, topsoil, solid sod and stabilization. This project is to be designed and contracted as a "turnkey" Public Works Project.

Materials and workmanship shall be per the enclosed plans and specifications. Some work will involve field investigation and "design build" prior to repair. All proposed field modifications and "design builds" shall be reviewed and approved bu the City Engineer prior to Contractor initiation of work.

CRITICAL TIMELINES:

- 15-day Notice to Proceed Period
- 120 Calendar Days allowed for work (no exceptions for holidays)

GENERAL NOTES:

1. Contractor will be required to be Licensed, Bonded, and Insured. Documents will be required at time of bid/quote acceptance and issuance of purchase order and/or contract.
2. Work must be completed 120 calendar days from the end of "Notice to Proceed" period.
3. Enclosed Scope of Work, descriptions, quantities, etc. are "good faith" estimates only.
4. Pay requests will be accepted and processed:
   a. By the 25th of each month of Construction.
   b. Final Pay Request at Project Closeout – Release of Retainage.
5. Job quoted are subject to the GENERAL CONDITIONS, SPECIAL PROVISIONS and SUPPLEMENTAL SPECIFICATIONS as attached.
6. LIQUIDATED DAMAGES: Liquidated Damages (LD's) shall be applied to this contract. The Liquidated Damages Daily Charge of $150.00/calendar day will apply.
7. Questions, inquiries and requests for clarification should be directed to Richard D. Johnson, PE; City Engineer via email to purchasing@fairhopeAL.gov.
8. Bids/Quotes must be received by 2:00 p.m. on Tuesday, June 25, 2024 at the Purchasing Department, 555 South Section Street, Fairhope, AL 36532.
9. This is a sealed Public Works Bid Project – all applicable City and State terms and conditions apply.

GENERAL CONDITIONS, SPECIAL PROVISIONS and SUPPLEMENTAL SPECIFICATIONS

Project 2024-PWI 025 Stacks Slope Stabilization Project

1. **SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION:** The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54).

   The contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operations.

2. **DEPARTMENT OF TRANSPORTATION SPECIFICATIONS:** It is the intent of the City Engineer to construct the within described improvements in accordance with the State of Alabama Highway Department Standard Specifications for Highway Construction, most current edition. Said specifications shall be hereafter referred to as the Highway Department Specifications.

   All provisions enumerated in the Highway Department Specifications shall be complied with, except as otherwise revised herein. Where certain modifications in said specifications appear in these specifications, only the modifications apply; otherwise, the standard specifications apply.

   In said specifications where the words State of Alabama, Governor, State Highway Department, Director, etc., appear, substitute the Owner. Where the word Engineer appears, it shall mean City Engineer. Where the words Testing Laboratory and/or Laboratory appear, it shall mean the particular Testing Laboratory retained by the Owner for this work.

3. **DEPARTMENT OF TRANSPORTATION DRAWINGS:** Where State of Alabama Department of Transportation Alabama Standard Drawings are applicable for the work required, they shall be considered as part of the plans, and copies of required drawings will be afforded the Contractor for construction purposes.

4. **PROJECT SITE:** The Contractor shall keep the project site clean at all times. No loose dirt, or stockpiles shall be left in areas other than those areas approved by the City Engineer. The City Engineer may require the Contractor to clean up any portion of the Project as he deems necessary. Construction & Demolition (C&D) must be cleaned up daily.

5. **MATERIALS:** The Contractor agrees to comply with, and to require the compliance of all subcontractors with the provisions of Act #876 of the Legislature of Alabama, adopted on September 8, 1961, requiring purchase of materials and supplies and products for the project which are manufactured, mined, processed, or otherwise produced in the United States or its territories if the same are available at reasonable prices; and the Contractor further agrees and stipulates to pay to the Owner a sum to be determined and fixed by the Owner in an amount not less than five hundred ($500.00) dollars nor more than twenty (20%) percent of the gross amount of the Contract in the event he or any subcontractor breach this agreement to use domestic products.

6. **SLOPE STABILIZATION VIA CONSTRUCTION OF A MSE RETAINING WALL:** This work shall include furnishing all labor, equipment, materials and all incidentals necessary to construct approximately 125 linear feet (2225 square feet of wall face) of Mechanically Stabilized Earth (MSE) Retention Wall within a reach of Stacks Gully. The failing gully slope is located east of South Mobile Street and south of 50 Fairhope Avenue, in Fairhope, Alabama. The work includes but is not limited to clearing & grubbing, erosion & sedimentation control, MSE wall construction, structural backfill, unclassified fill, grading, top soil, solid sod and stabilization. This project is to be designed and contracted as a “turnkey” Public Works Project.

Materials and workmanship shall be per the enclosed plans and specifications. Some work will involve field investigation and "design build" prior to repair. All proposed field modifications and "design builds" shall be reviewed and approved by the City Engineer prior to Contractors initiation of work.

7. **PUBLIC CONVENIENCE:** No attempt is made to restrict work hours of the Contractor's operations, but he is reminded that it will be necessary to arrange his work schedule to provide the least inconvenience to the public and individual residents. The Contractor shall take extra precaution to insure that traffic is protected by the use of, but not limited to, flashing signs and barrels. No direct payment will be made for any of the work described in this section.

8. **EROSION CONTROL:** Immediately prior to any clearing and grubbing or any excavation which could disturb the soils, the Contractor shall install the erosion control items in locations as required by the nature of the work performed. The provided Erosion Control Plan shall be considered the minimum requirement for the project.

   The Contractor will be responsible for identifying and installing erosion control in areas where erosion may be encountered during construction of the project. The Contractor shall take all necessary precautions to insure that the construction of the project and the erosion/sediment from the project are adequately controlled and do not damage streams or adjacent property.

   The erosion control items installed shall be maintained by the Contractor throughout the course of the project. The City of Fairhope's Environmental Programs Manager shall be the final authority for corrective action, remediation, requirement of additional BMP's and all other directives required for erosion/sediment control.

9. **UNDERGROUND UTILITIES AND SERVICES:** Existing utilities, mailboxes, signs and minor obstructions are not shown on the plans. Their presence, and the required removal and the resetting thereof shall be considered incidental to the overall project and the cost for the work noted above shall be included in the overall unit quantity price for the project (no separate payment unless noted otherwise).

   The Contractor is solely responsible for the locating all existing Utilities and Services. Failure of the Contractor to locate any utility does not justify additional payment to the Contractor if said utility is damaged. The Contractor must notify the utility companies involved prior to starting construction and shall make every effort not to damage any utilities. If utilities are damaged by the Contractor, the Contractor must pay all expenses incurred in the repair at no cost to the Owner or his representatives.

10. **PROVISIONS REQUIRED BY LAW DEEMED INSERTED:** Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion or correction.

11. **PROTECTION OF LIVES AND HEALTH:** "The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes, in addition to specific safety and health regulations described by Chapter XIII, Bureau of Labor Standards, Department of Labor, Part 1518, Safety and Health Regulations for Construction, as outlined in the Federal Register, Volume 36, No. 75, Saturday, April 17, 1971. Title 29 - LABOR, shall be observed and the Contractor shall take or cause to be taken, such additional safety and health measures as the Contracting Authority may determine to be reasonably necessary."

12. **CITY ENGINEER'S AUTHORITY:** The City Engineer shall give all orders and directions contemplated under this contract and specifications, relative to the execution of the work. The City Engineer shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and the construction thereof. The City Engineer's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any question shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the City Engineer's shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

    The City Engineer shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the Contractor under this contract and other Contractors performing work for the Owner shall be adjusted and determined by the City Engineer.

13. **USE OF PREMISES AND REMOVAL OF DEBRIS:** The Contractor expressly undertakes at his own expense:
    a. to take every precaution against injuries to persons or damage to property;
    b. to store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractors;
    c. to place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work; materials, and debris caused by his operations, to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance;
    d. before final payment to remove all surplus material, false-work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition;
    e. to effect all cutting, fitting or patching of his work required to make the same to conform to the plans and specifications and, except with the consent of the City Engineer, not to cut or otherwise alter the work of any other Contractor.
    f. The removal and proper disposal of all construction and demolition (C&D) debris is the contractor's responsibility. The cost of such removal and disposal shall be a subsidiary obligation of the related works unit costs.

14. **INSURANCE:** The Contractor shall not commence work under this contract until he has obtained all the insurance required under the terms of this contract.

15. **STATE OF ALABAMA GENERAL CONTRACTOR LICENSE:** Any proposed bidder for this project must possess and maintain a valid Alabama General Contractor (GC) License to qualify to submit bids in the state of Alabama (Code of Alabama; Section 34-8-8). The license must be maintained and valid throughout the contract period. The prime contractor may receive bids from unlicensed subcontractors; however the subcontractor must be licensed before beginning work (Code of Alabama; Section 34-8-7). A copy of all GC Licenses must be provided by the Pre-Construction Conference.

16. **CITY OF FAIRHOPE BUSINESS LICENSE:** The Contractor shall not commence work under this contract until he has obtained a City of Fairhope Business License. The license must be maintained and valid throughout the contract period. A copy of the Business License must be provided by the Pre-Construction Conference.

17. **MATERIALS, SERVICES AND FACILITIES:**
    a. It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.
    b. Any work necessary to be performed after regular working hours, on Sundays or Legal Holidays, shall be performed without additional expense to the Owner.

18. **CONTRACTOR'S TITLE TO MATERIALS:** No materials or supplies for the work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work, free from all liens, claims or encumbrances.

19. **INSPECTION AND TESTING OF MATERIALS:**
    a. All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Owner. The Owner will pay for all laboratory inspection service direct, and not as a part of the contract.
    b. Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specification and suitability for uses intended.

20. **QUANTITIES AND PAYMENTS:** Quantities provided are best estimates and may vary with field conditions. Contractor should field verify prior to bidding. Payment will be made on actual measured quantities of work/materials preformed. Only two pay requests will be entertained: 30-Day Draw, Final acceptance of work and release of retainage at final acceptance. A 5% of the first 50% of the Contract Amount retainage will be applied to the project – retainage will be paid at completion of project close out.

21. **CONTRACT TIME:** Contract time for this project shall be one hundred and twenty (120) Calendar days from the Notice to Proceed date.

22. **FAILURE TO COMPLETE WORK WITHIN CONTRACT TIME:** Should the Contractor, or in case of default, the surety, fail to complete the work within the time stipulated in the contract or the adjusted time as granted under the provisions of this contract, a deduction for each calendar day that any work shall remain uncompleted, an amount of ***$150.00 (one-hundred and fifty and no/100)*** shall be deducted from any monies due the Contractor on pay estimates. Any adjustments due to approved time extensions or overruns in the contract amount will be made only after written request by the contractor as may be appropriate. Liquidated damages assessed as provided in these Specifications is not a penalty, but is intended to compensate the City for increased time in administering the contract, supervision, inspection and management, particularly that management and inspection which requires maintaining normal field project management forces for a longer time on any construction operation or phase than originally contemplated when the contract period was agreed upon in the contract. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the City of any of its rights under the contract.

Chapter 2 National Standard Construction Specifications

	Effective date	
	Instruction	Specification
Site preparation		
1—Clearing	5/01	5/01
2—Clearing and Grubbing	5/01	5/01
3—Structure Removal	5/01	5/01
4—Channel Clearing and Shaping	5/01	5/01
5—Pollution Control	5/01	5/01
6—Seeding, Sprigging, and Mulching	5/01	5/01
7—Construction Surveys	5/01	5/01
8—Mobilization and Demobilization	5/01	5/01
9—Traffic Control	5/01	5/01
10—Water for Construction	5/01	5/01
Foundation work		
11—Removal of Water	5/01	5/01
12—Relief Wells	5/01	5/01
13—Piling	5/01	5/01
14—Pressure Grouting	5/01	5/01
Earthwork		
21—Excavation	5/01	5/01
22—(Reserved)		
23—Earthfill	5/01	5/01
24—Drainfill	5/01	5/01
25—Rockfill	5/01	5/01
26—Topsoiling	5/01	5/01
27—Diversions and Waterways	5/01	5/01
28—Lime Treated Earthfill	5/01	5/01
29—Soil-Cement	5/01	5/01
Concrete and reinforcement		
31—Concrete for Major Structures	5/01	11/05
32—Structure Concrete	5/01	5/01
33—Shotcrete	5/01	5/01
34—Steel Reinforcement	5/01	11/05
35—Concrete Repair	5/01	5/01
36—Roller Compacted Concrete	9/04	11/05

	Effective date	
	Instruction	Specification
Nonmetal pipe conduits		
41—Reinforced Concrete Pressure Pipe Conduits	5/01	5/01
42—Concrete Pipe Conduits and Drains	5/01	5/01
43—Clay Pipe	5/01	5/01
44—Corrugated Polyethylene Tubing	5/01	5/01
45—Plastic Pipe	5/01	5/01
46—Tile Drains	5/01	11/05
Metal pipe conduits		
51—Corrugated Metal Pipe	5/01	5/01
52—Steel Pipe	5/01	5/01
53—Ductile-Iron Pipe	5/01	5/01
Riprap and slope protection		
61—Rock Riprap	5/01	11/05
62—Grouted Rock Riprap	5/01	5/01
63—Treatment of Rock Surfaces	5/01	5/01
64—Wire Mesh Gabions and Mattresses Twisted (Woven) or Welded Mesh	5/01	11/05
Water control gates and valves		
71—Water Control Gates	5/01	5/01
Miscellaneous structural work		
81—Metal Fabrication and Installation	5/01	5/01
82—Painting Metalwork	5/01	11/05
83—Timber Fabrication and Installation	5/01	5/01
84—Painting Wood	11/05	11/05
Miscellaneous construction		
91—Chain Link Fence	5/01	5/01
92—Field Fence	5/01	5/01
93—Identification Markers or Plaques	5/01	5/01
94—Contractor Quality Control	5/01	5/01
95—Geotextile	5/01	5/01
96—Field Office	5/01	5/01
97—Flexible Membrane Liner	11/05	11/05
98—Geosynthetic Clay Liner	11/05	11/05

Chapter 3 National Standard Material Specifications

Instructions for use
Construction Specification 2—Clearing and Grubbing

1. Applicability
Construction Specification 2 is applicable to the clearing and grubbing of woody vegetation and the removal of trash and rubbish at construction sites.

2. Material specifications
No material specifications complement Construction Specification 2.

3. Included items
Items to be included in contract specifications and drawings follow:

a. When the area(s) to be cleared and grubbed, including area(s) of rubbish removal, is definable on the project layout map or other construction plan view, the limits must be shown and clearly defined.

b. When the area(s) to be cleared and grubbed is not definable on the drawings (which may occur for many channel improvement projects), the extent of clearing and grubbing required must be described by notes and by designation of right-of-way boundaries and station limits.

c. When replacement plants are required because of damage caused by the contractor, the specific size, number, and species needs to be specified in section 7. Example: "Any tree removed that was designated to remain or is irreparably damaged shall be replaced with two 15-gallon valley oak *(Quercus lobata)* as directed by the contracting officer."

d. When measurement and payment are identified to be in accordance with method 2, section 6, the survey line(s) along which the cleared and grubbed area(s) length is to be measured must be designated. The lateral extent and station reaches of the area(s) to be cleared and grubbed must be clearly defined.

e. Areas in which disposal of refuse/waste material is not allowed or areas where disposal is restricted must be clearly defined or shown on the drawings.

f. Special requirements for grubbing depth, if required.

g. Required depth of earth cover over buried materials, if applicable.

h. Required surface grading over buried materials, if applicable. Existing natural flow patterns onto the construction site or from the site onto other properties must be a consideration in the final grading.

i. Restrictions on the use of explosives, if any.

j. Restrictions on the burning of combustible materials as a disposal procedure, if any.

k. Special requirements for control of erosion, water pollution, and air pollution, if applicable. Requirements of this specification must be compatible with any and all requirements outlined in Construction Specification 5, Pollution Control, when included as part of the contract.

l. Method(s) of measurement and payment if the standard specification includes more than one method.

4. Methods
Section 6, Measurement and payment

Method 1—Intended for use when the area(s) to be cleared and grubbed is extensive and can be defined in units of area on the ground and on the drawings. Section 6 should specify horizontal or surface measurements to be used to determine area cleared and grubbed. A reservoir area is a typical example of this type of site.

***Method 2*—**Intended for use when the area(s) to be cleared and grubbed is long and narrow. Section 6 should specify horizontal or surface measurements to be used to determine length of clearing and grubbing. A channel right-of-way is a typical example of this type of site.

***Method 3*—**Intended for use when the area(s) to be cleared and grubbed is extensive, but the vegetation consists mainly of scattered trees, stumps, or snags that can be measured individually.

***Method 4*—**Intended for use when the area(s) to be cleared and grubbed cannot be measured practically and when it is reasonable to expect that variations in the estimated quantity of work to be performed will not occur after the contract is awarded. For method 4, the procedures that will be used to determine the amount of work satisfactorily completed for progress payment need to be identified in section 7. Options may include:

- An onsite agreed-to estimate of the percent of work satisfactorily completed at time of cutoff.
- Require the contractor to provide measurements of all areas and identify those that have been satisfactorily cleared and grubbed, and use a percentage of the total bid item.
- Other suitable and fair methods, one of which could be related to construction schedule.
- When all but one method is deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** After deleting, left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 2–3, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 2—Clearing and Grubbing

1. Scope
The work consists of clearing and grubbing and disposal of trees, snags, logs, brush, stumps, shrubs, and rubbish from the designated areas.

2. Protection of existing vegetation
Trees and other vegetation designated to remain undisturbed shall be protected from damage throughout the duration of the construction period. Any damages resulting from the contractor's operations or neglect shall be repaired by the contractor.

Earthfill, stockpiling of materials, vehicular parking, and excessive foot or vehicular traffic shall not be allowed within the drip line of vegetation designated to remain in place. Vegetation damaged by any of these or similar actions shall be replaced with viable vegetation of the same species, similar condition, and like size unless otherwise approved by the contracting officer.

Any cuts, skins, scrapes, or bruises to the bark of the vegetation shall be carefully trimmed and local nursery accepted procedures used to seal damaged bark.

Any limbs or branches 0.5 inch or larger in diameter that are broken, severed, or otherwise seriously damaged during construction shall be cut off at the base of the damaged limb or branch flush with the adjacent limb or tree trunk. All roots 1-inch or larger in diameter that are cut, broken, or otherwise severed during construction operations shall have the end smoothly cut perpendicular to the root. Roots exposed during excavation or other operations shall be covered with moist earth or backfilled as soon as possible to prevent the roots from drying out.

3. Marking
The limits of the area(s) to be cleared and grubbed will be marked by stakes, flags, tree markings, or other suitable methods. Trees to be left standing and uninjured will be designated by special markings placed on the trunk about 6 feet above the ground surface.

4. Clearing and grubbing
All trees not marked for preservation and all snags, logs, brush, stumps, shrubs, rubbish, and similar materials shall be cleared from within the limits of the designated areas. Unless otherwise specified, all stumps, roots, and root clusters that have a diameter of 1 inch or larger shall be grubbed out to a depth of at least 2 feet below subgrade for concrete structures and 1 foot below the ground surface at embankment sites and other designated areas.

5. Disposal
All materials cleared and grubbed from the designated areas shall be disposed of at locations shown on the drawings or in a manner specified in section 7. The contractor is responsible for complying with all local rules and regulations and the payment of any and all fees that may result from disposal at locations away from the project site.

6. Measurement and payment
Method 1—For items of work for which specific units prices are established in the contract, the cleared and grubbed area is measured to the nearest 0.1 acre. Payment for clearing and grubbing is made for the total area within the designated limits at the contract unit price. Such payment will constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, the length of the cleared and grubbed area is measured to the nearest full station (100 feet) along the line designated on the drawing or identified in the specifications. Payment for clearing and grubbing is made for the total length within the designated limits at the contract unit price. Such payment will constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Method 3—For items of work for which specific unit prices are established in the contract, each tree, stump, and snag having a diameter of 4 inches or larger and each log having a diameter of 4 inches or larger and a length of 10 feet are measured before removal. The size of each tree and snag is determined by measuring its trunk at breast height above the natural ground surface. The size of each log is determined by measuring the butt and by measuring its length from butt to tip. The size of each stump is measured at the top. Diameter is determined by dividing the measured circumference by 3.14.

Payment for clearing and grubbing of each tree, stump, and snag having a diameter of 4 inches or larger and each log having a diameter of 4 inches or larger and a length of 10 feet or larger is made at the contract unit price for its size designation as determined by the following schedule:

Measured diameter (in)	Size designation (in)
4 to 8	6
8 to 12	10
12 to 24	18
24 to 36	30
36 to 60	48
Over 60	60

The sum of such payments shall constitute full compensation for clearing and grubbing (including the clearing and grubbing of smaller trees, stumps, snags, logs, brush, shrubs, and roots), applicable permits and associated fees, and rubbish removal. Such payment shall constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Method 4—For items of work for which specific lump sum prices are established in the contract, payment for clearing and grubbing is made at the contract lump sum price. Such payment shall constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

All Methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 7.

7. Items of work and construction details

Instructions for use
Construction Specification 5—Pollution Control

1. Applicability

This specification is applicable to the control or reduction of pollution from all construction activities.

2. Material specifications

No material specifications complement this specification. Any material specifications required shall be specified in section 8 of this specification.

3. Included items

Items to be included in contract specifications and drawings follow:

a. The area to be controlled should be defined, and the limits to be treated shall be shown on the drawings or described in the construction specifications, or both.
b. If areas to be treated are not easily definable on the site map, such as some channel projects, the extent of treatment shall be fully described by notes or designated by stations or right-of-way limits.
c. Restrictions or special requirements limiting the selection of best management practices for control or treatment should be specified.
d. Special requirements designating the sequence of construction operations are included. These requirements might require temporary or prolonged shutdown of some or all construction operations.
e. Alternate methods of control, if applicable.
f. Any restrictions on amount of area disturbed before treatment is started.
g. Any restriction on timing of installation, operation, or removal of any of the controls or treatments. Stabilization and structural practices, such as diversions, stream crossings, sediment basins, sediment filters, and waterways, are typically specified as temporary and to be removed. If any of these practices are to remain in place, specify in section 8, along with any maintenance or changes required before final acceptance.
h. Special pollution control requirements, such as sectional excavation or placement of materials, burying operations, waste area reclamation, blasting, clearing, dredging, or other unique construction procedure or operation.
i. Water and chemicals for dust control is covered in section 5. Payment for water for dust control may be included as an item of work under this specification or Construction Specification 10, Water for Construction. The intent is to be covered in section 8 of this specification.
j. Any other special requirements pertaining to this specification, including reference to applicable state and local laws and regulations.
k. Storm Water Pollution Prevention Plan (SWPPP) requirements. Environmental Protection Agency or State requirements shall be followed as applicable.
l. Method of measurement and payment.

4. Construction methods to be applied in contracts to control pollution

The following list does not include all possible erosion and pollution control methods. All personnel concerned with planning, design, and construction should study the site carefully and specify needed practices required to control erosion, sediment, and air pollution. Pollution control specifications are to be coordinated with the SWPPP requirements developed to meet the National Pollution Discharge Elimination System (NPDES) program.

Structures

1. Limit clearing and grubbing before actual need. Protect vegetation where possible.

2. Install terraces, diversions, or level spreaders, including stable outlets:
   (a) Above and below borrow areas
   (b) Above earth emergency spillways
   (c) Above storage areas
3. Control access and haul roads:
   (a) Contour roads and grade surfaces away from slopes and toward controlled outlets.
   (b) Dust control with water and/or chemicals.
   (c) Erosion control by installing turnouts and culverts and by stabilizing road ditches.
   (d) Vegetate disturbed areas.
   (e) Surface roughening or pitting.
4. Shape and control borrow areas. Reduce area and duration of exposed areas.
5. Install debris basins, brush dams, straw bale barriers, and geotextile fences.
6. Locate, shape, size, and protect by-pass channel:
   — Use coffer dams.
   — Pump extra water across construction area.
7. Sectional construction.
8. Timely installation of all structural and stabilization practices.
9. Control work sequence.
10. Complete as you go.
11. Winter or seasonal shutdowns to minimize pollution control problems.
12. Good housekeeping practices, to prevent water or air pollution, in use at the work site at all times.
13. Seeding for temporary or permanent protection. Provide topsoil as appropriate.
14. Prevent wildfires. Burn only per regulations.
15. Prevent pollution by chemicals and lubricants.
16. Mulch unprotected areas.

Channels

1. Preserve natural vegetation where possible. Remove blocks if possible.
2. Leave old channel to function as long as possible. Perform new channel excavation as an initial construction activity.
3. Where possible, do not open new channel to flows until vegetation is established. Sequence work.
4. Seed or sod slopes immediately after construction. Provide topsoil as necessary.
5. Mulch or mat slopes immediately after disturbance.
6. Spray mulch, seed, fertilizer, and asphalt or polyvinyl resin.
7. Begin excavation downstream and work upstream.
8. Use temporary grade control structures.
9. Limit clearing, clearing and grubbing, and snagging.
10. Limit disturbance of channel banks to one side. Delay and complete other side after the initial side is vegetated.
11. Channel construction should be performed in segments, completing each segment before starting the next.
12. Control storm water inlets into channel.
13. Install pipe inlets, grade control structures, and other such structures at the time of construction.
14. Install sediment traps in channel and provide for their cleanout and maintenance.

5. Methods

Section 7, Measurement and payment

Method 1—Provides measurement and payment by the unit of work performed. The use of water and chemical suppressants inappropriately and in excessive to need may be clarified in section 8.

Method 2—Provides for payment on the lump sum basis with progress payments determined from invoices provided by the contractor.

***Method 3*—**Provides for payment on the lump sum basis with measurement on a prorated and equal basis for each monthly payment.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in the contract specification, delete from the last paragraph, ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

6. Items of work and construction details

Starting at the top of page 5–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 5—Pollution Control

1. Scope

The work consists of installing measures or performing work to control erosion and minimize the production of sediment and other pollutants to water and air from construction activities.

2. Material

All material furnished shall meet the requirements of the material specifications listed in section 8 of this specification.

3. Erosion and sediment control measures and works

The measures and works shall include, but are not limited to, the following:

Staging of earthwork activities—The excavation and moving of soil materials shall be scheduled to minimize the size of areas disturbed and unprotected from erosion for the shortest reasonable time.

Seeding—Seeding to protect disturbed areas shall occur as soon as reasonably possible following completion of that earthwork activity.

Mulching—Mulching to provide temporary protection of the soil surface from erosion.

Diversions—Diversions to divert water from work areas and to collect water from work areas for treatment and safe disposition. They are temporary and shall be removed and the area restored to its near original condition when the diversions are no longer required or when permanent measures are installed.

Stream crossings—Culverts or bridges where equipment must cross streams. They are temporary and shall be removed and the area restored to its near original condition when the crossings are no longer required or when permanent measures are installed.

Sediment basins—Sediment basins collect, settle, and eliminate sediment from eroding areas from impacting properties and streams below the construction site(s). These basins are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.

Sediment filters—Straw bale filters or geotextile sediment fences trap sediment from areas of limited runoff. Sediment filters shall be properly anchored to prevent erosion under or around them. These filters are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.

Waterways—Waterways for the safe disposal of runoff from fields, diversions, and other structures or measures. These works are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.

Other—Additional protection measures as specified in section 8 of this specification or required by Federal, State, or local government.

4. Chemical pollution

The contractor shall provide watertight tanks or barrels or construct a sump sealed with plastic sheets to dispose of chemical pollutants, such as drained lubricating or transmission fluids, grease, soaps, concrete mixer washwater, or asphalt, produced as a by-product of the construction activities. At the completion of

the construction work, sumps shall be removed and the area restored to its original condition as specified in section 8 of this specification. Sump removal shall be conducted without causing pollution.

Sanitary facilities, such as chemical toilets, or septic tanks shall not be located next to live streams, wells, or springs. They shall be located at a distance sufficient to prevent contamination of any water source. At the completion of construction activities, facilities shall be disposed of without causing pollution as specified in section 8 of this specification.

5. Air pollution

The burning of brush or slash and the disposal of other materials shall adhere to state and local regulations.

Fire prevention measures shall be taken to prevent the start or spreading of wildfires that may result from project activities. Firebreaks or guards shall be constructed and maintained at locations shown on the drawings.

All public access or haul roads used by the contractor during construction of the project shall be sprinkled or otherwise treated to fully suppress dust. All dust control methods shall ensure safe construction operations at all times. If chemical dust suppressants are applied, the material shall be a commercially available product specifically designed for dust suppression and the application shall follow manufacturer's requirements and recommendations. A copy of the product data sheet and manufacturer's recommended application procedures shall be provided to the engineer 5 working days before the first application.

6. Maintenance, removal, and restoration

All pollution control measures and temporary works shall be adequately maintained in a functional condition for the duration of the construction period. All temporary measures shall be removed and the site restored to near original condition.

7. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, each item is measured to the nearest unit applicable. Payment for each item is made at the contract unit price for that item. For water or chemical suppressant items used for dust control for which items of work are established in section 8 of this specification, measurement for payment will not include water or chemical suppressants that are used inappropriately or excessive to need. Such payment will constitute full compensation for the completion of the work.

Method 2—For items of work for which lump sum prices are established in the contract, payment is made as the work proceeds and supported by invoices presented by the contractor that reflect actual costs. If the total of all progress payments is less than the lump sum contract price for this item, the balance remaining for this item will be included in the final contract payment. Payment of the lump sum contract price will constitute full compensation for completion of the work.

Method 3—For items of work for which lump sum prices are established in the contract, payment will be prorated and provided in equal amounts on each monthly progress payment estimate. The number of months used for prorating shall be the number estimated to complete the work as outlined in the contractor's approved construction schedule. The final month's prorate amount will be provided with the final contract payment. Payment as described will constitute full compensation for completion of the work.

***All Methods*—**The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items, and the items to which they are made subsidiary, are identified in section 8 of this specification.

8. Items of work and construction details

Instructions for use
Construction Specification 6—Seeding, Sprigging, and Mulching

1. Applicability
Construction Specification 6 is applicable to vegetating or mulching all designated areas requiring protective cover following completion of construction operations.

2. Material specifications
Material requirements are included in this specification.

3. Included items
Items to be included in contract specifications and drawings:

a. Complete plans of the designated areas to be treated, including locations of disposal sites for oversize rocks and other debris.

b. Name of plant or mixture to include scientific name, common name, and acceptable cultivars.

c. Purity, germination, hard seed, and weed seed requirements for seed or mixture. Certified (e.g., Blue Tag) seed may be specified.

d. Fertilizer, lime, and other soil amendment requirements, if applicable.

e. Inoculant requirements, if needed.

f. Types of mulch, straw, hay, or native hay and mulching methods, when required.

g. Dates for seeding, sprigging, fertilizing, and mulching operations.

h. Rates for seeding, sprigging, fertilizing, and mulching operations, expressed in pounds pure live seed (PLS) per acre.

i. Method of application of seed, sprigs, fertilizer, and mulch.

j. Method of anchoring mesh or netting.

k. Supplemental irrigation to support vegetation establishment; frequency, volume per application, and duration of irrigation. Overirrigation and soil saturation must be avoided for some soils.

4. Methods
Section 6, Measurement and payment

Method 1—Measurements used to determine the size of the area treated should specify horizontal or surface measured values in section 7. Constructed fill or cut slopes steeper than 3 feet horizontal to 1 foot vertical should consider surface measurements to calculate areas for payment purposes.

Methods 2 and 3—The procedures that will be used to determine the amount of work satisfactorily completed for progress payment should be identified in section 7. Options may include:

- An onsite agreed-to estimate of the percent of work satisfactorily complete at time of progress payment preparation.
- Require the contractor to provide invoices (method 3) to support his incurred costs to satisfactorily complete work at time of progress payment.
- Other suitable and fair methods, one of which could be related to the construction schedule.

When all methods but one are deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details
Starting at the top of page 6–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 6—Seeding, Sprigging, and Mulching

1. Scope

The work consists of preparing the area for treatment; furnishing and placing seed, sprigs, mulch, fertilizer, inoculant, lime, and other soil amendments; and anchoring mulch in designated areas as specified.

2. Material

Seed—All seed shall conform to the current rules and regulations of the state where it is being used and shall be from the latest crop available. It shall meet or exceed the standard for purity and germination listed in section 7.

Seed shall be labeled in accordance with the state laws and the U.S. Department of Agriculture rules and regulations under the Federal Seed Act in effect on the date of invitations for bids. Bag tag figures are evidence of purity and germination. No seed will be accepted with a test date of more than 9 months before the delivery date to the site.

Seed that has become wet, moldy, or otherwise damaged in transit or storage will not be accepted. The percent of noxious weed seed allowable shall be as defined in the current State laws relating to agricultural seeds. Each type of seed shall be delivered in separate sealed containers and fully tagged unless exception is granted in writing by the contracting officer.

Fertilizer—Unless otherwise specified, the fertilizer shall be a commercial grade fertilizer. It shall meet the standard for grade and quality specified by State law. Where fertilizer is furnished from bulk storage, the contractor shall furnish a supplier's certification of analysis and weight. When required by the contract, a representative sample of the fertilizer shall be furnished to the contracting officer for chemical analysis.

Inoculants—The inoculant for treating legume seeds shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species and shall not be used later than the date indicated on the container or as otherwise specified. A mixing medium, as recommended by the manufacturer, shall be used to bond the inoculant to the seed. Two times the amount of the inoculant recommended by the manufacturer shall be used except four times the amount shall be used when seed is applied using a hydraulic seeder. Seed shall be sown within 24 hours of treatment and shall not remain in the hydraulic seeder longer than 4 hours.

Lime and other soil amendments—Lime shall consist of standard ground agriculture limestone, or approved equivalent. Standard ground agriculture limestone is defined as ground limestone meeting current requirements of the State Department of Agriculture. Other soil amendments shall meet quality criteria and application requirements specified in section 7.

Mulch tackifiers—Asphalt emulsion tackifiers shall conform to the requirements of ASTM D 977, Specification for Emulsified Asphalt. The emulsified asphalt may be rapid setting, medium setting, or slow setting. Nonasphaltic tackifiers required because of environmental considerations shall be as specified in section 7.

Straw mulch material—Straw mulch shall consist of wheat, barley, oat or rye straw, hay, grass cut from native grasses, or other plants as specified in section 7. The mulch material shall be air-dry, reasonably light in color, and shall not be musty, moldy, caked, or otherwise of low quality. The use of mulch that contains noxious weeds is not permitted. The contractor shall provide a method satisfactory to the contracting officer for determining weight of mulch furnished.

***Other mulch materials*—**Mulching materials, such as wood cellulose fiber mulch, mulch tackifiers, synthetic fiber mulch, netting, and mesh, are other mulching materials that may be required for specialized locations and conditions. These materials, when specified, must be accompanied by the manufacturer's recommendations for methods of application.

3. Seeding mixtures, sod, sprigs, and dates of planting

The application rate per acre for seed mixtures, sprigs, or sod and date of seeding or planting shall be as shown on the plans or as specified in section 7.

4. Seedbed preparation and treatment

Areas to be treated shall be dressed to a smooth, firm surface. On sites where equipment can operate on slopes safely, the seedbed shall be adequately loosened (4 to 6 inches deep) and smoothed. Depending on soil and moisture conditions, disking or cultipacking, or both, may be necessary to properly prepare a seedbed. Where equipment cannot operate safely, the seedbed shall be prepared by hand methods by scarifying to provide a roughened soil surface so that broadcast seed will remain in place.

If seeding is to be accomplished immediately following construction operations, seedbed preparation may not be required except on a compacted, polished, or freshly cut soil surface.

Rocks larger than 6 inches in diameter, trash, weeds, and other debris that will interfere with seeding or maintenance operations shall be removed or disposed of as specified in section 7.

Seedbed preparation shall be discontinued when soil moisture conditions are not suitable for the preparation of a satisfactory seedbed as determined by the contracting officer's technical representative (COTR).

5. Seeding, sprigging, fertilizing, mulching, and stabilizing

All seeding or sprigging operations shall be performed in such a manner that the seed or sprigs are applied in the specified quantities uniformly in the designated areas. The method and rate of seed application shall be as specified in section 7. Unless otherwise specified, seeding or sprigging shall be accomplished within 2 days after final grading is completed and approved.

Fertilizer, lime, and other soil amendments shall be applied as specified in section 7. When specified, the fertilizer and soil amendments shall be thoroughly incorporated into the soil immediately following surface application.

The rate, amount, and kind of mulching or mesh shall be as specified in section 7. Mulches shall be applied uniformly to the designated areas. They shall be applied to areas seeded not later than 2 working days after seeding has been performed. Straw mulch material shall be stabilized within 24 hours of application using a mulch crimper or equivalent anchoring tool or by a suitable tackifier. When the mulch crimper or equivalent anchoring tool is used, it shall have straight blades and be the type manufactured expressly for and capable of firmly punching the mulch into the soil. Where the equipment can be safely operated, it shall be operated on the contour. Hand methods shall be used where equipment cannot safely operate to perform the work required.

The tackifier shall be applied uniformly over the mulch material at the specified rate, or it shall be injected into the mulch material as it is being applied. Mesh or netting stabilizing materials shall be applied smoothly, but loosely on the designated areas. The edges of these materials shall be buried or securely anchored using spikes or staples as specified in section 7.

The contractor shall maintain the mesh or netting areas until all work under the contract has been completed and accepted. Maintenance shall consist of the repair of areas damaged by water erosion, wind, fire, or other causes. Such areas shall be repaired to reestablish the intended condition and to the design lines and grades required by the contract. The areas shall be refertilized, reseeded, and remulched before the new application of the mesh or netting.

6. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, each area treated is measured as specified in section 7 and the area calculated to the nearest 0.1 acre. Payment for treatment is made at the contract unit price for the designated treatment, which will constitute full compensation for completion of the work.

When specified as an item of work, mesh or netting is measured to the nearest square yard of surface area covered and accepted. Payment is made at the contract unit price and will constitute full compensation for completion of the work.

Method 2—For items of work for which specific lump sum prices are established in the contract, the quantity of work will not be measured for payment. Payment for this item is made at the contract lump sum price for the item and will constitute full compensation for the completion of the work.

Method 3—For items of work for which lump sum prices are established in the contract, payment is made as the work proceeds. Progress payments will be determined as specified in section 7. Payment of the lump sum contract price will constitute full compensation for completion of the work.

All Methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the item(s) to which they are made subsidiary are identified in section 7.

7. Items of work and construction details

Instructions for use
Construction Specification 8—Mobilization and Demobilization

1. Applicability
Construction Specification 8 is applicable to any construction contract that includes a bid item for general mobilization and demobilization of the contractor's personnel and equipment. It is not intended to cover mobilization and demobilization of special equipment for specific items of work, such as grouting equipment, pile driving equipment, or rock drilling equipment, for which payment for mobilization and demobilization is included and provided by specific bid items elsewhere in the contract.

2. Material specification
No material specifications complement Construction Specification 8.

3. Included items
Items to be included in contract specifications and drawings follow:

a. Special requirements pertaining to mobilization and demobilization, if any.

b. Any particular work for which payment will or will not be made under the mobilization and demobilization item if not adequately described by the specification.

c. When more sites than one (work limits not continuous) are included in the contract, include in section 4 of this specification if mobilization of contractor's equipment and personnel between sites is included or not included in Section 3, Payment.

4. Items of work and construction details
Starting at the top of page 8–2, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 8—Mobilization and Demobilization

1. Scope

The work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract. It does not include mobilization and demobilization for specific items of work for which payment is provided elsewhere in the contract. Mobilization will not be considered as work in fulfilling the contract requirements for commencement of work.

2. Equipment and material

Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable; and other items specified in section 4 of this specification.

Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.

This work includes mobilization and demobilization required by the contract at the time of award. If additional mobilization and demobilization activities and costs are required during the performance of the contract as a result of changed, deleted, or added items of work for which the contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the item or items of work changed or added.

3. Payment

Payment will be made as the work proceeds, after presentation of paid invoices or documentation of direct costs by the contractor showing specific mobilization and demobilization costs and supporting evidence of the charges of suppliers, subcontractors, and others. When the total of such payments is less than the lump sum contract price, the balance remaining will be included in the final contract payment. Payment of the lump sum contract price for mobilization and demobilization will constitute full compensation for completion of the work.

Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

4. Items of work and construction details

Instructions for use
Construction Specification 21—Excavation

1. Applicability

Construction Specification 21 is applicable to all types of excavation. The specification defines classes of excavation and includes special requirements for certain types of excavation, but does not establish and define all types of excavation. It is intended that the types of excavation be established on a job or project basis, as needed.

The *class* of excavation defines the kind of material to be excavated. The *type* defines the functional purpose of the excavation. Established types of excavation may include (but are not restricted to):

- Foundation excavation with or without stripping
- Cutoff, keyway, or core trench excavation
- Channel excavation
- Structure excavation
- Auxiliary spillway excavation
- Abutment shaping excavation
- Borrow area excavation

Any of the established types may include excavation of materials in any class. However, the excavation of a given class of material may be more difficult in one type of excavation than in another. These factors must be carefully considered as a basis for establishing types of excavation to be designated on the drawings and listed in the bid schedule.

For projects involving considerable quantities of excavation of different classes of material under conditions that vary in different part of the works, bids must be asked, and payments made, on the basis of both type and class of excavation. For such projects, the bid schedule must be set up in terms of both type and class of excavation (for example: channel excavation, common; and channel excavation, rock).

For projects involving only one type of excavation and for projects involving small quantities of excavation, it may be sufficient to include only the classes of excavation in the bid schedule.

2. Material specifications

No material specifications complement Construction Specification 21, Excavation.

3. Included items

Items to be included in contract specifications and drawings follow:

a. The horizontal and vertical extent of each type of excavation. Indicate the vertical extent as approximate where the exact depth required is not known.

b. Designation and definition of types of excavation.

c. Excavation pay limits when method 1, section 9, is used.

d. Surface finish requirements, such as grading tolerances. This may be especially important at the crest of an auxiliary spillway.

e. The location and limits of all borrow areas. Outline all surface grading requirements following completion of borrow material utilization.

f. The location and limits of all waste areas. When borrow areas serve also as waste areas, coordination of construction activities may be important.

g. Boring logs and test pit logs pertinent to all areas to be excavated. In addition to descriptions of materials, logs must also include water table elevations and dates of observation , where applicable. For purposes of the construction drawings, no indications of correlation of materials

between logs shall be shown. Interpretation of materials is to be avoided and left to the contractor for determination.

h. Existing access and haul roads.

i. Special requirements for dewatering and keeping the excavation dry, with cross reference to Construction Specification 11, Removal of Water, where applicable.

j. Special requirements for control of blasting, including written plans and approvals, if applicable.

k. Special requirements for control of erosion, water pollution, and air pollution, with cross reference to Construction Specification 5, Pollution Control, as applicable.

l. Requirements for control of the size gradation of excavated rock where necessary to obtain material of a particular gradation for rock fill or riprap.

m. Methods of measurement and payment, if the standard specification includes more than one method.

n. Requirements for concrete to fill voids from overexcavation (refer to Construction Specification 31, Concrete for Major Structures, or 32, Structure Concrete) if requirements in section 8 are not adequate.

4. Methods

Section 4, Use of excavated materials

Method 1—Intended for use when the quality, condition, and relative location of significant quantities of the materials to be excavated are known to be suited to the economic construction of the required earthfills and earth backfills, and particularly where alternate sources of material are less desirable or do not exist.

Method 2—Intended for use when the known data indicate that the use of alternate sources of earthfill materials may result in more economical construction of the required earthfills and earth backfills.

Section 5, Disposal of waste materials

Method 1—Intended for use when areas for wasting unsuitable and/or excess materials are available at the site, when the waste fill will beneficially supplement the function of the permanent works, or if no known market is available for such waste materials as may be produced.

Method 2—Intended for use when areas for wasting unsuitable and excess material are not readily available at the site or if a known market for such waste materials is readily available.

Section 9, Measurement and payment

Note in section 10 when volume calculations other than the average cross-sectional end area method are used and describe the applicable method. Example: *In lieu of computing excavation volumes by the method of average cross-sectional end areas, the volume may be computed by the prismoidal formula method with the assistance of computer aided design program.*

Method 1—Intended for excavations where the pay limits can best be defined on the drawings.

Method 2—Intended for excavations bounded by simple plane surfaces and constant or gradually varying cross section throughout.

Method 3—Intended for excavations where the lower limits are determinable only by examination of the materials encountered and where the lower limits have been designated on the drawings as approximate or to be determined by the engineer during construction.

Method 4—Intended for structure excavation bounded by fairly simple plane surfaces where pay limits are not shown on the drawings.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete

from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 21–5, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 21—Excavation

1. Scope

The work shall consist of the excavation required by the drawings and specifications and disposal of the excavated materials.

2. Classification

Excavation is classified as common excavation, rock excavation, or unclassified excavation in accordance with the following definitions or is designated as unclassified.

Common excavation is defined as the excavation of all materials that can be excavated, transported, and unloaded using heavy ripping equipment and wheel tractor-scrapers with pusher tractors or that can be excavated and dumped into place or loaded onto hauling equipment by excavators having a rated capacity of one cubic yard or larger and equipped with attachments (shovel, bucket, backhoe, dragline, or clam shell) appropriate to the material type, character, and nature of the materials.

Rock excavation is defined as the excavation of all hard, compacted, or cemented materials that require blasting or the use of ripping and excavating equipment larger than defined for common excavation. The excavation and removal of isolated boulders or rock fragments larger than 1 cubic yard encountered in materials otherwise conforming to the definition of common excavation shall be classified as rock excavation. The presence of isolated boulders or rock fragments larger than 1 cubic yard is not in itself sufficient cause to change the classification of the surrounding material.

For the purpose of these classifications, the following definitions shall apply:

Heavy ripping equipment is a rear-mounted, heavy duty, single-tooth, ripping attachment mounted on a track type tractor having a power rating of at least 250 flywheel horsepower unless otherwise specified in section 10.

Wheel tractor-scraper is a self-loading (not elevating) and unloading scraper having a struck bowl capacity of at least 12 cubic yards.

Pusher tractor is a track type tractor having a power rating of at least 250 flywheel horsepower equipped with appropriate attachments.

Unclassified excavation is defined as the excavation of all materials encountered, including rock materials, regardless of their nature or the manner in which they are removed.

3. Blasting

The transportation, handling, storage, and use of dynamite and other explosives shall be directed and supervised by a person(s) of proven experience and ability who is authorized and qualified to conduct blasting operations.

Blasting shall be done in a manner as to prevent damage to the work or unnecessary fracturing of the underlying rock materials and shall conform to any special requirements in section 10 of this specification. When specified in section 10, the contractor shall furnish the engineer, in writing, a blasting plan before blasting operations begin.

4. Use of excavated material

Method 1—To the extent they are needed, all suitable material from the specified excavations shall be used in the construction of required permanent earthfill or rockfill. The suitability of material for specific purposes is determined by the engineer. The contractor shall not waste or otherwise dispose of suitable excavated material.

Method 2—Suitable material from the specified excavations may be used in the construction of required earthfill or rockfill. The suitability of material for specific purposes is determined by the engineer.

5. Disposal of waste materials

Method 1—All surplus or unsuitable excavated materials are designated as waste and shall be disposed of at the locations shown on the drawings.

Method 2—All surplus or unsuitable excavated materials are designated as waste and shall be disposed of by the contractor at sites of his own choosing away from the site of the work. The disposal shall be in an environmentally acceptable manner that does not violate local rules and regulations.

6. Excavation limits

Excavations shall comply with OSHA Construction Industry Standards (29CFR Part 1926) Subpart P, Excavations, Trenching, and Shoring. All excavations shall be completed and maintained in a safe and stable condition throughout the total construction phase. Structure and trench excavations shall be completed to the specified elevations and to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work. Excavations outside the lines and limits shown on the drawings or specified herein required to meet safety requirements shall be the responsibility of the contractor in constructing and maintaining a safe and stable excavation.

7. Borrow excavation

When the quantities of suitable material obtained from specified excavations are insufficient to construct the specified earthfills and earth backfills, additional material shall be obtained from the designated borrow areas. The extent and depth of borrow pits within the limits of the designated borrow areas shall be as specified in section 10 or as approved by the engineer.

Borrow pits shall be excavated and finally dressed to blend with the existing topography and sloped to prevent ponding and to provide drainage.

8. Overexcavation

Excavation in rock beyond the specified lines and grades shall be corrected by filling the resulting voids with portland cement concrete made of materials and mix proportions approved by the engineer. Concrete that will be exposed to the atmosphere when construction is completed shall meet the requirements of concrete selected for use under Construction Specification 31, Concrete for Major Structures, or 32, Structure Concrete, as appropriate.

Concrete that will be permanently covered shall contain not less than five bags of cement per cubic yard. The concrete shall be placed and cured as specified by the engineer.

Excavation in earth beyond the specified lines and grades shall be corrected by filling the resulting voids with approved, compacted earthfill. The exception to this is that if the earth is to become the subgrade for riprap, rockfill, sand or gravel bedding, or drainfill, the voids may be filled with material conforming to the specifications for the riprap, rockfill, bedding, or drainfill. Before correcting an overexcavation condition, the contractor shall review the planned corrective action with the engineer and obtain approval of the corrective measures.

9. Measurement and payment

For items of work for which specific unit prices are established in the contract, the volume of each type and class of excavation within the specified pay limits is measured and computed to the nearest cubic yard by the method of average cross-sectional end areas or by methods outlined in section 10 of this specification. Regardless of quantities excavated, the measurement for payment is made to the specified pay limits except that excavation outside the specified lines and grades directed by the engineer to remove unsuitable material is included. Excavation required because unsuitable conditions result from the contractor's improper construction operations, as determined by the engineer, is not included for measurement and payment.

Method 1—The pay limits shall be as designated on the drawings.

Method 2—The pay limits shall be defined as follows:

a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
b. The lower and lateral limits shall be the neat lines and grades shown on the drawings.

Method 3 —The pay limits shall be defined as follows:

a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
b. The lower and lateral limits shall be the true surface of the completed excavation as directed by the engineer.

Method 4—The pay limits shall be defined as follows:

a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
b. The lower limit shall be at the bottom surface of the proposed structure.
c. The lateral limits shall be 18 inches outside of the outside surface of the proposed structure or shall be vertical planes 18 inches outside of and parallel to the footings, whichever gives the larger pay quantity, except as provided in d below.
d. For trapezoidal channel linings or similar structures that are to be supported upon the sides of the excavation without intervening forms, the lateral limits shall be at the underside of the proposed lining or structure.
e. For the purposes of the definitions in b, c, and d, above, any specified bedding or drainfill directly beneath or beside the structure will be considered to be a part of the structure.

All methods—The following provisions apply to all methods of measurement and payment.

Payment for each type and class of excavation is made at the contract unit price for that type and class of excavation. Such payment will constitute full compensation for all labor, materials, equipment, and all other items necessary and incidental to the performance of the work except that extra payment for backfilling overexcavation will be made in accordance with the following provisions.

Payment for backfilling overexcavation, as specified in section 8 of this specification, is made only if the excavation outside specified lines and grades is directed by the engineer to remove unsuitable material and if the unsuitable condition is not a result of the contractor's improper construction operations as determined by the engineer.

Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

Instructions for use
Construction Specification 23—Earthfill

1. Applicability
Construction Specification 23 is applicable to all types of earthfill including fill sections constructed of rocky soils and embankments constructed of soft or friable rock that is expected to break down during compaction.

2. Material specifications
No material specifications complement Construction Specification 23.

3. Included items
Items to be included in the contract specifications and drawings

a. Complete plans and cross sections of the required earthfills and earth backfills.

b. Pay limits, where applicable.

c. Borrow areas or other sources of material.

d. Designation and description of the types of material required in the various parts of the work.

e. Maximum allowable size of rock particles.

f. Special requirements for foundation preparation.

g. Maximum layer thickness before compaction for earthfill. (Table A-23 may be used as a guide. This table gives upper limits for the general classes of material listed. The specified maximum layer thickness may need to be substantially less than the tabulated value to obtain adequate compaction.)

h. Maximum layer thickness before compaction for earth backfill by manually directed power tampers. (The maximum thickness that can be adequately compacted depends upon the tampers and upon the soil being placed. It varies from about 4 inches for plastic clays to about 8 inches for coarse grained material of low plasticity.)

i. Special instructions for sectional or phased construction, where applicable.

j. Allowable range of moisture content for each item. For example:

   (1) "The moisture content of the fill matrix at the time of compaction shall be neither less than 2 percent below optimum moisture content nor more than 2 percent above optimum moisture content."

   (2) "The moisture content of the fill material shall be maintained within the limits required to: (a) prevent bulking or dilatance of the material under the action of the hauling or compacting equipment, (b) prevent the adherence of the earthfill material to the treads and tracks of the equipment, and (c) ensure the crushing and blending of the soil clods and aggregations into a reasonably homogeneous mass."

k. Compaction class for each item. (Table A-23 may be used as a guide.)

l. For Class A compaction—Compaction test method and required percent of maximum density. Typical compaction test results, if applicable.

m. For Class B compaction—Minimum mass density.

n. For Class C compaction—Type of roller, minimum weight or contact pressure of roller, minimum vibrating force and frequency for vibrating roller, and minimum number of passes.

o. Special rapid methods for moisture control (quick dry, speedy, alcohol, nuclear gauge), if used. These methods are only used on soils where they prove to be a reliable approximation to ASTM D 2216. When rapid methods are used, a reference to the

procedure to be followed should be included.

p. When the *family of curves* and the one-point Proctor is the intended method for soil density standard determination and verification, it should be referenced and so specified in section 10.

q. Special requirements, where applicable, for placing earth backfill adjacent to structures, such as reduced compactive effort for high, thin walled structures. This may include monitoring stresses and wall movements and/or specifying minimum in-place concrete strength requirements before the forms or other supports are removed or earth backfilling commences. Minimum inplace concrete strength requirements shall be determined by the designer and clearly stated.

r. Required minimum strength of concrete, determined according to section 6, for starting compaction of backfill adjacent to structures, if applicable. Use of minimum strength is encouraged over minimum times listed in section 6.

s. Methods of measurement and payment.

t. Embedded structures or other elements whose volume will be excluded from the earthfill volume for payment. Major items may be listed for exclusion. The cost of measuring, computing, checking, recordkeeping, and other similar activities must clearly justify the exclusion.

u. Special requirements pertaining to furnishing and applying water including designated source and details of ownership and water rights, if applicable, and water quality requirements if quality may be a concern.

v. Special requirements for control of erosion, water pollution, and air pollution, with appropriate cross reference to Construction Specification 5, Pollution Control.

w. Surface finish requirements, such as completed surface grade tolerances.

4. Methods
Section 9, Measurement and payment

***Method 1*—**Intended for structure earth backfill and other cases where pay limits can best be shown on the drawings.

The selected methods for pay limits must be compatible with those selected for use in Construction Specification 21, Excavation.

Methods 6 or 7 must be used with any or all methods 1 through 5.

a. Method 6 is intended for use when no separate payment is to be made for water.

b. Method 7 is intended for use with Construction Specification 10, Water for Construction, when the contractor is to be paid under a separate item for the water needed to bring the earthfill and earth backfill materials to the specified moisture content.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details
Starting at the top of page 23–6, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Table A–23 Compaction class

Grading characteristics of soil fill material % > no. 4	% fines (passing #200)	Appropriate compaction classes	Maximum layer thickness (before compaction) tamping roller (in)	pneum. roller (in)	vibrating roller (in)	40,000 lb track trctr (in)
0 – 35	Over 5	A	9	9	---	---
	Under 5	A	9	12	24	---
		B, C	---	18	30	12
35 – 65	25 – 50	A	9	12	24	---
		B, C	9	18	24	---
	5 – 25	A	---	12	24	---
		B, C	---	18	24	---
	Under 5	B, C	---	24	24	18
Over 65	Over 5	B, C	---	18	24	---
	Under 5	B, C	---	24	24	18

Note: **Tabulated values are upper limits.** Actual maximum layer thickness for uniform compaction of a given soil material may be substantially lower. Maximum size of rock or rock fragments should not exceed two-thirds of the layer thickness prior to compaction. Soil plasticity should be a consideration.

For weathered or weakly indurated rock materials:
For material, such as shales, schists, disintegrated granite, soft sandstone, and siltstone, the appropriate compaction classes depend upon the degree of breakdown under the action of the excavating and compacting equipment. The maximum layer thickness before compaction must be determined on the basis of special laboratory tests or field compaction tests, or both. Field test fills should be considered to determine the least effort required to meet minimum density requirements.

Construction Specification 23—Earthfill

1. Scope

The work consists of the construction of earth embankments, other earthfills, and earth backfills required by the drawings and specifications.

Earthfill is composed of natural earth materials that can be placed and compacted by construction equipment operated in a conventional manner.

Earth backfill is composed of natural earth material placed and compacted in confined spaces or adjacent to structures (including pipes) by hand tamping, manually directed power tampers or vibrating plates, or their equivalent.

2. Material

All fill material shall be obtained from required excavations and designated borrow areas. The selection, blending, routing, and disposition of material in the various fills shall be subject to approval by the engineer.

Fill materials shall contain no frozen soil, sod, brush, roots, or other perishable material. Rock particles larger than the maximum size specified for each type of fill shall be removed prior to compaction of the fill.

The types of material used in the various fills shall be as listed and described in the specifications and drawings.

3. Foundation preparation

Foundations for earthfill shall be stripped to remove vegetation and other unsuitable material or shall be excavated as specified.

Except as otherwise specified, earth foundation surfaces shall be graded to remove surface irregularities and shall be scarified parallel to the axis of the fill or otherwise acceptably scored and loosened to a minimum depth of 2 inches. The moisture content of the loosened material shall be controlled as specified for the earthfill, and the surface material of the foundation shall be compacted and bonded with the first layer of earthfill as specified for subsequent layers of earthfill.

Earth abutment surfaces shall be free of loose, uncompacted earth in excess of 2 inches in depth normal to the slope and shall be at such a moisture content that the earthfill can be compacted against them to produce a good bond between the fill and the abutments.

Rock foundation and abutment surfaces shall be cleared of all loose material by hand or other effective means and shall be free of standing water when fill is placed upon them. Occasional rock outcrops in earth foundations for earthfill, except in dams and other structures designed to restrain the movement of water, shall not require special treatment if they do not interfere with compaction of the foundation and initial layers of the fill or the bond between the foundation and the fill.

Foundation and abutment surfaces shall be no steeper than one horizontal to one vertical unless otherwise specified. Test pits or other cavities shall be filled with compacted earthfill conforming to the specifications for the earthfill to be placed upon the foundation.

4. Placement

Earthfill shall not be placed until the required excavation and foundation preparation have been completed and the foundation has been inspected and approved by the engineer. Earthfill shall not be placed upon a frozen surface nor shall snow, ice, or frozen material be incorporated in the earthfill matrix.

Earthfill shall be placed in approximately horizontal layers. The thickness of each layer before compaction shall not exceed the maximum thickness specified in section 10 or shown on the drawings. Materials placed by dumping in piles or windrows shall be spread uniformly to not more than the specified thickness before being compacted.

Hand compacted earth backfill shall be placed in layers whose thickness before compaction does not exceed the maximum thickness specified for layers of earth backfill compacted by manually directed power tampers.

Earth backfill shall be placed in a manner that prevents damage to the structures and allows the structures to assume the loads from the earth backfill gradually and uniformly. The height of the earth backfill adjacent to a structure shall be increased at approximately the same rate on all sides of the structure.

Earthfill and earth backfill in dams, levees, and other structures designed to restrain the movement of water shall be placed to meet the following additional requirements:

(a) The distribution of materials throughout each zone shall be essentially uniform, and the earthfill shall be free from lenses, pockets, streaks, or layers of material differing substantially in texture, moisture content, or gradation from the surrounding material. Zone earthfills shall be constructed concurrently unless otherwise specified.

(b) If the surface of any layer becomes too hard and smooth for proper bond with the succeeding layer, it shall be scarified parallel to the axis of the fill to a depth of not less than 2 inches before the next layer is placed.

(c) The top surface of embankments shall be maintained approximately level during construction with two exceptions: A crown or cross-slope of about 2 percent shall be maintained to ensure effective drainage, or as otherwise specified for drainfill or sectional zones.

(d) Dam embankments shall be constructed in continuous layers from abutment to abutment except where openings to facilitate construction or to allow the passage of streamflow during construction are specifically authorized in the contract.

(e) Embankments built at different levels as described under (c) or (d) above shall be constructed so that the slope of the bonding surfaces between embankment in place and embankment to be placed is not steeper than 3 feet horizontal to 1 foot vertical. The bonding surface of the embankment in place shall be stripped of all material not meeting the requirements of this specification and shall be scarified, moistened, and recompacted when the new earthfill is placed against it. This ensures a good bond with the new earthfill and obtains the specified moisture content and density at the contact of the inplace and new earthfills.

5. Control of moisture content

During placement and compaction of earthfill and earth backfill, the moisture content of the material being placed shall be maintained within the specified range.

The application of water to the earthfill material shall be accomplished at the borrow areas insofar as practicable. Water may be applied by sprinkling the material after placement on the earthfill, if necessary. Uniform moisture distribution shall be obtained by disking.

Material that is too wet when deposited on the earthfill shall either be removed or be dried to the specified moisture content prior to compaction.

If the top surface of the preceding layer of compacted earthfill or a foundation or abutment surface in the zone of contact with the earthfill becomes too dry to permit suitable bond, it shall either be removed or scarified and moistened by sprinkling to an acceptable moisture content before placement of the next layer of earthfill.

6. Compaction

Earthfill—Earthfill shall be compacted according to the following requirements for the class of compaction specified:

***Class A compaction*—**Each layer of earthfill shall be compacted as necessary to provide the density of the earthfill matrix not less than the minimum density specified in Section 10 or identified on the drawings. The earthfill matrix is defined as the portion of the earthfill material finer than the maximum particle size used in the compaction test method specified.

***Class B compaction*—**Each layer of earthfill shall be compacted to a mass density not less than the minimum density specified.

***Class C compaction*—**Each layer of earthfill shall be compacted by the specified number of passes of the type and weight of roller or other equipment specified or by an approved equivalent method. Each pass shall consist of at least one passage of the roller wheel or drum over the entire surface of the layer.

Earth backfill—Earth backfill adjacent to structures shall be compacted to a density equivalent to that of the surrounding inplace earth material or adjacent required earthfill or earth backfill. Compaction shall be accomplished by hand tamping or manually directed power tampers, plate vibrators, walk-behind, miniature, or self-propelled rollers. Unless otherwise specified heavy equipment including backhoe mounted power tampers or vibrating compactors and manually directed vibrating rollers shall not be operated within 2 feet of any structure. Towed or self-propelled vibrating rollers shall not be operated within 5 feet of any structure. Compaction by means of drop weights operating from a crane or hoist is not permitted.

The passage of heavy equipment will not be allowed:

- Over cast-in-place conduits within 14-days after placement of the concrete
- Over cradled or bedded precast conduits within 7 days after placement of the concrete cradle or bedding
- Over any type of conduit until the backfill has been placed above the top surface of the structure to a height equal to one-half the clear span width of the structure or pipe or 2 feet, whichever is greater, except as may be specified in section 10.

Compacting of earth backfill adjacent to structures shall not be started until the concrete has attained the strength specified in section 10 for this purpose. The strength is determined by compression testing of test cylinders cast by the contractor's quality control personnel for this purpose and cured at the work site in the manner specified in ASTM C 31 for determining when a structure may be put into service.

When the required strength of the concrete is not specified as described above, compaction of earth backfill adjacent to structures shall not be started until the following time intervals have elapsed after placement of the concrete.

Structure	Time interval (days)
Vertical or near-vertical walls with earth loading on one side only	14
Walls backfilled on both sides simultaneously	7
Conduits and spillway risers, cast-in-place (with inside forms in place)	7
Conduits and spillway risers, cast-in-place (inside forms removed)	14
Conduits, pre-cast, cradled	2
Conduits, pre-cast, bedded	1
Cantilever outlet bents (backfilled both sides simultaneously)	3

7. Reworking or removal and replacement of defective earthfill

Earthfill placed at densities lower than the specified minimum density or at moisture contents outside the specified acceptable range of moisture content or otherwise not conforming to the requirements of the specifications shall be reworked to meet the requirements or removed and replaced by acceptable earthfill. The replacement earthfill and the foundation, abutment, and earthfill surfaces upon which it is placed shall conform to all requirements of this specification for foundation preparation, approval, placement, moisture control, and compaction.

8. Testing

During the course of the work, the engineer will perform quality assurance tests required to identify material; determine compaction characteristics; determine moisture content; and determine density of earthfill in place. Tests performed by the engineer will be used to verify that the earthfills conform to contract requirements of the specifications and not as a replacement for the contractor's quality control program. The contractor shall perform all quality control testing in conformance with the approved quality control system for Method 1 and the approved quality control plan for Method 2 in Construction Specification 94, Contractor Quality Control as required to assure that work performed meets contract requirements.

Densities of earthfill requiring Class A compaction will be determined in accordance with ASTM D 1556, D 2167, D 2922, or D 2937 except that the volume and moist weight of included rock particles larger than those used in the compaction test method specified for the type of fill will be determined and deducted from the volume and moist weight of the total sample before computation of density or, if using the nuclear gauge, added to the specified density to bring it to the measure of equivalent composition for comparison. The density so computed is used to determine the percent compaction of the earthfill matrix. Unless otherwise specified, moisture content is determined by one of the following methods: ASTM D 2216, D 3017, D 4643, D 4944, or D 4959.

9. Measurement and payment

For items of work for which specific unit prices are established in the contract, the volume of each type and compaction class of earthfill and earth backfill within the specified zone boundaries and pay limits is measured and computed to the nearest cubic yard by the method of average cross-sectional end areas. Unless otherwise specified in section 10, no deduction in volume is made for embedded items, such as, but not limited to, conduits, inlet structures, outlet structures, embankment drains, sand diaphragm and outlet, and their appurtenances.

The pay limits shall be as defined below, with the further provision that earthfill required to fill voids resulting from overexcavation of the foundation, outside the specified lines and grades, will be included in the measurement for payment only under the following conditions:

- Where such overexcavation is directed by the engineer to remove unsuitable material, and
- Where the unsuitable condition is not a result of the contractor's improper construction operations as determined by the engineer.

Earthfill beyond the specified lines and grades to backfill excavation required for compliance with OSHA requirements will be considered subsidiary to the earthfill bid item(s).

Method 1—The pay limits shall be as designated on the drawings.

Method 2—The pay limits shall be the measured surface of the foundation when approved for placement of the earthfill and the specified neat lines of the earthfill surface.

Method 3—The pay limits shall be the measured surface of the foundation when approved for placement of the earthfill and the measured surface of the completed earthfill.

Method 4—The pay limits shall be the specified pay limits for excavation and the specified neat lines of the earthfill surface.

Method 5—The pay limits shall be the specified pay limits for excavation and the measured surface of the completed earthfill.

Method 6—Payment for each type and compaction class of earthfill and earth backfill is made at the contract unit price for that type and compaction class of earthfill. Such payment will constitute full compensation for all labor, material, equipment, and all other items necessary and incidental to the performance of the work.

Method 7—Payment for each type and compaction class of earthfill and earth backfill is made at the contract unit price for that type and compaction class of earthfill. Such payment will constitute full compensation for all labor, material, equipment, and all other items necessary and incidental to the performance of the work except furnishing, transporting, and applying water to the foundation and earthfill material. Water applied to the foundation and earthfill material is measured and payment made as specified in Construction Specification 10.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

Instructions for use
Construction Specification 25—Rockfill

1. Applicability

Construction Specification 25 is applicable to rockfill constructed of hard, durable rock with sufficiently open grading to drain freely. It does not apply to riprap slope protection nor to earthfill constructed of rocky soils or of soft rock that is expected to break down during compaction activities.

2. Material specifications

No material specifications complement Construction Specification 25.

3. Included items

Items to be included in contract specifications and drawings

a. Complete plans and cross-sections of the required fills. Include any required construction tolerances measured from the lines and grades shown on the drawings.

b. Zoning plans, including gradation requirements for material in each zone.

c. Specifications for bedding.

d. Pay limits where applicable.

e. The source of each type of fill.

f. Screening or other processing requirements.

g. Specifications for wetting during placement and compaction, if required. If water is to be added and is to be included in the separate pay item for water, add the statement: *Water applied to the fill material will be measured and payment will be made as specified in Construction Specification 10, Water for Construction.*

h. Class of compaction for rockfill. Specify more passes or heavier equipment if test fills or other sources of information indicate the need for it. (Class I is intended for use where the highest degree of compaction is required. Class II is intermediate, and Class III is for use where no special compaction is needed.)

When specifying Class II compaction, note in section 10 the method (a, b, or c) that applies. Note also if one or more of the methods are to be excluded.

i. Class of compaction for bedding. Also specify more passes or heavier equipment if more than minimum amounts specified in section 8 may be needed.

4. Methods

Section 5, Placement

Method 1—Intended for use whenever the grading of materials within the fill is not a critical element of the design.

Method 2—Intended for use when the piping or cracking potential of the core zone is a critical element of the design or when the percentage of large rock is relatively low and special slope protection is desired.

5. Items of work and construction details

Starting at the top of page 25–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 25—Rockfill

1. Scope

The work consists of the construction of rockfill zones of embankments and other rockfills required by the drawings and specifications, including bedding where specified.

2. Material

Material for rockfill and bedding shall be obtained from the specified sources unless otherwise specified in section 10 of this specification. The material shall be excavated, selected, processed, and handled as necessary to conform to the specified gradation requirements.

3. Foundation preparation

Foundations for rockfill shall be stripped to remove vegetation and other unsuitable material or shall be excavated as specified.

Except as otherwise specified, earth foundation surfaces shall be graded to remove surface irregularities, and test pits or other cavities shall be filled with compacted earthfill of approximately the same kind and density as the adjacent foundation material.

Rock foundation surfaces shall be cleared of all loose material not conforming to the specifications for the rockfill.

Abutments for rockfill zones of embankments shall be prepared as specified above for foundations.

Rockfill and/or bedding shall not be placed until the foundation preparation is completed and the foundation and excavations have been inspected and approved.

4. Bedding

When a bedding layer beneath rockfill is specified, the bedding material shall be spread uniformly on the prepared subgrade surfaces to the depth indicated. Compaction of the bedding material shall be as specified in section 10 of this specification.

5. Placement

Method 1—The rock shall be dumped and spread into position in approximately horizontal layers not to exceed 3 feet in thickness. It shall be placed to produce a reasonably homogeneous stable fill that contains no segregated pockets of large or small fragments or large unfilled spaces caused by bridging of the larger rock fragments.

Method 2—The rock shall be dumped and spread into position in approximately horizontal layers not to exceed 3 feet in thickness. The rock shall be placed so that the completed fill shall be graded with the smaller rock fragments placed in the inner portion of the embankment and the larger rock fragments placed on the outer slopes. Rock shall be placed to produce a stable fill that contains no large unfilled spaces caused by bridging of the larger fraction.

6. Control of moisture

The moisture content of rockfill material shall be controlled as specified in section 10 of this specification. When the addition of water is required, it shall be applied in a manner to avoid excessive wetting of adjacent earthfill. Except as specified in section 10 of this specification, control of the moisture content is not required.

The moisture content of the bedding material shall be controlled to ensure that bulking of the sand materials does not occur during compaction operations.

7. Compaction of rockfill

Rockfill shall be compacted as described below for the class of compaction specified or by an approved equivalent method.

Class I compaction—Each layer of fill shall be compacted by at least four passes over the entire surface with a steel-drum vibrating roller that weighs at least 5 tons and exerting a vertical vibrating force of not less than 20,000 pounds at a frequency not less than 1,200 times per minute.

Class II compaction—Each layer of fill shall be compacted by at least four passes over the entire surface by a track of a crawler-type tractor weighing at least 20 tons.

Class III compaction—No compaction is required beyond that resulting from the placing and spreading operations.

Heavy equipment shall not be operated within 2 feet of any structure. Vibrating rollers shall not be operated within 5 feet of any structure. Compaction by means of drop weights operating from a crane, hoist, or similar equipment is not permitted.

When compaction other than Class III compaction is specified, rockfill placed in trenches or other locations inaccessible to heavy equipment shall be compacted by manually controlled pneumatic or vibrating tampers or by equivalent methods approved by the engineer.

8. Compaction of bedding

Bedding shall be compacted according to the following requirements for the Class of compaction specified:

Class A compaction—Each layer of bedding shall be compacted to a relative density of not less than 70 percent as determined by ASTM Method D 4254.

Class I compaction—Each layer of bedding shall be compacted by at least two passes over the entire surface with a steel-drum vibrating roller weighing at least 5 tons and exerting a vertical vibrating force not less than 20,000 pounds at a frequency not less than 1,200 times per minute, or an approved equivalent method.

Class II compaction—Each layer of bedding shall be compacted by one of the following methods or by an equivalent method approved by the engineer:

a. At least two passes over the entire surface with pneumatic rubber-tired roller exerting a minimum pressure of 75 pounds per square inch. A pass is defined as at least one passage of the roller wheel, track, tire, or drum over the entire surface of the bedding layer.
b. At least four passes over the entire surface with the track of a crawler-type tractor weighing a minimum of 20 tons.
c. Controlled movement of the hauling equipment so that the entire surface is traversed by a minimum of one tread track of the loaded equipment.

Class III compaction—No compaction is required beyond that resulting from the placing and spreading operations.

Heavy equipment shall not be operated within 2 feet of any structure. Vibrating rollers shall not be operated within 5 feet of any structure. Compaction by means of drop weights operating from a crane, hoist, or similar equipment is not permitted.

When compaction other than Class III is specified, bedding placed in trenches or other locations inaccessible to heavy equipment shall be compacted by manually controlled pneumatic or vibrating tampers or by equivalent methods approved by the engineer.

9. Measurement and payment

For items of work for which specific unit prices are established in the contract, the volume of each type of rockfill, including bedding, with the zone boundaries and limits specified on the drawings or established by the engineer is measured and computed to the nearest cubic yard by the method of average cross-sectional end areas.

Payment for each type of rockfill is made at the contract unit price for that type of fill. Except as otherwise specified in section 10 of this specification, such payment will constitute full compensation for all labor, equipment, material, and all other items necessary and incidental to the performance of the work including furnishing, placing, and compacting the bedding material.

Compensation for any type of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

Instructions for use
Construction Specification 26—Topsoiling

1. Applicability
Construction Specification 26 is applicable to the furnishing and spreading of topsoil to selected areas of the construction site for the purpose of establishing vegetative cover to minimize soil erosion and provide aesthetic improvement.

2. Material specifications
No material specifications complement Construction Specification 26.

3. Included items
Items to be included in contract specifications and drawings follow:

a. Limits of source areas for obtaining topsoil.

b. Limits of areas on which topsoil is to be spread.

c. Depth of topsoil layer following the spreading operation.

d. Limits and locations for stockpile areas, if critical.

e. Limitation of rock sizes to be included in the topsoil to be spread.

f. Restriction of woody vegetation that may be included in the topsoil to be spread.

g. Note in the Measurement and payment section if the measurements will be slope measured or horizontal measurements for use in computing the area covered.

h. Extent of compaction required for the topsoil.

4. Methods
The methods in Section 5, Spreading, and Section 6, Measurement and payment, are self-explanatory.

When progress payments are anticipated, outline in section 7 the procedures that will be implemented to determine progress amounts.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete from the next to last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text. Also, delete from the last paragraph ***All Payment Methods.*** Left justify the remaining text.

5. Items of work and construction details
Starting at the top of page 26–3, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 26—Topsoiling

1. Scope
The work consists of furnishing and spreading topsoil to specified depths at locations shown on the drawings.

2. Quality of topsoil
Topsoil shall consist of friable surface soil reasonably free of grass, roots, weeds, sticks, rocks, or other unsuitable material. Additional quality requirements, if any, are in section 7 of this specification.

3. Furnishing
Method 1—Topsoil shall be salvaged from designated earth surfaces that will be disturbed by construction activities. After designated sites have been cleared and grubbed, the topsoil shall be removed from the designated areas and stockpiled at locations shown on the drawings or acceptable to the engineer. Unsuitable material encountered during removal of topsoil shall be disposed of at locations shown on the drawings or approved by the engineer, or it will be otherwise hauled and disposed of at locations removed from the construction site. The contractor is responsible for complying with all local rules and regulations and the payment of any and all fees that may result from the disposal at locations outside the construction work limits.

Method 2—Topsoil shall be furnished from an offsite source designated by the contractor. The engineer shall be granted access to the source for inspection and acceptance before delivery to the site. Test results and samples shall be provided when specified in section 7 of this specification.

4. Stockpiling
Stockpiles of topsoil shall not conflict with the requirements of Construction Specification 5, Pollution Control, when made a part of this contract.

5. Spreading
Method 1—Spreading shall not be conducted when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to uniform spreading operations. Surfaces designated to receive a topsoil application shall be lightly scarified just before the spreading operation.

Following the spreading operation, the topsoil surface shall be left reasonably smooth and without ruts or surface irregularities that could contribute to concentrated waterflow downslope.

Method 2—Spreading shall not be performed when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to uniform spreading operations. Surfaces designated to receive a topsoil application shall be lightly scarified just before the spreading operation. Where compacted earthfills are designated to be topsoiled, the topsoil shall be placed concurrently with the earthfill and shall be bonded to the compacted fill with the compacting equipment.

Following the spreading operation, the topsoil surface shall be left reasonably smooth and without ruts or surface irregularities that could contribute to concentrated waterflow downslope.

6. Measurement and payment
Method 1—The total surface covered by topsoil is measured and the area(s) computed to the nearest square yard. Payment for furnishing and placing topsoil is made at the contract unit price.

Method 2—The total surface covered by topsoil, except the surface area of embankments, levees, dikes, and other earthfills not included for payment, is measured and the area(s) computed to the nearest square yard.

Payment for topsoil spread on the surface of embankments, levees, dikes, and other earthfills is included in the measurement and payment for that item of earthfill where topsoil application occurred.

Method 3—For items of work for which specific unit prices are established in the contract, the volume of topsoil furnished and spread is computed to the nearest cubic yard by the method of average cross-sectional end areas from surveys of the excavated topsoil stockpile or, if not stockpiled, cross-sectional surveys of the borrow area(s). Payment for furnishing and spreading topsoil is made at the contract unit price.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 7 of this specification.

All payment methods—Payment will constitute full compensation for all labor, equipment, material, and all other items necessary and incidental to the completion of the work. This includes excavating, stockpiling, hauling, spreading, and the wasting of unsuitable excavated material.

7. Items of work and construction details

Instructions for use
Construction Specification 34—Steel Reinforcement

1. Applicability
Construction Specification 34 is applicable to the placement of steel bar reinforcement and steel welded wire fabric reinforcement for reinforced concrete or pneumatically applied mortar.

2. Material specifications
Material Specification 539, Steel Reinforcement (for concrete) complements Construction Specification 34.

3. Included items
Items to be included in contract specifications and drawings follow:

a. Complete placing drawings prepared by the designer or instructions for the contractor to prepare placement drawings with steel schedules from the engineering drawings.

b. Steel schedule and bar list with bending diagram if needed to facilitate the placement drawings. These items are generally needed for all except simple structures.

c. Type and grade of steel if the contractor's choice from the list in Material Specification 539 must be restricted.

d. Bar splice requirements are normally covered by the ACI Codes and should be referenced. Unique limitations or exceptions need be included to provide clarity.

e. Standard methods would include the following to be used to specify bar splice lengths. One of two methods can be used in specifying lap lengths at bar splices. The required information varies depending upon the method used.

Method 1—Show splice locations along with lengths of bars in a schedule that is adequate to meet the design requirements and criteria.

Method 2—Include the following:

(1) Locations where splices are permitted or not

(2) Type of splices at locations permitted: contact, noncontact, or butt

(3) Splice layout at locations permitted: staggered or coincident and alternating or repeated in section 10.

(4) Splice class for each respective location and mat

(5) Concrete design compressive strength, f'_c

(6) Bar stress condition: tension or compression

(7) Designation of top bars and others

(8) Steel reinforcement design yield strength

f. Method(s) of measurement and payment, if the standard specification includes more than one method.

4. Methods
Section 5, Splicing bar reinforcement

Method 1—Intended for use when construction drawings for reinforced concrete structures show bar placement details and steel schedules listing bar dimensions and bar shape. Splice locations and bar laps have been determined during design and fully detailed on the drawings. This method applies when national standard detail drawings are used.

Method 2—Intended for use when construction drawings do not contain complete bar placement diagrams and bar schedules. This method should be considered when quality control and other responsibilities are placed on the contractor.

Complete bar placement—Drawings and schedules should normally be included in all construction drawings. However, in such cases when engineering drawings are prepared by a project sponsor or an A-E firm and complete bar placement drawings and schedules are not provided, they may be prepared by the steel fabricator based on engineering drawings as shown in ACI 315.

Section 9, Measurement and payment

Method 1—Intended for use when all reinforcement is measured by weight.

Method 2—Intended for use when bar reinforcement is measured by weight and welded wire fabric reinforcement is measured by area.

When all methods but one are deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 34–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 34—Steel Reinforcement

1. Scope
The work shall consist of furnishing and placing steel reinforcement for reinforced concrete or pneumatically applied mortar.

2. Material
Steel reinforcement shall conform to the requirements of Material Specification 539, Steel Reinforcement (for concrete). Before reinforcement is placed, the surface of the bars and fabric and any metal supports shall be cleaned to remove any loose, flaky rust, mill scale, oil, grease, or other undesirable coatings or foreign substances. Epoxy-coated steel reinforcement shall be free of surface damage. After placement, the reinforcement shall be maintained in a clean and serviceable condition until it is completely embedded within the concrete.

3. Bar schedule, lists and diagrams
Any supplemental bar schedules, bar lists or bar-bending diagrams required in section 10 of this specification to accomplish the fabrication and placement of steel reinforcement shall be provided by the contractor. Before reinforcement is placed, the contractor shall furnish four copies of any such lists or diagrams to the contracting officer for approval. Acceptance of the reinforcement is not based on approval of these lists or diagrams, but on inspection of the steel reinforcement after it has been placed, tied, and supported and is ready to receive concrete.

4. Bending
Reinforcement shall be cut and bent in compliance with the requirements of the American Concrete Institute Standard 315. Bars shall not be bent or straightened in a manner that will injure or weaken the material. Bars with kinks, cracks, or improper bends will be rejected.

5. Splicing bar reinforcement
Method 1—Splices of reinforcement shall be made only at locations shown on the drawings and provided by the steel schedule. Placement of bars at the lap splice locations shown, when not in contact, shall not be farther apart than one-fifth the shown lap length and in any case no greater than 6 inches.

Method 2—Splices of reinforcement shall be limited to those locations shown on the drawings. Splice lengths shall be determined before fabrication and meet the requirements of ACI Standard 318, Building Code Requirements for Reinforced Concrete, based upon design information in section 10 of this specification. Bar placement drawings and schedules shall be provided for approval before fabrication. The drawings shall show all splice locations, layouts, and lap dimensions.

6. Splicing welded wire fabric
Unless otherwise specified, welded wire fabric shall be spliced in the following manner:

End-to-end—Adjacent sections shall be spliced end-to-end (longitudinal lap) by overlapping a minimum of one full mesh plus 2 inches plus the length of the two end overhangs. The splice length is measured from the end of the longitudinal wires in one piece of fabric to the end of the longitudinal wire in the lapped piece of fabric.

Side-to-side—Adjacent sections shall be spliced side to side (transverse lap) a minimum of one full mesh plus 2 inches. The splice length shall be measured from the centerline of the first longitudinal wire in one piece of fabric to the centerline of the first longitudinal wire in the lapped piece of fabric.

7. Placing

Reinforcement shall be accurately placed and secured in position to prevent its displacement during the placement of concrete. Tack welding of bars is not permitted. Metal chairs, metal hangers, metal spacers, and concrete chairs may be used to support the reinforcement. Metal hangers, spacers, and ties shall be placed in such a manner that they are not exposed in the finished concrete surface. The legs of metal chairs or side form spacers that may be exposed on any face of slabs, walls, beams, or other concrete surfaces shall have a protective coating or finish. The coating or finish can be hot dip galvanizing, epoxy coating, plastic coating, or stainless steel. Metal chairs and spacers not fully covered by a protective coating or finish shall have a minimum cover of 0.75 inch of concrete over the unprotected metal part. The exception is that those with plastic coatings may have a minimum cover of 0.5 inch of concrete over the unprotected metal part. Precast concrete chairs shall be manufactured of the same class of concrete as specified for the structure and shall have the tie wires securely anchored in the chair or a V-shaped groove at least 0.75 inch in depth molded into the upper surface to receive the steel bar at the point of support. Precast concrete chairs shall be clean and moist at the time concrete is placed.

High density or structural plastic rebar accessories designed to ensure maximum concrete bond may be substituted for metal or concrete accessories in spacer applications as approved by the contracting officer. Exposure of plastic rebar accessories at the finished concrete surface shall be kept to a minimum. Plastic rebar accessories, when used, shall be staggered along adjacent parallel bars and shall be placed at intervals no closer than 12 inches. Plastic rebar accessories shall not be used in concrete sections 6 inches or less in thickness.

Reinforcement shall not be placed until the prepared site has been inspected and approved. After placement of the reinforcement, concrete shall not be placed until the reinforcement has been inspected and approved by the contracting officer's technical representative (COTR).

8. Storage

Steel reinforcement stored at the work site shall be placed on platforms, skids, or other supports. This is done so that contact with the ground is avoided and the material is protected from mechanical damage and/or corrosion.

9. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the weight of steel reinforcement placed in the concrete in accordance with the drawings is determined to the nearest pound by computation from the placing drawings. Measurement of hooks and bends is based on the requirements of ACI Standard 315. Computation of weights of reinforcement is based on the unit weights established in tables 34–1 and 34–2 of this specification. Computation of weights for welded wire fabric not shown in table 34–2 shall be based on ACI Standard 315. The area of welded wire fabric reinforcement placed in the concrete in accordance with the drawings is determined to the nearest square foot by computation from the placing drawings with no allowance for required laps. The weight of steel reinforcing in extra splices or extra-length splices approved for the convenience of the contractor or the weight of supports and ties is not included in the measurement for payment.

Payment for furnishing and placing reinforcing steel is made at the contract unit price. Such payment constitutes full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work including preparing and furnishing bar schedules, lists, or diagrams; furnishing and attaching ties and supports; and furnishing, transporting, storing, cutting, bending, cleaning, and securing all reinforcements.

Method 2—For items of work for which specific unit prices are established in the contract, the weight of bar reinforcement placed in the concrete in accordance with the drawings is determined to the nearest pound by computation from the placing drawings. Measurement of hooks and bends is based on the requirements of ACI Standard 315. Computation of weights of bar reinforcement is based on the unit weights established in table 34–1 of this specification. The weight of steel reinforcing in extra splices or extra length splices approved for the convenience of the contractor or the weight of supports and ties is not included in the measurement for payment.

The area of welded wire fabric reinforcement placed in the concrete in accordance with the drawings is determined to the nearest square foot by computation from the placing drawings with no allowance for required laps.

Payment for furnishing and placing bar reinforcing steel is made at the contract unit price for bar reinforcement. Payment for furnishing and placing welded wire fabric reinforcing steel is made at the contract unit price for welded wire fabric reinforcement. Such payment constitutes full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work including preparing and furnishing bar schedules, lists, or diagrams; furnishing and attaching ties and supports; and furnishing, transporting, cutting, bending, cleaning, and securing all reinforcement.

All Methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

Table 34–1 Standard reinforcing bars

Bar size designations		Weight (lb/ft)
English	Metric	
3	10	0.376
4	13	0.668
5	16	1.043
6	19	1.502
7	22	2.044
8	25	2.670
9	29	3.400
10	32	4.303
11	36	5.313
14	43	7.650
18	57	13.600

1/ The bar diameter (inches) equals the bar size number divided by eight. For example, the diameter of a #4 bar is 4÷8 = 0.5 inch.
2/ The metric bar size has been rounded to a whole number that represents the approximate diameter of the bar in millimeters.

Table 34–2 Rectangular welded wire fabric

Style designation 1/		Weight
by steel wire gauge	by W-number	(lb/100 ft^2)
6 x 6 – 10 x 10	6 x 6 – W1.4 x W1.4	21
6 x 6 – 8 x 8	6 x 6 – W2.1 x W2.1	30
6 x 6 – 6 x 6	6 x 6 – W2.9 x W2.9	42
6 x 6 – 4 x 4	6 x 6 – W4.0 x W4.0	58
4 x 4 – 10 x 10	4 x 4 – W1.4 x W1.4	31
4 x 4 – 8 x 8	4 x 4 – W2.1 x W2.1	44
4 x 4 – 6 x 6	4 x 4 – W2.9 x W2.9	62
4 x 4 – 4 x 4	4 x 4 – W4.0 x W4.0	85
4 x 12 – 8 x 12	4 x 12 – W2.1 x W0.9 2/	25
4 x 12 – 7 x 11	4 x 12 – W2.5 x W1.1 2/	31

1/ Style designation is defined in ACI Standard 315 of the American Concrete Institute.
2/ Welded smooth wire fabric with wires smaller than size W1.4 is manufactured from galvanized wire.

Instructions for use
Construction Specification 44—Corrugated Polyethylene Tubing

1. Applicability
Construction Specification 44 is applicable for use for land drainage and drains for embankments, foundations, structures, and other conduit systems.

2. Material specifications
Material specification 548, Corrugated Polyethylene Tubing, complements Construction Specification 44:

3. Included items
Items to be included in construction specifications and drawings follow

a. Line and grade of tubing. Include in Section 9, Items of work and construction details, any applicable limitations or restrictions on the grade of the tubing, such as reverse grades are not acceptable.

b. Details of the trench bottom.

c. Details of the bedding including description and grading limits of the bedding material.

d. Describe in section 9 the range of overexcavation that will be permitted without corrective measures.

e. Diameter(s) of the tubing and interior finish (corrugated or smooth wall).

f. Describe any special filter envelope for tubing, if required.

g. Type of joint and details for any special joints.

h. Details of special fittings and appurtenances.

i. Details for connections with other appurtenances or existing structures, or both.

j. Details and specifications for nylon sock, when required.

4. Measurement and payment
Method 1—Includes all excavation and earth backfill to install the pipe.

Method 2—Intended for use when separate payment items are identified for earthwork.

When a nylon sock or other special filter material is an installation requirement, mention the item in section 9 of this specification as an included item for measurement and payment if it is not a separate item in the bid schedule.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in the contract specification, delete from the last paragraph, ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

Note: At the present time, ASTM does not have a standard for double wall or ribbed pipe or the tubing covered by AASHTO M252 and M294.

5. Items of work and construction details
Starting at the top of page 44–3, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 44—Corrugated Polyethylene Tubing

1. Scope

The work consists of furnishing and installing tubing and the necessary fittings and appurtenances as shown on the drawings and as outlined in this specification.

2. Material

Corrugated polyethylene tubing and fittings shall conform to the material requirements as outlined in Material Specification 548, Corrugated Polyethylene Tubing.

When perforations are specified, the water inlet area shall be a minimum of 1 square inch per lineal foot of tubing. The inlets either shall be circular perforations or slots equally spaced along the length and circumference of the tubing. Unless otherwise specified, circular perforations shall not exceed 3/16 inch in diameter, and slot perforations shall not be more that 1/8 inch wide.

Geotextile filter socks, when required, shall meet the material requirements outlined in section 9 of this specification.

Granular bedding material, when specified, shall conform to the requirements specified in section 9 of this specification.

The tubing shall be appropriately marked with ASTM or AASHTO designation.

3. Handling and storage

Tubing shall be delivered to the job site and handled by means that provide adequate support to the tubing and do not subject it to undue stresses or damage. When handling and placing corrugated polyethylene tubing, care shall be taken to prevent impact blows, abrasion damage, and gouging or cutting (by metal edges and/or surface or rocks). The manufacturer's special handling requirements shall be strictly observed. Special care shall be taken to avoid impact when the pipe must be handled at a temperature of 40 degrees Fahrenheit or less.

Tubing shall be stored on a relatively flat surface so that the full length of the tube is evenly supported. Unless the tube is specifically manufactured to withstand exposure to ultraviolet radiation, it shall be covered with an opaque material when stored outdoors for 15 days or longer.

4. Excavation

Unless otherwise specified or approved by the engineer, excavation for and subsequent installation of each tube line shall begin at the outlet end and progress upgrade. The trench or excavation for the tubing shall be constructed to the lines, depths, cross sections, and grade shown on the drawings, specified in Section 9 of this specification, or as approved by the engineer.

Trench shields, shoring and bracing, or other suitable methods necessary to safeguard the contractor's employees and the works of improvement and to prevent damage to the existing improvements shall be furnished, placed, and subsequently removed by the contractor.

5. Preparing the tubing bed and blinding the tubing

When a granular filter or envelope is specified, the filter or envelope material shall be placed in the bottom of the trench just before the tubing is laid. The tubing shall then be laid and the filter and envelope material placed to a depth over the top of the tubing of not less than that shown on the drawings or as specified in section 9 of this specification.

When a granular filter or envelope is not specified, the bottom of the trench shall be shaped to form a semicircular or trapezoidal groove in its center. This groove shall provide support for not less than a fourth of the outside circumference of the tubing. After the tubing is placed in the excavated groove, it shall be capped with friable material from the sides of the trench. The friable material shall be placed around the tubing, completely filling the trench to a depth of at least 3 inches over the top of the tubing. For material to be suitable, it must not contain hard clods, rocks, frozen soil, or fine material that will cause a silting hazard to the drain. Tubing placed during any day shall be blinded (place required soil material around and over pipe) and temporarily capped before construction activities are completed for that day.

6. Placement and joint connections

All tubing shall be installed to grade as shown on the drawings. After the tubing is placed in the trench and blinded, allow sufficient time for the tubing to adapt to the soil temperature before backfilling.

Maximum allowable stretch of the tubing is 5 percent. Special precautions must be implemented on hot, bright days to ensure that the stretch limit is not exceeded and excessive deflection does not occur as a result of installation procedures, including backfill operations.

Unless otherwise specified in section 9 of this specification or shown on the drawings, connections are made with manufactured junctions comparable in strength with the specified tubing. All split fittings shall be securely fastened with nylon cord or plastic zip ties before any backfill is placed. All buried ends shall be supplied with end caps unless otherwise approved by the engineer.

7. Backfilling

Unless otherwise specified in section 9 of this specification, the backfilling of the trench shall be as shown on the drawings and completed as rapidly as is consistent with the soil conditions. Automatic backfilling machines may be used only when approved by the engineer. Backfill shall extend above the ground surface and be well rounded and centered over the trench.

8. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the quantity of each kind and size of tubing is determined to the nearest foot of length measured along the centerline of the installed tubing. Payment for each kind and size of tubing is made at the contract unit price for that kind and size of tubing. Such payment constitutes full compensation for all labor, equipment, tools, and all other items necessary and incidental to furnishing, transporting, and installing the tubing, including excavation, shoring, geotextile or granular filter (when specified), backfill and all fittings, appurtenances, and other items required to complete the work. Payment for appurtenances listed separately in the bid schedule is made at the contract unit price(s) for the size and type of appurtenance listed.

Method 2—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of tubing is determined to the nearest foot by measurement of the laid length along the crown centerline of the tubing. Payment for each kind, size, and class of tubing is made at the contract unit price for the kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the tubing, including shoring, all fittings, thrust blocks, appurtenances, and other items necessary and incidental to the completion of the work. Payment for appurtenances listed separately in the bid schedule are made at the contract prices for those items.

Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 9 of this specification.

9. Items of work and construction details

Instructions for use
Construction Specification 45—Plastic Pipe

1. Applicability
Construction Specification 45 is applicable for the use of plastic pipe conduits except corrugated polyethylene tubing (see Construction Specification 44).

2. Material specification
Material Specification 547, Plastic Pipe, complements Construction Specification 45.

3. Included items
Items to be included in the construction specification and drawings follow:

a. Line and grade of the conduit.

b. Details of the bedding and shape and placement requirements.

c. Description of the bedding material and grading limits, if needed.

d. Excavation requirements. Provide pay limits or actual limits for excavation, minimum trench width, if applicable and any special considerations necessary in case of unstable trench bottom or walls or for safety.

e. Backfill requirements. Provide pay limits or actual limits of backfill, compaction requirements, or other special methods of performing and controlling backfill, including the kind of material, as appropriate.

f. Specify industry (ASTM or AWWA) material standards or specifications that the pipe material is required to meet, as applicable.

   The designer may require a specific type of pipe by listing in section 14 of this construction specification or the appropriate reference specification(s). The designer must be prepared to evaluate and accept pipe meeting other references that equal or exceed the minimum specified when proposed by the contractor or supplier. NRCS maintains a limited list of reference specifications in NRCS offices for use of design and construction personnel.

g. Specify the salient features of the pipe that are required to meet the intent of the design.

   (1) Size (diameter, include ID or OD if critical) and type of plastic (PE, HDPE, ABS, PVC 1120, or other).

   (2) Schedule, SDR or DR, pressure class, and/or pressure rating, as appropriate.

   (3) Perforation requirements if different from Material Specification 547.

h. Type of joint by referring to a reference specification or details of any specific joint requirements.

i. Details of special fittings, when applicable.

j. Type of protective coatings for special fittings and appurtenances, when applicable (include field repair requirements).

k. Pressure testing specifications, including rate of filling requirements, if applicable. The test pressure specified should not be less than the normal operating pressure together with the duration of the test with the allowable pressure change that is acceptable.

l. Specify and detail concrete thrust blocks, encasement, and anchors where applicable. Requirements for concrete encasement and for thrust blocks if other than Construction Specification 32, Structure Concrete, Class 3000M.

m. Methods of measurement and payment.

4. Methods

Section 12, Pressure testing

The methods are self-explanatory. The choice of method must be consistent with the function of the conduit and the required operating pressure.

Section 13, Measurement and payment

The methods are self-explanatory.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete from the last paragraph, ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining two sentences.

5. Discussion

This specification is written to include cast iron pipe sizes, iron pipe sizes (IPS), sewer pipe, pressure pipe, water pipe, drainpipe, and plastic irrigation pipe (PIP).

In addition to the ductile iron and cast iron fittings, one piece, injection molded, gasketed PVC plastic fittings are available for PVC pipe. These fitting are available for sewer pipe sizes 4 inches to 15 inches, for IPS-PVC pipe sizes 1.5 inches to 8 inches, and for AWWA Standard C900 pipes that are compatible with cast iron pipe sizes 4 inches to 8 inches.

6. Items of work and construction details

Starting at the top of page 45–8, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 45—Plastic Pipe

1. Scope

The work consists of furnishing and installing plastic pipe (except corrugated polyethylene tubing) and the necessary fittings and appurtenances as shown on the drawings or as specified herein.

2. Material

Pipe, fittings, and gaskets shall conform to the requirements of Material Specification 547, Plastic Pipe, and as specified in section 14 of this specification or as shown on the drawings.

Perforated pipe shall conform to the requirements of Material Specification 547, Plastic Pipe, and as specified in section 14 of this specification or as shown on the drawings.

Unless otherwise specified, concrete shall conform to the requirements of Construction Specification 32, Structure Concrete, and section 8 of this specification.

Unless otherwise specified, earth backfill shall conform to the requirements of Construction Specification 23, Earthfill.

Unless otherwise specified, drainfill shall conform to the requirements of Construction Specification 24, Drainfill.

3. Handling and storage

Pipe shall be delivered to the job site and handled by means that provide adequate support to the pipe and do not subject it to undue stresses or damage. When handling and placing plastic pipe, care shall be taken to prevent impact blows, abrasion damage, and gouging or cutting (by metal edges and/or surface or rocks). The manufacturer's special handling requirements shall be strictly observed. Special care shall be taken to avoid impact when the pipe must be handled at a temperature of 40 degrees Fahrenheit or less.

Pipe shall be stored on a relatively flat surface so that the barrels are evenly supported. Unless the pipe is specifically manufactured to withstand exposure to ultraviolet radiation, it shall be covered with an opaque material when stored outdoors for 15 days or longer.

4. Excavation

Excavation shall be in accordance with Construction Specification 21, Excavation, and section 14 of this specification or as shown on the drawings.

The pipe foundation shall be excavated a minimum of 4 inches lower than the pipe grade shown on the drawings or staked in the field whenever bedrock, boulders, cobbles, or other material that may cause pipe damage is encountered at planned pipe grade.

5. Laying the pipe

Plastic pipe conduits complete with fittings and other related appurtenances shall be installed to the lines and grades shown on the drawings or specified in section 14 of this specification. The pipe shall be installed so that there is no reversal of grade between joints unless otherwise shown on the drawings. The pipe shall not be dropped or dumped on the bedding or into the pipe trench. The ground surface near the pipe trench shall be free of loose rocks and stones greater than 1 inch in diameter. This ensures that rock will not be displaced and impact the pipe.

Just before placement, each pipe section shall be inspected to ensure that all foreign material is removed from inside the pipe. The pipe ends and the couplings shall be free of foreign material when assembled. At the completion of a work shift, all open ends of the pipeline shall be temporarily closed off using a suitable cover or plug.

Care shall be taken to prevent distortion and damage during hot or cold weather. During unusually hot weather (daytime high temperature of more than 90 °F), the pipe assembled in the trench shall be lightly backfilled or shaded to keep it as near to ground temperature as possible until final backfill is placed. Backfill operations should be performed during daily construction periods when the ground temperature and the temperature of the pipe do not vary more than 40 degrees Fahrenheit.

Perforated pipe shall be installed with the perforations down and oriented symmetrically about the vertical centerline. Perforations shall be clear of any obstructions on the inside and outside of the pipe when the pipe is approved by the engineer for backfill.

During installation, the pipe shall be firmly and uniformly bedded throughout its entire length, to the depth and in the manner specified in section 14 of this specification or as shown on the drawings. Bellholes shall be placed in bedding material under bells, couplings, and other fittings to assure the pipe is uniformly supported throughout its entire length. Blocking or mounding beneath the pipe to bring the pipe to final grade is not permitted.

6. Pipe embedment

Earth bedding—The pipe shall be firmly and uniformly placed on compacted earthfill bedding or an inplace earth material bedding of ample bearing strength to support the pipe without noticeable settlement. The earth material on which the pipe is placed shall be of uniform density to prevent differential settlement.

Unless otherwise specified, a groove that closely conforms to the outside surface of the pipe shall be formed in the bedding. The depth of the groove shall be equal to or greater than 0.3 of the pipe diameter.

Earth bedding shall be compacted to a density not less than adjacent undisturbed inplace earth material or be compacted earth backfill. Earthfill material used for compacted earth bedding shall be free of rocks or stones greater than 1 inch in diameter and earth clods greater than 2 inches in diameter. The pipe shall be loaded sufficiently during the compaction of bedding under the haunches and around the sides of the pipe to prevent displacement from its final approved placement.

Sand, gravel, or crushed rock bedding—When sand, gravel, or crushed rock bedding is specified, the pipe shall be firmly and uniformly placed on the bedding material. Material for bedding shall not exceed 1 inch in diameter. Unless otherwise specified in section 14 of this specification or shown on the drawings, the coarse-grained bedding material shall be carefully placed and compacted to a depth equal to or greater than 0.3 of the diameter of the pipe above the bottom of the pipe. The pipe shall be loaded sufficiently during backfilling and compaction around the sides to prevent displacement of the pipe from its final approved placement.

Pipe encased in drainfill—The pipe shall be firmly and uniformly placed on bedding of specified drainfill. Drainfill shall be placed and compacted as specified in section 14 of this specification or as shown on the drawings to form a continuous uniform support around the entire circumference of the pipe. The pipe shall be loaded sufficiently during backfilling around the sides and during compaction to prevent displacement of the pipe.

7. Backfill

Initial backfill—Unless otherwise specified, initial backfill to 6 inches above the top of the conduit is required. Earth haunching and initial backfill material shall consist of soil material that is free of rocks, stones, or hard clods more than 1 inch in diameter. Coarse backfill material shall be the specified sand, gravel, crushed rock, or drainfill material.

Initial backfill shall be placed in two stages. In the first stage (haunching), backfill is placed to the pipe spring line (center of pipe). In the second stage, it is placed to 6 inches above the top of the pipe.

The first stage material shall be worked carefully under the haunches of the pipe to provide continuous support throughout the entire pipe length. The haunching backfill material shall be placed in layers that have a maximum thickness of about 6 inches and are compacted as specified in section 14 of this specification or as shown on the drawings. During compaction operations, care shall be taken to ensure that the tamping or vibratory equipment does not come in contact with the pipe and the pipe is not deformed or displaced.

When pressure testing is not specified, the pipe shall be covered with a minimum of 6 inches of backfill material as soon as possible following assembling of the pipe in the trench, but not later than within the same day that placement has occurred. When pressure testing is specified, sufficient backfill material shall be placed over the pipe to anchor the conduit against movement during pressure testing activities.

Final backfill—Final backfill shall consist of placing the remaining material required to complete the backfill from the top of the initial backfill to the ground surface, including mounding at the top of the trench. Final backfill material within 2 feet of the top of the pipe shall be free of debris or rocks larger than 3 inches nominal diameter. Coarse backfill material shall be the specified sand, gravel, crushed rock, or drainfill. Final backfill shall be placed in approximately uniform, compacted layers. Final backfill compaction requirements shall be as specified in section 14 of this specification or as shown on the drawings.

Vehicles or construction equipment shall not be allowed to cross the pipe until the minimum earth cover and required density as specified in section 14 of this specification has been obtained.

8. Pipe encasement in concrete

Concrete encasement shall be carefully placed to form a continuous uniform support around the entire circumference of the pipe as specified in section 14 of this specification or as shown on the drawings. Pipes encased in concrete shall be securely anchored to prevent movement of the pipe during concrete placement. A clear distance of 1.5 inch shall be maintained between the pipe and the reinforcing steel.

The concrete for the encasement shall conform to the requirements of Construction Specification 32, Structure Concrete, for Class 3000M concrete unless otherwise specified.

9. Joints

Unless otherwise specified in section 14 of this specification or shown on the drawings, joints shall be either bell and spigot type with elastomeric gaskets, coupling type, solvent cement bell and spigot, or jointed by butt heat fusion. When a lubricant is required to facilitate joint assembly, it shall be a type having no deleterious affect on the gasket or pipe material.

Pipe joints shall be watertight at the pressures specified except where unsealed joints are indicated.

Pipe shall be installed and joined in accordance with the manufacturer's recommendations. Laying deflections and joint fitting or stab depths shall be within the manufacturer's recommended tolerances.

When solvent cement joints are specified for PVC or ABS pipe and fittings, they shall be made in accordance with the following ASTMs and the related appendix of each ASTM; D 2855 for PVC pipe and fittings and D 2235 for ABS pipe and fittings.

Flanged, banded, heat-fusion, or elastomeric-sealed mechanical joints shall be used when joining polyethylene (PE) and high density polyethylene (HDPE) pipe and fittings unless otherwise specified in section 14 of this specification or as shown on the drawings.

Pipe ends shall be cut square and be deburred to provide a uniform, smooth surface for the jointing process. Reference marks shall be placed on the spigot ends to assist in determining when proper seating depth has been achieved within the joint.

10. Fittings

Unless otherwise specified, steel fittings, valves, and bolted connections shall be painted or coated as recommended by the manufacturer.

Fittings for nonpressure pipe shall be of the same or similar material as the pipe and shall provide the same durability, watertightness, and strength as the pipe unless otherwise specified.

11. Thrust blocks and anchors

When specified, concrete thrust blocks and anchors shall be installed as shown on the drawings or specified in section 14 of this specification.

The concrete for the thrust blocks and anchors shall conform to the requirements of Construction Specification 32, Structure Concrete, for Class 3000M concrete unless otherwise specified in section 14 of this specification.

The thrust block cavity shall be hand dug into undisturbed soil or previously placed compacted backfill. The cavity shall be formed with soil or wood to hold the freshly placed concrete without displacement until an initial set has occurred.

When excavation beyond the designated trench widths and depths as shown on the drawings or specified in section 14 of this specification occurs at locations where installation of concrete thrust blocks is required, the contractor shall install an alternative thrust block provision. The concrete thrust block shall have a thickness of one pipe diameter and a contact face area that shall be formed against the pipe as shown on the drawings or specified in section 14 of this specification. Backfill shall be placed on all sides of the thrust block and to the sides of the excavation. It shall be compacted as specified for initial backfill.

12. Pressure testing

Method 1—Pressure testing of the completed conduit is not required.

Method 2—The conduit shall be tested for leaks in the following manner:

a. Before pressure testing:
   (1) Joints of the assembled pipeline shall be allowed to cure as recommended by the manufacturer.
   (2) Pipeline shall be flushed and cleaned.
   (3) All concrete anchors and thrust blocks shall be in place and allowed to cure for a minimum of 3 days.
   (4) Earth backfill shall be sufficient to anchor the conduit against movement during the pressure testing and shall be compacted as specified in Section 14 of this specification or as shown on the drawings.

(5) The conduit shall be braced, anchored, or both, at each end to restrict all potential pipe movement.

(6) The ends of the conduit shall be plugged. The upstream plug shall have a standpipe installed vertically having a minimum diameter of 2 inches and shall be equipped with a shutoff valve. All high points in the line shall be vented to evacuate air pockets. The conduit and the standpipe shall be slowly filled with water such that no air is entrapped during the filling operation. After filling is complete, all vents shall be closed.

b. During pressure testing, the water level in the standpipe shall be continuously maintained at a minimum of 10 feet above the highest invert elevation of the conduit for no less than 2 hours unless otherwise specified in section 14 of this specification or as shown on the drawings.

The volume of water leakage in the 2-hour test period shall be recorded. The maximum allowable leakage (L) in gallons per hour shall not exceed 0.02 times the nominal pipe diameter (D) in inches for each 1,000 feet of pipe line, which is about 50 pipe joints (L = 0.02 x D).

c. When observed leakage exceeds the allowable, leaks shall be sealed by replacement of pipe and fittings as necessary. The conduit shall be retested as described above. This procedure shall be repeated until the conduit leakage does not exceed the allowable specified above.

The contractor shall be fully responsible for any and all work required to correct leakage exceeding the amount specified.

***Method 3*—**The conduit shall be tested for leaks in the following manner:

a. Before pressure testing:

(1) Joints of the assembled pipeline shall be allowed to cure as recommended by the manufacturer.

(2) Pipeline shall be flushed and cleaned.

(3) All concrete anchor and thrust blocks shall be in place and allowed to cure for at least 3 days.

(4) Earth backfill shall be sufficient to anchor the conduit against movement during the pressure testing and compacted as specified in section 14 of this specification or as shown on the drawings.

(5) The conduit shall be braced and/or anchored at each end to prevent all potential pipe movement.

(6) The ends of the conduit shall be plugged, and a pressure gauge shall be attached to the upstream and downstream ends. All high points along the pipeline shall be vented to permit the complete removal of all air within the pipeline. The conduit shall be slowly filled with water such that no air is entrapped during the filling operations.

b. The testing pressure specified in section 14 of this specification shall be continuously maintained at the upstream gauge for a minimum of 2 hours. The pressure at the downstream gauge shall not exceed the pressure rating of the pipe.

c. The volume of water leakage for the 2-hour test period shall be recorded. Maximum allowable leakage shall be in accordance with the following:

Allowable leakage for plastic pipe
(gal/hr/1,000 feet, or 50 pipe joints) 1/

Nominal pipe size (in)	Test pressure in the pipeline (lb/in^2) 50	100	150	200
	Allowable leakage			
4	.19	.27	.33	.38
6	.29	.41	.50	.57
8	.38	.54	.66	.76
10	.48	.68	.83	.96
12	.57	.81	.99	1.15
14	.67	.95	1.16	1.34
15	.72	1.02	1.25	1.44
16	.76	1.07	1.32	1.52
18	.86	1.22	1.49	1.72

1/ Computation basis $L = \frac{ND\sqrt{P}}{7,400}$

where:
L = allowable leakage in gallons per hour
N = number of joints (pipe and fittings)
D = nominal diameter of pipe in inches
P = test pressure in pounds per square inch

d. When observed leakage exceeds the allowable, leaks shall be sealed by replacement of pipe and fittings as necessary. The conduit shall be retested as described in this section. The procedure shall be repeated until the conduit leakage does not exceed the allowable specified above.

The contractor shall be fully responsible for any and all work required to correct leakage exceeding the amount specified.

13. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe is determined to the nearest foot by measurement of the laid length along the crown centerline of the conduit. Payment for each kind, size, and class of pipe is made at the contract unit price for that kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the pipe including excavation, shoring, backfill, bedding, thrust blocks, and all fittings, appurtenances, and other items necessary and incidental to the completion of the work. Payment for appurtenances listed separately in the bid schedule is made at the contract prices for those items.

Method 2—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe is determined as the sum of the nominal laying lengths of the sections used. Payment for each kind, size, and class of pipe is made at the contract unit price for the kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the pipe including excavation, shoring, backfill, bedding, thrust blocks, and all fittings, appurtenances, and other items necessary and incidental to the completion of the work. Payment for appurtenances listed separately in the bid schedule is made at the contract prices for those items.

Method 3—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe is determined to the nearest foot by measurement of the laid length along the crown centerline of the conduit. Payment for each kind, size, and class of pipe is made at the contract unit price for the kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the pipe including shoring, all fittings, thrust blocks, appurtenances, and other items necessary and incidental to the completion of the work. Payment for appurtenances listed separately in the bid schedule is made at the contract prices for those items.

Method 4—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe is determined as the sum of the nominal laying lengths of the pipe sections used. Payment for each kind, size, and class of pipe is made at the contract unit price for that kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the pipe including shoring, all fittings, thrust blocks, appurtenances, and other items necessary and incidental to the completion of the work. Payment for appurtenances listed separately in the bid schedule is made at the contract prices for those items.

Methods 3 and 4—Excavation, backfill, and bedding is paid separately under their respective bid items.

All measurement and payment methods—Compensation for any items of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and items to which they are made subsidiary are identified in section 14 of this specification.

14. Items of work and construction details

Instructions for use
Construction Specification 46—Tile Drains

1. Applicability
Construction Specification 46 is applicable to the installation of clay and concrete drain tile for land drainage.

2. Material specifications
The following material specifications complement Construction Specification 46:
543—Nonreinforced Concrete Pipe
544—Clay Pipe and Drain Tile

3. Included items
Items to be included in contract specifications and drawings follow:

a. Line and grade for tile/pipe. Include statement in items of work that pipe shall be installed so that there is no reversal of grade between joints unless specifically shown otherwise on the drawings.
b. Kind, size, and class of tile and/or pipe.
c. Typical cross sections, including typical bedding details.
d. Special fittings, appurtenances, and other items necessary to complete the work.
e. Maximum and minimum trench widths.
f. Procedures to use where unstable soils are encountered. Consider contractor's responsibility for construction safety.
g. Typical pipe outlets.
h. Details of appurtenances.
i. Location and details of any special tile/pipe bedding requirements.
j. Use or restrictions of automatic backfillers.
k. Location of required compacted backfill.
l. Details of any special fittings.
m. Type of joint required (including spacers where required).
n. Type, kind, and size of material to be used to cover joint or pipe.
o. Type of envelope or filter.
p. Gradation of sand-gravel envelope or filter material. Note the limits of the moisture content of sand material so bulking is avoided.
q. Directions for covering pipe with envelope or filter material. Provide caution to avoid the dropping of gravel/rock material directly on clay tile.

4. Methods
Methods are included in sections 4, 5, and 7. The methods are self-explanatory.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in the contract specification, delete from the last paragraph, ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details
Starting at the top of page 46–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 46—Tile Drains

1. Scope
The work consists of furnishing and installing drain tile and necessary fittings and appurtenances.

2. Material
Unless otherwise specified, the drain tile and fittings shall conform to the requirements of Material Specification 543, Nonreinforced Concrete Pipe, or Material Specification 544, Clay Pipe and Drain Tile, whichever is applicable.

3. Excavation
Unless otherwise specified, excavation for the installation of each tile line shall begin at the outlet end and progress upstream.

The trench or excavation for the tile shall be constructed to the depths and cross-sections shown on the drawings. The trench width may be increased above the top of the tile at the option of the contractor.

Trench shields, shoring and bracing, or other methods necessary to safeguard construction personnel and to prevent damage to the existing improvements shall be furnished, placed, and subsequently removed by the contractor.

4. Preparing the tile bed
Method 1—In stable soils the tile shall be firmly and uniformly bedded throughout its entire length to the specified depth and in the specified manner.

When the bottom of the trench does not provide a sufficiently stable or firm foundation for the drain tile, cradles for the tile (constructed of timber or fabricated lumber of a cleat-and-rail type construction), a sand-gravel mix, or other approved material shall be used to stabilize the bottom of the trench.

Drain tile shall not be laid on a rock foundation. In the event that boulders, rocks or ledge rock, or cemented material that prevents satisfactory bedding are encountered at the required grade with the trench cross-section, the trench shall be excavated to a minimum depth of 6 inches below grade and backfilled to grade with a sand-gravel mixture or other approved material. The bedding material shall be shaped to grade and compacted.

Method 2—Tile shall be bedded as shown on the drawings or as specified in section 10 of this specification.

5. Laying tile and joint covering
Method 1—Gaps between tile ordinarily shall be from 1/8 inch to 1/4 inch in clay, clay loam, and cohesive soil. Tile is laid without gaps in sandy soils and on lines to convey water with no intention of providing drainage.

Where tile is installed with the width of joint opening exceeding the limits stated above for noncohesive silts and fine and medium sands, the joint shall be covered with a permanent type material, such as coal tar pitch treated roofing paper, fiber glass sheet or mat, or plastic sheeting.

For tile installations on a curve alignment, the outside tile gap shall be covered with tile bats (broken tile) or covered as described above when the gap exceeds the recommended gap for the type of soil encountered. To maintain the gap within the allowable range, the inside pipe lip may be chipped and fitted to secure the required joint opening.

The ends and inside surface of all tiles shall be kept clean during installation. All earth or other extraneous material within the tile shall be removed before installation of the next tile section. At the end of work each day and when laying has been temporarily suspended, the inlet end shall be blocked so that earth or other extraneous material cannot enter the tile. The upper end of each tile line shall be blocked with permanent type material following satisfactory completion of tile installation.

Method 2—Tile shall be laid and joints shall be covered in the manner shown on the drawings or as specified in section 10 of this specification.

6. Connections

Lateral connections are made with manufactured junctions comparable in strength with the specified tile unless otherwise specified.

Where existing tile lines not shown on the drawings are crossed, they shall be bridged across the new trench or they shall be connected into the new tile lines, as directed by the engineer.

7. Blinding or filter material

Method 1—As soon as the tiles are placed satisfactorily, they shall be blinded by covering with friable soil material to a minimum depth of 6 inches. Material used for blinding shall not be frozen and, unless otherwise specified in section 10 of this specification, shall contain no rocks or stones that when dropped may cause tile damage. Sandy and other noncohesive soil shall not be used for blinding unless the joints are covered. All tile placed during any day shall be blinded at the completion of the work activities that day.

Method 2—Tile shall be covered with sand and gravel meeting the gradation, quality, quantities, and dimensions requirements and installed as shown on the drawings or as specified in section 10 of this specification. Material used for blinding shall not be frozen or contain rocks or stones that when dropped may cause tile damage. All tile placed during any day shall be blinded at the completion of the work activities that day.

Method 3—Unless otherwise specified, tile shall be covered with material obtained from required trench excavations.

8. Backfilling

Backfilling of the trench shall be completed as rapidly as consistent with the soil conditions.

Automatic backfilling machines may be used only when approved by the engineer. Backfill shall extend above the ground surface and be well rounded and centered over the trench.

Unless otherwise specified, where drain tile is installed under roads and at other designated locations shown on the drawings, the backfill shall be placed in successive layers of not more than 6 inches and each layer shall be compacted before the next layer is placed. The density of the compacted backfill shall not be less than the density of the surrounding adjacent earth material unless otherwise specified in section 10 of this specification.

9. Measurement and payment

For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of tile is determined to the nearest foot of length measured along the centerline of the installed tile. Payment for each kind, size, and class of tile is made at the contract unit price for that kind, size, and class of tile. Such payment constitutes full compensation for furnishing, transporting, and installing the tile, including excavation, shoring, backfill, and all fittings, appurtenances, and other items necessary and incidental to the completion of the work. Payment for appurtenances listed separately in the bid schedule is made at the contract prices for the sizes and types of appurtenances listed.

Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

Instructions for use
Construction Specification 61—Rock Riprap

1. Applicability
Construction Specification 61 is applicable to equipment-placed or hand-placed rock riprap, granular filter, and granular bedding. It is also applicable for riprap placed over geotextile fabrics installed in accordance with Construction Specification 95.

2. Material specifications
Material Specifications 521, 523, and 592 complement Construction Specification 61. Select rock type 1, 2, or 3 of Specification 523, section 2, as appropriate and specify in section 8.

Rock type 1—For exposure conditions that require sound and durable material because of aggressive environment and demanding requirements, or in locations where replacement or repair would be difficult if breakdown or other failure were to occur.

Rock type 2—A lesser degree of durability is required while meeting a good standard of performance. The hazard is not a major consideration, and accessibility for repair or replacement is practical. No design changes are necessary for use of this rock type.

Rock type 3—Does not meet our normal requirements for quality, but because of the lack of onsite availability or availability of better materials, it is advantageous to use. Design changes, such as greater rock thickness and/or flatter slopes, may be required to compensate for the lack of long-term durability. More frequent repair and replacement should be anticipated.

3. Included items
Items to be included in contract specifications and drawings follow:

a. Complete plans and cross-sections of the required riprap.

b. Type of placement (equipment or hand-placed).

c. Pay limits, where applicable.

d. Foundation preparation requirements, if any.

e. Gradation requirements for material.

f. Screening, selection, or other processing requirements to ensure obtaining rock of the required quality and grading. For example, if angular to subangular rock is preferred over subrounded to rounded rock, specify this requirement in section 8.

g. Sources of material if the sources are to be specified. When sources are designated in the contract, the adequacy of quantity and quality of usable material at each source must be determined in advance by:

   (1) Geologic investigations with adequate sampling and testing

   (2) Specific case history that establishes the quality by satisfactory performance under comparable conditions of use and exposure or acceptable prequalification by other agencies.

h. ASTM D 5240 should be specified to check for rock resistance to freeze-thaw damage on sites that have large volumes of riprap, at highly hazardous locations, or on sites that would be difficult to repair if rock breakdown occurs. Acceptance limits in the specification must be evaluated and strengthened, if needed, to ensure the use of the appropriate rock type and quality.

i. Method(s) of measurement and payment.

j. When geotextile filters are specified, Construction Specification 95 should be used.

4. Methods

Section 8, Measurement and payment

The methods listed below provide two basic options for measuring and paying for rock riprap using either weight (ton) or volume (cubic yard) methods. Advantages of each option are as follows:

Weight—Ton methods would be more appropriate for quarried rock imported to a site. Contractors generally pay their supplier for quarried rock by the ton. Payment by the ton provides for direct pricing without the need to convert from a ton basis to cubic yards. Variations in riprap characteristics, such as rock specific gravity, transportation and placement losses, denseness of placement, make it necessary for the contractor to add contingencies that include these variations.

Volume—Cubic yard methods would be more appropriate for riprap that is produced from onsite locations, for gathered field stone, quarried rock sold by the truck load, and other situations where a certified scale is not readily available. It would also be appropriate for small quantities of rock where quantity measurement is not complex or a major task. Cubic yard methods can also be an advantage where the riprap end section is uniform for long reaches on larger projects. The elimination of the need to keep track of delivery tickets may be a considerable timesavings.

Cubic yard methods can be expected to impose some contingency considerations from the contractor because of the necessity to convert from tons to cubic yards in quantity estimation.

Methods 1, 2, and 3—Provide various means of measurement and are intended for use where filter or bedding aggregate, if any, is to be paid for as a separate item.

Method 4—Intended for use where filter or bedding aggregate is a minor item and payment for it is to be included in the payment for rock riprap.

Methods 5 and 6—Intended for use when geotextile filters are specified or when no filter, bedding aggregate, or geotextile are specified.

When all methods but one are deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 61–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 61—Rock Riprap

1. Scope

The work shall consist of the construction of rock riprap revetments and blankets, including filter or bedding where specified.

2. Material

Rock riprap shall conform to the requirements of Material Specification 523, Rock for Riprap, or if so specified, shall be obtained from designated sources. It shall be free from dirt, clay, sand, rock fines, and other material not meeting the required gradation limits.

At least 30 days before rock is delivered from other than designated sources, the contractor shall designate in writing the source from which rock material will be obtained and provide information satisfactory to the contracting officer that the material meets contract requirements. The contractor shall provide the contracting officer's technical representative (COTR) free access to the source for the purpose of obtaining samples for testing. The size and grading of the rock shall be as specified in section 8.

Rock from approved sources shall be excavated, selected, and processed to meet the specified quality and grading requirements at the time the rock is installed.

Based on a specific gravity of 2.65 (typical of limestone and dolomite) and assuming the individual rock is shaped midway between a sphere and a cube, typical size/weight relationships are:

Sieve size of rock	Approx. weight of rock	Weight of test pile
16 inches	300 pounds	6,000 pounds
11 inches	100 pounds	2,000 pounds
6 inches	15 pounds	300 pounds

The results of the test shall be compared to the gradation required for the project. Test pile results that do not meet the construction specifications shall be cause for the rock to be rejected. The test pile that meets contract requirements shall be left on the job site as a sample for visual comparison. The test pile shall be used as part of the last rock riprap to be placed.

Filter or bedding aggregates when required shall conform to Material Specification 521, Aggregates for Drainfill and Filters, unless otherwise specified. Geotextiles shall conform to Material Specification 592, Geotextile.

3. Subgrade preparation

The subgrade surface on which the rock riprap, filter, bedding, or geotextile is to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. When fill to subgrade lines is required, it shall consist of approved material and shall conform to the requirements of the specified class of earthfill.

Rock riprap, filter, bedding, or geotextile shall not be placed until the foundation preparation is completed and the subgrade surface has been inspected and approved.

4. Equipment-placed rock riprap

The rock riprap shall be placed by equipment on the surface and to the depth specified. It shall be installed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying material. The rock for riprap shall be delivered and placed in a manner that ensures the riprap in place is reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks and spalls filling the voids between the larger rocks. Some hand placing may be required to provide a neat and uniform surface.

Rock riprap shall be placed in a manner to prevent damage to structures. Hand placing is required as necessary to prevent damage to any new and existing structures.

5. Hand placed rock riprap

The rock riprap shall be placed by hand on the surface and to the depth specified. It shall be securely bedded with the larger rocks firmly in contact one to another without bridging. Spaces between the larger rocks shall be filled with smaller rocks and spalls. Smaller rocks shall not be grouped as a substitute for larger rock. Flat slab rock shall be laid on its vertical edge except where it is laid like paving stone and the thickness of the rock equals the specified depth of the riprap course.

6. Filter or bedding

When the contract specifies filter, bedding, or geotextile beneath the rock riprap, the designated material shall be placed on the prepared subgrade surface as specified. Compaction of filter or bedding aggregate is not required, but the surface of such material shall be finished reasonably smooth and free of mounds, dips, or windrows.

7. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the quantity of each type of rock riprap placed within the specified limits is computed to the nearest ton by actual weight. The volume of each type of filter or bedding aggregate is measured within the specified limits and computed to the nearest cubic yard by the method of average cross-sectional end areas. For each load of rock riprap placed as specified, the contractor shall furnish to the COTR a statement-of-delivery ticket showing the weight to the nearest 0.1 ton.

Payment is made at the contract unit price for each type of rock riprap, filter, or bedding. Such payment is considered full compensation for completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, the quantity of each type of rock riprap placed within the specified limits is computed to the nearest 0.1 ton by actual weight. The quantity of each type of filter or bedding aggregate delivered and placed within the specified limits is computed to the nearest 0.1 ton. For each load of rock riprap placed as specified, the contractor shall furnish to the engineer a statement-of-delivery ticket showing the weight to the nearest 0.1 ton. For each load of filter or bedding aggregate, the contractor shall furnish to the COTR a statement-of-delivery ticket showing the weight to the nearest 0.1 ton.

Payment is made at the contract unit price for each type of rock riprap, filter, or bedding. Such payment is considered full compensation for completion of the work.

Method 3—For items of work for which specific unit prices are established by the contract, the volume of each type of rock riprap and filter or bedding aggregate is measured within the specified limits and computed to the nearest cubic yard by the method of average cross-sectional end areas.

Payment is made at the contract unit price for each type of rock riprap, filter, or bedding. Such payment is considered full compensation for completion of the work.

Method 4—For items of work for which specific unit prices are established by the contract, the volume of each type of rock riprap, including filter and bedding aggregate, is measured within the specified limits and computed to the nearest cubic yard by the method of average cross-sectional end areas.

Payment is made at the contract unit price for each type of rock riprap, including filter and bedding. Such payment is considered full compensation for completion of the work.

Method 5—For items of work for which specific unit prices are established by the contract, the quantity of each type of rock riprap placed within the specified limits is computed to the nearest ton by actual weight. For each load of rock for riprap placed as specified, the contractor shall furnish to the COTR a statement-of-delivery ticket showing the weight to the nearest 0.1 ton.

Payment is made at the contract unit price for each type of rock riprap, including geotextile used for filter or bedding. Such payment is considered full compensation for completion of the work.

Method 6—For items of work for which specific unit prices are established by the contract, the volume of each type of rock riprap is measured within the specified limits and computed to the nearest cubic yard by the method of average cross-sectional end areas.

Payment is made at the contract unit price for each type of rock riprap, including geotextile used for filter or bedding. Such payment is considered full compensation for completion of the work.

All methods—The following provision applies to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 8.

No separate payment is made for testing the gradation of the test pile. Compensation for testing is included in the appropriate bid item for riprap.

8. Items of work and construction details

Instructions for use
Construction Specification 62—Grouted Rock Riprap

1. Applicability
Construction Specification 62 is applicable to the placement of grouted rock riprap on channel slopes and in other designated areas.

2. Material specifications
The following material specifications complement Construction Specification 62:
521—Aggregates for Drainfill and Filters
522—Aggregates for Portland Cement Concrete
523—Rock for Riprap
531—Portland Cement
532—Mineral Admixtures for Concrete
533—Chemical Admixtures for Concrete
534—Concrete Curing Compound
592—Geotextile

Construction Specifications 31, 32, and 95 also complement Construction Specification 62.

3. Included items
Items to be included in construction specifications and drawings follow:

a. Complete plans and cross-sections clearly defining the grouted rock riprap requirements.
b. Pay limits, where applicable.
c. Gradation of rock.
d. Gradation of filter or bedding materials, if used.
e. Location of weep holes and pipe material for weep holes, if used.
f. Placement tolerances.
g. Design of grout mix together with the slump range and amount of air content.
h. Type of cement.
i. Type of admixtures, if any.
j. Gradation of coarse aggregate.
k. Designate equipment-placed or hand-placed rock.
l. Designate if grout is to be placed or pumped.
m. Method of measurement and payment.

4. Methods
Section 4, Placement of rock riprap

Method 1—Intended for use when rock placement operations that may cause some displacement of the filter or bedding material is not critical. Access to the site for dumping by hauling and placing equipment is reasonable.

Method 2—Intended for sites with limited access by hauling and placement equipment. This method should be considered when using geotextile filter material and sharp angular rock so puncture of the geotextile can be minimized. Hand-placed operations should be considered on steeper slopes.

Section 12, Measurement and payment

Method 1—Intended for use when the volume of riprap and grout, together with the filter or bedding material when used, is computed as one quantity and paid for at the contract unit price for grouted rock riprap.

Method 2—Intended for use when the volume of riprap, the volume of filter or bedding, the volume of concrete grout, and the area of geotextile are computed and paid as separate items.

Method 3—Intended for use when the actual weight of rock and filter/bedding material delivered is determined and paid to the nearest 0.1 ton, the grout volume is determined and paid to the nearest 0.1 cubic yard from batch volumes delivered, and the geotextile is determined and paid to the nearest square yard.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete from the last paragraph, ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 62–7, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 62—Grouted Rock Riprap

1. Scope

The work consists of furnishing, transporting, and the installation of grouted rock riprap revetments and blankets, including filter or bedding where specified.

2. Material

Rock for riprap shall conform to the requirements of Material Specification 523, or, if so specified, shall be obtained from designated sources. It shall be free from dirt, clay, sand, rock fines, and other material not meeting the required gradation limits.

At least 30 days before rock is delivered from other than designated sources, the contractor shall designate, in writing, the source from which rock material will be obtained and provide information satisfactory to the engineer that the material meets contract requirements. The contractor shall provide the engineer free access to the source for the purpose of obtaining samples for testing. The size and grading of the rock shall be as specified in section 13 of this specification.

Rock from approved sources shall be excavated, selected, and processed to meet the specified quality and grading requirements at the time the rock is installed.

When specified in section 13 of this specification or when requested by the contracting officer, a gradation quality control check shall be made by the contractor and subject to inspection by the engineer. The test shall be performed at the work site in accordance to ASTM D 5519 Test Method B Size, Size-Range Grading, on a test pile of representative rock. The weight or size of the test pile shall be large enough to ensure a representative gradation of rock from the source and to provide test results within a 5 percent accuracy.

Based on a specific gravity of 2.65 (typical of limestone and dolomite), and assuming the individual rock is shaped midway between a sphere and a cube, typical size/weight relationships are:

Sieve size	Approx. weight of rock	Weight of test pile
16 inches	300 pounds	6,000 pounds
11 inches	100 pounds	2,000 pounds
6 inches	15 pounds	300 pounds

The results of the test shall be compared to the gradation required for the project. Test pile results that do not meet the construction specifications shall be cause for the rock to the rejected. The test pile that meets contract requirements shall be left on the job site as a sample for visual comparison. The test pile shall be used as part of the last rock riprap to be placed.

Filter or bedding aggregates, when required, shall conform to Material Specification 521, Aggregates for Drainfill and Filters, unless otherwise specified.

Portland cement shall conform to the requirements of Material Specification 531 for the specified type.

Pozzolan conforming to Specification ASTM C 618, Class C or F, in amounts not to exceed 25 percent based on absolute volume, may be substituted for an equivalent amount of portland cement in the grout mixture unless otherwise specified in section 13 of this specification.

Aggregates shall conform to the requirements of Material Specification 522, Aggregates for Portland Cement Concrete, except that the grading for coarse aggregate shall be as specified in section 13 of this specification.

Water shall be clean and free from injurious amounts of oils, acid, alkali, organic matter, or other deleterious substances.

Air-entraining admixtures shall conform to the requirements of Material Specification 533, Chemical Admixtures for Concrete.

Curing compound shall conform to the requirements of Material Specification 534, Concrete Curing Compound.

Other admixtures, when required, shall be as specified in section 13 of this specification.

Geotextiles shall conform to the requirements of Material Specification 592.

3. Subgrade preparation

The subgrade surface on which the grouted rock riprap, filter, bedding, or geotextile is to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. When fill to subgrade lines is required, it shall consist of approved material and shall conform to the requirements of the specified class of earthfill.

Rock riprap, filter, bedding, or geotextile shall not be placed until the foundation preparation is completed and the subgrade surface has been inspected and approved.

4. Placement of rock riprap

***Method 1 Equipment-placed rock*—**The rock riprap shall be placed by equipment on the surface and to the depth specified. It shall be installed to the full section thickness in one operation and in such a manner as to avoid serious displacement of the underlying material. The rock for riprap shall be delivered and placed in a manner that ensures that the riprap in place shall be reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks and spalls filling the voids between the larger rocks. Some hand placing may be required to provide a neat and uniform surface.

Rock riprap shall be placed in a manner to prevent damage to structures. Hand placing is required as necessary to prevent damage to any new and existing structures.

***Method 2 Hand-placed rock*—**The rock riprap shall be placed by hand on the surface and to the depth specified. It shall be securely bedded with the larger rocks firmly in contact one to another without bridging. Spaces between the larger rocks shall be filled with smaller rocks and spalls. Smaller rocks shall not be grouped as a substitute for larger rock. Flat slab rock shall be laid on its vertical edge except where it is installed like paving stone and the thickness of the rock equals the specified depth of the riprap section.

5. Filter or bedding

When the contract specifies filter, bedding, or geotextile beneath the rock riprap, the designated material shall be placed on the prepared subgrade surface as specified. Compaction of filter or bedding

aggregate is not required, but the surface of such material shall be finished reasonably smooth and free of mounds, dips, or windrows.

6. Design of the grout mix

The mix proportions for the grout mix shall be as specified in the construction details in section 13 of this specification. During installation, the engineer may require adjustment of the mix proportions whenever necessary. The mix shall not be altered without the approval of the engineer.

7. Handling and measurement of grout material

Material shall be stockpiled and batched by methods that prevent segregation or contamination of aggregates and ensure accurate proportioning of the mix ingredients.

Except as otherwise provided in section 13 of this specification, cement and aggregates shall be measured as follows:

- Cement shall be measured by weight or in bags of 94 pounds each. When cement is measured in bags, no fraction of a bag shall be used unless weighed.
- Aggregates shall be measured by weight. Mix proportions shall be based on the batch weight of each aggregate saturated, surface-dry weight plus the weight of surface moisture it contains at the time of batching.
- Water shall be measured, by volume or by weight, to an accuracy within 1 percent of the total quantity of water required for the batch.
- Admixtures shall be measured within a limit of accuracy of plus or minus 3 percent.

8. Mixers and mixing

The mixer, when operating at capacity, shall be capable of combining the ingredients of the grout mix into a thoroughly mixed and uniform mass and of discharging the mix with a satisfactory degree of uniformity.

The mixer shall be operated within the limits of the manufacturer's guaranteed capacity and speed of rotation.

The time of mixing after all cement and aggregates have been combined in the mixer shall be a minimum of 1 minute for mixers having a capacity of 1 cubic yard or less. For larger capacity mixers, the minimum time shall be increased 15 seconds for each cubic yard or fraction thereof of additional capacity. The batch shall be so charged into the mixer that some water will enter in advance of the cement and aggregates, with the balance of the mixing water introduced into the mixer before a fourth of the total minimum mixing time has elapsed.

When ready-mix grout is furnished, the contractor shall furnish to the engineer at the time of delivery a ticket showing the time of loading and the quantities of material used for each load of grout mix delivered.

No mixing water in excess of the amount required by the approved job mix shall be added to the grout mix during mixing or hauling or after arrival at the delivery point.

9. Conveying and placing

The grout mix shall be delivered to the site and placed within 1.5 hours after the introduction of the cement to the aggregates. In hot weather or under conditions contributing to accelerated stiffening of the concrete, the time between the introduction of the cement to the aggregates and complete discharge of the grout batch shall be a maximum of 45 minutes. The engineer may allow a longer time provided the

setting time of the grout is increased a corresponding amount by the addition of an approved set-retarding admixture. In any case concrete shall be conveyed from the mixer to the final placement as rapidly as practicable by methods that prevent segregation of the aggregates, loss of mortar, displacement of the rock riprap, or a combination of these.

Grout mix shall not be allowed to free fall more than 5 feet unless suitable equipment is used to prevent segregation.

The grout mix shall not be placed until the rock riprap has been inspected and approved by the engineer for the placement of grout.

Rock to be grouted shall be kept moist for a minimum of 2 hours before grouting.

The rock riprap shall be flushed with water before placing the grout to remove the fines from the rock surfaces. The rock shall be kept moist before the grouting and without placing in standing or flowing water. Grout placed on inverts or other nearly level areas may be placed in one operation. On slopes, the grout shall be placed in two nearly equal applications consisting of successive lateral strips about 10 feet in width starting at the toe of the slope and progressing upward. The grout shall be delivered to the place of final deposit by approved methods and discharged directly on the surface of the rock. A metal or wood splash plate is used to prevent displacement of the rock directly under the grout discharge. The flow of grout shall be directed with brooms, spades, or baffles to prevent grout from flowing excessively along the same path and to assure that all intermittent spaces are filled. Sufficient barring shall be conducted to loosen tight pockets of rock and otherwise aid in the penetration of grout to ensure the grout fully penetrates the total thickness of the rock blanket. All brooming on slopes shall be uphill. After the grout has stiffened, the entire surface shall be rebroomed to eliminate runs and to fill voids caused by sloughing. The surface finish, following the completion of grout installation, shall consist of one-third of the rock extended above the level of grout. The exposed rock will not have a plastered appearance.

After completion of any strip or panel, no individual(s) or equipment shall be permitted on the grouted surface for 24 hours. The grouted surface shall be protected from injurious action by the sun, rain, flowing water, mechanical injury, or other potential damaging activity.

10. Curing and protection

The completed finished surface shall be prevented from drying for a minimum curing period of 7 days following placement. Exposed surfaces shall be maintained in a moist condition continuously for the 7-day curing period or until curing compound has been applied as specified in this section. Moisture shall be maintained by sprinkling, flooding, or fog spraying or by covering with continuously moistened canvas, cloth mats, straw, sand, or other approved material. Water or moist covering shall be used to protect the grout during the curing process without causing damage to the grout surface by erosion or other mechanisms that may cause physical damage.

The grouted rock may be coated with an approved curing compound as an alternative method to maintaining a continuous moisture condition during the curing period. The compound shall be sprayed on the moist grout surface as soon as free water has disappeared and all surface finishing has been completed. The compound shall be applied at a minimum uniform rate of 1 gallon per 175 square feet of surface and shall form a continuous adherent membrane over the entire surface. Curing compound shall not be applied to surfaces requiring bond to subsequently placed grout and/or concrete. If the membrane is damaged during the curing period, the damaged area shall be resprayed at the rate of application specified for the original treatment.

Grout mix shall not be placed when the daily minimum temperature is less than 40 degrees Fahrenheit unless facilities are provided to ensure that the temperature of the material is maintained at a minimum

temperature of 50 degrees Fahrenheit and not more than 90 degrees Fahrenheit during placement and the curing period. Grout mix shall not be placed on a frozen surface. When freezing conditions prevail, rock to be grouted must be covered and heated to within a range of 50 to 90 degrees Fahrenheit for a minimum of 24 hours before placing grouting material.

11. Inspecting and testing fresh grout

The grout material shall be checked and tested throughout the grouting operation. Sampling of fresh grout shall be conducted in conformance with ASTM C 172. The volume of each batch will be determined by methods prescribed in ASTM C 138.

The engineer shall have free access to all parts of the contractor's plant and equipment used for mixing and placing grout during the period of the contract. Proper facilities shall be provided for the engineer to sample material and view processes implemented in the mixing and placing of grout as well as for securing grout test samples. All tests and inspections shall be conducted so that only a minimum of interference to the contractor's operation occurs.

For ready-mixed grout, the contractor shall furnish to the engineer a statement-of-delivery ticket for each batch delivered to the site. The ticket shall provide as a minimum: weight in pounds of cement, aggregates (fine and coarse), water; weight in ounces of air-entraining agent; time of loading; and the revolution counter reading at the time batching was started.

12. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the volume of grouted rock riprap, including filter layers or bedding, is determined to the nearest cubic yard from the specified thickness shown on the drawings and the area on which acceptable placement has been installed. Payment for grouted rock riprap is made at the contract unit price. Such payment is considered full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the grouted rock riprap, filter layers and bedding, and geotextile material.

Method 2—For items of work for which specific unit prices are established in the contract, the volume of riprap and the volume of filter layers or bedding is determined to the nearest cubic yard from the specified thickness shown on the drawings and the area in which acceptable placement has been installed. The volume of grout is determined from the calculated batch volume and the number of mixed batches delivered to the site and placed in accordance with the specification. The area of geotextile is determined to the nearest square yard from measurements of geotextile material installed according to the contract requirements. Payment is made at the contract unit price for each type of rock riprap, filter or bedding, concrete grout, and geotextile. Such payment is considered full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work.

Method 3—For items of work for which specific unit prices are established in the contract, the quantity of each type of rock riprap placed within the specified limits is computed to the nearest 0.1 ton by actual weight. The quantity of each type of filter or bedding aggregate delivered and placed within the specified limits is computed to the nearest 0.1 ton. For each load of rock riprap placed as specified, the contractor shall furnish to the engineer a statement-of-delivery ticket showing the weight to the nearest 0.1 ton. For each load of filter or bedding aggregate, the contractor shall furnish to the engineer a statement-of-delivery ticket showing the weight to the nearest 0.1 ton. The volume of grout is determined from the calculated batch volume and the number of mixed batches delivered to the site and placed in accordance with the specifications and drawings. The area of geotextile is determined to the nearest square yard from measurements of geotextile material installed according to the contract requirements. Payment is made at the contract unit price for each type of rock riprap, filter or bedding, concrete grout, and geotextile. Such payment is considered full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work.

***All methods*—**The following provision applies to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 13 of this specification.

13. Items of work and construction details

Instructions for use
Construction Specification 64—Wire Mesh Gabions and Mattresses Twisted (Woven) or Welded Mesh

1. Applicability
Construction Specification 64 is applicable to the installation of wire mesh gabion baskets and mattresses, including bedding, filter, or geotextile where specified.

2. Material specifications
The following material specifications complement Construction Specification 64:
521—Aggregates for Drainfill and Filters
523—Rock for Riprap
592—Geotextile

Construction Specification 95, Geotextile, also complements this specification.

3. Included items
Items to be included in contract specifications and drawings follow:

a. Complete drawings showing alignment, layout, size of baskets or mattresses required, interior support details, lacing, connecting or fastening plans as applicable, and any other related appurtenances or details.

b. Gabions designated as basket or mattress, as appropriate. Type of gabion construction: twisted or welded mesh.

c. Specify in section 8 if alternate ring fasteners as recommended by the manufacturer are to be allowed for basket interconnection and closure of tops. The specification only allows the use of alternative ring fasteners for the assembly of empty gabion baskets or mattresses. If it is determined that the use of these fasteners can provide a minimum strength of 1,400 pounds per linear foot for gabions and 900 pounds per linear foot for gabion mattresses, then section 8 of this specification may be used to allow their use to join gabions and to close the lids of gabions. The manufacturer's recommendations are to be followed concerning the proper interlocking of fasteners and their spacing to attain the required strength.

d. Specify in section 8 the type of wire (plain, galvanized, or PVC coated) if specific design requirements need to be met, coating color, and any special requirements, such as different wire size or mesh openings, as applicable. Note in table 2 of the construction specification that only PVC coated gabion mattresses are specified.

e. Details of bedding, filter material and/or geotextile including gradation for material, compaction requirements of material, class of geotextile, and any special requirements, if required. Refer to the respective construction specifications as applicable. Both types of gabions perform best when placed on relatively smooth and unyielding foundations. A coarse aggregate or a stone leveling course can be successfully used under gabions to enhance good support and grade control.

f. Source of rock and prequalification of other material as appropriate.

g. Rock size if different than that specified.

h. Requirements for concrete cap, if applicable, including location and placement details. Include and refer to Construction Specifications 31, 32, or 33 as necessary.

i. Rockfill and lid closure requirements for gabions placed on a slope to serve as a chute with flow down the top surface. These gabions must be filled as densely as possible to avoid movement and distortion during design flow events.

j. The specified batter to the front face of vertical gabion walls. A minimum wall batter of 6 degrees is recommended (1 horizontal to 10 vertical). Where possible, design stepped faced gabion walls instead of vertical faced walls.

k. Method of measurement and payment in section 8.

4. Methods
Section 7, Measurement and payment

Method 1—Used when payment is to be made for gabions or mattresses and rock filler. Bedding, filter, or geotextile is to be paid under a separate item.

Method 2—Used when payment is made for gabions or mattresses and rock filler including the bedding or filter and geotextile. Include a description of the subsidiary items in section 8 of this specification and in the items of work and construction details of the appropriate companion construction specification.

Method 3—Used when payment is to be made for gabion mattresses and rock filler. Bedding, filter, or geotextile is to be paid under a separate item of work.

Method 4—Used when payment is made for completed gabion mattresses and rock filler including the bedding or filter and geotextile. Include a description of the subsidiary items in section 8 and in the items of work and construction details of the appropriate companion construction specification.

When all methods but is deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details
Starting at the top of page 64–6, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 64—Wire Mesh Gabions and Mattresses Twisted (Woven) or Welded Mesh

1. Scope

The work consists of furnishing, assembling, and installing rock filled wire mesh gabion baskets and mattresses.

2. Types

Gabions shall consist of rectangular wire mesh formed containers filled with rock. Gabions will conform to one of the following types:

Woven mesh—Nonraveling, double twisted, hexagonal wire mesh consisting of two wires twisted together in two 180-degree turns.

Welded mesh—Welded-wire mesh with a uniform square or rectangular pattern and a resistance weld at each intersection. The welded wire connections shall conform with the requirements of ASTM A 185, including wire smaller than W1.2 (0.124 in.), except that the welded connections shall have a minimum average shear strength of 70 percent and a minimum shear strength of 60 percent of the minimum ultimate tensile strength of the wire.

Gabions—Gabions shall be furnished as baskets or mattresses as specified in section 8. Baskets and mattresses shall be fabricated within a dimension tolerance of plus or minus 5 percent.

Baskets—Baskets are at least 12 inches high.

Mattresses—Mattresses are no more than 12 inches thick.

3. Material

Gabions shall be fabricated, assembled, and installed in accordance with the nominal wire sizes and dimensions shown in tables 64–1 and 64–2, using the following materials unless otherwise specified in section 8.

Wire for fabrication and assembly shall be hot-dipped galvanized. The wire shall have a minimum tensile strength of 60,000 pounds per square inch. Galvanized steel wire shall conform to ASTM A 641, Class 3, Soft Temper.

When epoxy or polyvinyl chloride (PVC) coated wire is specified in section 8, the galvanized wire shall be coated by fusion bonded epoxy; fusion bonded, extruded; or extruded and bonded PVC material. The wire coating shall be black, gray, green, or silvery, and the initial properties of the PVC coating shall meet the following requirements:

a. Specific gravity. In the range of 1.30 to 1.40, ASTM D 792.
b. Abrasion resistance. The percentage of weight loss shall be less than 12 percent when tested according to ASTM D 1242, method B, at 200 cycles, CSI-A abrader tape, 80 grit.
c. Brittleness temperature. Not higher than 15 °F, ASTM D 746.
d. Tensile strength. Extruded coating (not less than 2,980 lb/in^2, ASTM D 412); fusion bonded coating (not less than 2,275 lb/in^2, ASTM D 638).
e. Modulus of elasticity. Extruded coating (not less than 2,700 lb/in^2 at 100 percent strain, ASTM D 412); fusion bonded coating (not less than 1,980 lb/in^2 at 100 percent strain, ASTM D 638).
f. Ultraviolet light exposure. An exposure period of not less than 3,000 hours at 63 degrees centigrade, ASTM G 152.

Table 64–1 Minimum requirements*

Gabion baskets—height 12, 18, or 36 inches; length as specified

Type of wire	Mesh size (in)	Wire diameter (in)	PVC coating (in)	Total diameter (in)	Galvanized coating oz./ft^2
Woven mesh	3.25 x 4.5	0.118	None	0.118	0.80
	3.25 x 4.5	0.105	0.02	0.145	0.80
Selvage		0.153	None	0.153	0.80
		0.132	0.02	0.172	0.80
Lacing and internal connecting wire		0.086	0.02	0.126	0.70
Welded	3 x 3	0.118	None	0.118	0.80
Mesh	3 x 3	0.105	0.02	0.145	0.80
Spiral binder		0.105	0.02	0.145	0.80

Table 64–2 Minimum requirements*

Gabion mattresses—height 6, 9, or 12 inches; length as specified

Type of wire	Mesh size (in)	Wire diameter (in)	PVC coating (in)	Total diameter (in)	Galvanized coating oz./ft^2
Woven mesh	2.5 x 3.25	0.086	0.02	0.126	0.70
Selvage		0.105	0.02	0.145	0.80
Lacing and internal connecting wire		0.086	0.02	0.126	0.70
Welded mesh	1.5 x 3	0.080	0.02	0.120	0.70
Spiral binder		0.105	0.02	0.145	0.80

* Note: The wire sizes and PVC coating thickness shown are nominal sizes. The wire sizes include the galvanizing coating thickness.

g. Salt spray test. A test period of not less than 3,000 hours, ASTM B 117.

After the exposure to ultraviolet light and the salt spray test as specified above, the PVC coating shall not show cracks, blisters, splits, nor noticeable change of coloring (surface chalk). In addition, the specific gravity shall not change more than 6 percent, resistance to abrasion shall not change more than 10 percent, tensile strength shall not change more than 25 percent, and modulus of elasticity shall not change more than 25 percent from their initial values.

The wire sizes shown in tables 64–1 and 64–2 are the size of the wire after galvanizing and before coating with PVC.

Spiral binders are the standard fastener for welded-mesh gabion baskets and mattresses, and shall be formed from wire meeting the same quality and coating thickness requirements as specified for the gabion baskets and mattresses.

Alternate fasteners for use with wire mesh gabions, such as ring fasteners, shall be formed from wire meeting the same quality and coating thickness requirements as specified for the gabions and, as a minimum, shall conform to the manufacturer's recommendations.

Standard fasteners and alternate fasteners must provide a minimum strength of 1,400 pounds per lineal foot for gabion baskets and 900 pounds per lineal foot for gabion mattresses. When used to interconnect gabion baskets or mattresses with PVC coating, ring fasteners shall be made of stainless steel and spiral fasteners will be PVC coated. All fasteners shall meet all of the closing requirements of the gabion manufacturer in addition to any requirements specified in section 8.

Rock shall conform to the quality requirements in Material Specification 523, Rock for Riprap, unless otherwise specified in section 8. At least 85 percent of the rock particles, by weight, shall be within the predominant rock size range.

Gabion basket or mattress height	Predominant rock size (in)	Minimum rock dimension (in)	Maximum rock dimension (in)
12-, 18-, or 36-inch basket	4 to 8	4	8
6-, 9-, or 12-inch mattress	3 to 6	3	6

At least 30 days before delivery to the site, the contractor shall inform the engineer in writing of the source from which the rock will be obtained. The test data and other information by which the material was determined by the contractor to meet the specification are included. The contractor shall provide the engineer free access to the source for the purpose of obtaining samples for testing and source approval.

Bedding or filter material, when specified, shall meet the gradation shown on the plans, or as specified in section 8, and the requirements of Material Specification 521, Aggregates for Drainfill and Filters. Geotextile, when specified, shall conform to the requirements specified in section 8 and those of Material Specification 592.

4. Foundation preparation

The foundation on which the gabions are to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. Surface irregularities, loose material, vegetation, and all foreign matter

shall be removed from the foundation. When fill is required, it shall consist of material conforming to the specified requirements. Gabions and bedding or specified geotextiles shall not be placed until the foundation preparation is completed and the subgrade surfaces have been inspected and approved by the COTR.

Compaction of bedding or filter material is required as specified in section 8. The surface of the finished material shall be to grade and free of mounds, dips, or windrows. Geotextile shall be installed in accordance with the requirements of Construction Specification 95.

5. Assembly and placement

Unless otherwise specified in section 8, the assembly and placement of gabions shall be in accordance with the following procedures:

Assembly—Rotate the gabion panels into position and join the vertical edges with fasteners for gabion assembly. Where lacing wire is used, wrap the wire with alternating single and double half-hitches at 4- to 5-inch intervals. Where spiral fasteners are used for welded-wire mesh, crimp the ends to secure the spirals in place. Where ring type alternate fasteners are used for basket assembly, install the fasteners at a maximum spacing of 6 inches. Use the same fastening procedures to install interior diaphragms where they are required.

Interior diaphragms are required where any inside dimension exceeds 3 feet. Diaphragms are installed to assure that no open intervals are present that exceed 3 feet.

Placement—Place the empty gabions on the foundation and interconnect the adjacent gabions along the top, bottom, and vertical edges using lacing wire. Wrap the wire with alternating single and double half-hitches at 4- to 6-inch intervals. Unless otherwise specified in section 8, lacing wire will be the only fastener allowed for interconnecting woven mesh gabions. Spiral fasteners are commonly used for the assembly and interconnection of welded mesh gabions. Spirals are screwed down at the connecting edges then each end of the spiral is crimped to secure it in place. Lacing may be used as needed to supplement the interconnection of welded mesh gabions and the closing of lids.

Interconnect each layer of gabions to the underlying layer of gabions along the front, back, and sides. Stagger the vertical joints between the gabions of adjacent rows and layers by at least half of a cell length.

6. Filling operation

After adjacent empty woven wire gabion units are set to line and grade and common sides properly connected, they shall be placed in straight line tension and stretched to remove any kinks from the mesh and to gain a uniform alignment. Welded-mesh gabions do not require stretching. The gabions may be staked to maintain the established proper alignment before the rock is placed. No stakes shall be placed through geotextile material. Connecting lacing wire and other fasteners (as allowed) shall be attached during the filling operation to preserve the strength and shape of the structure.

Internal connecting crosstie wires shall be placed in each unrestrained gabion cell of more than 18 inches in height, including gabion cells left temporarily unrestrained. Two internal connecting wires shall be placed concurrently with rock placement at each 12-inch interval of depth. In woven mesh gabions these crossties are placed evenly spaced along the front face and connecting to the back face. All crosstie wires shall be looped around two mesh openings and each wire end shall be secured by a minimum of five 180-degree twists around itself after looping.

In welded mesh gabions these crossties or stiffeners are placed across the corners of the gabions (at 12 inches from the corners) providing diagonal bracing. Lacing wire or preformed hooked wire stiffeners may be used.

The gabions shall be carefully filled with rock by machine or hand methods to ensure alignment, avoid bulges, and provide a compact mass that minimizes voids. Machine placement requires supplementing with hand work to ensure the desired results. The cells in any row shall be filled in stages so that the depth of rock placed in any one cell does not exceed the depth of rock in any adjoining cell by more than 12 inches. Along the exposed faces, the outer layer of stone shall be carefully placed and arranged by hand to ensure a neat, compact placement with a uniform appearance.

The last layer of rock shall be uniformly leveled to the top edges of the gabions. Lids shall be stretched tight over the rock filling using only approved lid closing tools as necessary. The use of crowbars or other single point leverage bars for lid closing is prohibited as they may damage the baskets. The lid shall be stretched until it meets the perimeter edges of the front and end panels. The gabion lid shall then be secured to the sides, ends, and diaphragms with spiral binders, approved alternate fasteners, or lacing wire wrapped with alternating single and double half-hitches in the mesh openings.

Any damage to the wire or coatings during assembly, placement, and filling shall be repaired promptly in accordance with the manufacturer's recommendations or replaced with undamaged gabion baskets.

7. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the volume of rock is measured within the neat lines of the gabion structure and computed to the nearest cubic yard. Payment for gabions is made at the contract unit price and includes the wire mesh and rock. Such payment is considered full compensation for all labor, material, equipment, and all other items necessary and incidental to completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, the volume of the gabions is measured within the neat lines of the gabion structure and computed to the nearest cubic yard. Payment for the gabions is made at the contract unit price and includes the wire mesh, rock, and specified bedding material or geotextile. Such payment is considered full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work.

Method 3—For items of work for which specific unit prices are established in the contract, the surface area is measured within the neat lines of the gabion mattress structure and computed to the nearest square yard. Payment for the gabion mattress is made at the contract unit price and includes the wire mesh and rock. Such payment is considered full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work.

Method 4—For items of work for which specific unit prices are established in the contract, the surface area is measured within the neat lines of the gabion mattress structure and computed to the nearest square yard. Payment for the gabion mattress is made at the contract unit price and includes the wire mesh, rock, and specified bedding material or geotextile. Such payment is considered full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work.

All methods—The following provisions apply to all methods of measurement and payment. Unless otherwise specified in section 8, no deduction in volume is made for any void or embedded item. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Each item and the items to which they are made subsidiary are identified in section 8 of this specification.

8. Items of work and construction details

Instructions for use
Construction Specification 91—Chain Link Fence

1. Applicability
Construction Specification 91 is applicable to the installation of chain link fences.

2. Material specifications
No material specifications complement Construction Specification 91.

3. Included items
Items to be included in contract specifications and drawings follow:

a. Plan showing the location and extent of fences including location of gates, corners, pull posts, and end points.

b. Dimensions of the fence including post spacing, clearance from ground, and height of fence.

c. Details of posts and assemblies:
   (1) Types of post and top rails if other than specified in section 2.
   (2) Line post detail showing height of post, depth of embedment.
   (3) Details of corner post assembly, pull post, and corner post, including embedment, top rail connections, tension wire detail, braces, and trusses.
   (4) Show diameters of embedment items.
   (5) Special anchor requirements, if any.

d. Dimensions of gate opening (clear opening between inside faces of the gateposts).

e. Dimensions of gates and type if other than specified in section 2.

f. Required appurtenances, such as locks with number of keys, barbed wire arms, barbed wire, and post tops.

g. Type, mesh, and gauge of chain link fabric, if other than specified in section 2.

h. If the fence material is to be PVC coated, the following information should be included in the Items of Work and Construction Details:
   (1) Specify PVC coating for the fence material.
   (2) Specify desired standard color of PVC coating (see ASTM F 934) if other than black is to be used.

4. Methods
Section 5, Measurement and payment

Method 1—Intended for use when gates are a minor part of the work item.

Method 2—Intended for use when gates form a substantial part of the work item or when gates must be installed in existing fences.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details
Starting at the top of page 91–3, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 91—Chain Link Fence

1. Scope

The work consists of furnishing and installing chain link fencing complete with all posts, braces, gates, and all other appurtenances.

2. Material

The material for the chain link fence shall be as follows:

Galvanized

Chain link fence fabric shall conform to the requirements of ASTM A 392, 2-inch mesh and 9-gauge galvanized steel wire. Zinc coating shall be class 2.

Posts and fence framework shall conform to the requirements of ASTM F 1043 Group 1A, for Heavy Industrial Fence. Coatings shall be a type A galvanized coating for internal and external surfaces. Steel pipe posts shall conform to the requirements of ASTM F 1043 and F 1083.

Fence fittings shall conform to the requirements of ASTM F 626. Fittings shall be galvanized steel. Wire ties and clips shall be 9-gauge.

Gates, gateposts, and gate accessories shall conform to the requirements of ASTM F 900. Coating shall be the same as selected for adjoining fence and framework.

Barbed wire shall be 12.5 gauge and shall conform to the requirements of ASTM A 121, chain link fence grade.

Galvanized and PVC coated

Chain link fence fabric shall conform to the requirements of ASTM F 668 for class 2a or 2b, 2-inch mesh, and 9-gauge galvanized steel wire. The fabric shall have a polymer top coating of the color specified in section 6.

Posts and fence framework shall conform to the requirements of ASTM F 1043 Group 1A, for Heavy Industrial Fence. Coatings shall be a type A galvanized coating for internal and external surfaces and covered with a polymer top coating of color as specified in section 6.

Fence fittings shall conform to the requirements of ASTM F 626. Fittings shall be galvanized steel with a polymer top coating of color as specified in section 6.

Any damage to the coating shall be repaired in accordance with the manufacturer's recommendations, or the damaged fencing material shall be replaced. The contractor shall provide the engineer a copy of the manufacturer's recommended repair procedure and materials before correcting damaged coatings.

3. Installing fence posts

Unless otherwise specified, line posts shall be placed at intervals of 10 feet measured from center to center of adjacent posts. In determining the post spacing, measurement is made parallel with the ground surface.

Posts shall be set in concrete backfill in the manner shown on the drawings.

Posts set in the tops of concrete walls shall be grouted into preformed holes to a depth of 12 inches.

All corner posts, end posts, gateposts, and pull posts shall be embedded, braced, and trussed as shown on the drawings or in accordance with appropriate industry practice if not otherwise shown or specified.

4. Installing wire fabric

Fencing fabric shall not be stretched until at least 4 days after the posts are grouted into walls or 7 days after the posts are set in the concrete backfill.

Fencing fabric shall be installed on the side of the posts designated on the drawings.

The fabric shall be stretched taut and securely fastened, by means of tie clips, to the posts at intervals not exceeding 15 inches and to the top rails or tension wires at intervals not exceeding 2 feet. Care shall be taken to equalize the fabric tension on each side of each post.

Barbed wire shall be installed as shown on the drawings and shall be pulled taut and fastened to each post or arm with the tie wires or metal tie clips.

5. Measurement and payment

Method 1—The length of fence is measured to the nearest 0.1 foot along the fence, including gates. Payment is made at the contract unit price for the specified height of fence. Such payment constitutes full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work.

Method 2—The length of fence is measured to the nearest 0.1 foot along the fence, excluding gate openings. Payment is made at the contract unit price for the specified height of fence. The number of each size and type of gate installed is determined. Payment is made at the contract unit price for that type and size of gate. Such payment constitutes full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 6 of this specification.

6. Items of work and construction details

Instructions for use
Construction Specification 92—Field Fence

1. Applicability
Construction Specification 92 is applicable to the installation of field fence of the barbed wire, woven wire, or wire netting types.

2. Material specifications
Material Specification 591 complements Construction Specification 92.

3. Included items
Items to be included in contact specifications and drawings follow:

a. Plan showing the location and extent of fences including location of gates, corners, braces, and end points.

b. Dimensions of the fence including post spacing, clearance from ground and height of fence.

c. Details of concrete or other specialty post, if required.

d. Details of posts and assemblies.
   (1) Type and kind of posts as defined and referenced in Material Specification 591.
   (2) Line post detail showing height of post, depth of embedment.
   (3) Details of end panel assembly, pull post assembly, brace panel assembly, and corner assembly including types of posts, types of backfill, types and dimensions of braces, gauges of tension wires and details of fastening of tension wires to post.
   (4) Special anchor requirements for posts at crossings over depressions or waterways.
   (5) Where fencing is to be placed on a curved alignment, special consideration should be given to providing adequate vertical stability for prevention of pull-over. Consideration should include spacing of end panels, post spacing, type of posts, and post depth.

e. Details of gates listed in this section may often be shown on a standard drawing developed for use for fencing projects within an agency administrative area.

f. Type and kind of fencing as defined in section 11.
   (1) For barbed wire fencing, specify the type, gauge of wire, gauge and spacing of barbs, and the number of points per barb.
   (2) For woven wire fencing, specify the type, style, design number, and tensile strength grade.
   (3) For wire netting, specify the type, style, height of netting, size of mesh and gauge of wire, or design number and coating class.
   (4) For high tensile strength wire fencing material, specify the strength grade classification.

g. Species of wood posts.

h. Preservative treatment of wood posts and braces, as applicable.

i. Protective coating (painted or zinc-coated) for steel posts and braces.

4. Methods
Section 10, Measurement and payment

Method 1—Intended for use when gates are simple and are considered to be of field fabricated type.

Method 2—Intended for use when gates must be shop fabricated, available on the market, or when gates must be installed within existing fences.

When specifications are prepared using electronic procedures and all methods but one are

deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 92–3, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 92—Field Fence

1. Scope
The work shall consist of furnishing and installing field fence, including gates and fittings.

2. Material
Material for field fence shall conform to the requirements of Material Specification 591. All wooden posts shall be of the same species, when available.

3. Setting posts
Concrete or wood posts shall be set in holes and backfilled with earth except where otherwise specified. Wood posts may be driven when approved by the engineer. Steel posts shall be driven unless otherwise specified.

Holes for installing fence posts shall be at least 6 inches larger than the diameter or side dimension of the posts.

Earth backfill around posts shall be thoroughly tamped in layers not thicker than 4 inches and shall completely fill the posthole up to the ground surface. Concrete backfill around posts shall be rodded into place in layers not thicker than 12 inches and shall completely fill the posthole to the surface of the ground. Backfill, either earth or concrete, shall be crowned-up around posts at the ground surface.

No stress shall be applied to posts set in concrete for a period of not less than 24 hours following the development of a firm set of the concrete.

4. Corner assembly
Unless otherwise specified in section 11, corner assemblies shall be installed at all points where the fence alignment changes 15 degrees or more.

5. End panels
End panels shall be built at gates and fence ends.

6. Pull post assembly
Pull post assembly (bracing within a section of straight fence) shall be installed at the following locations:

a. In straight fence sections, at intervals not to exceed 660 feet.
b. At any point where the vertical angle described by two adjacent reaches of wire is upward and exceeds 10 degrees (except as provided in section 11 of this specification).
c. At the beginning and end of each curved fence section.

7. Attaching fencing to posts
The fencing shall be stretched and attached to posts as follows:

a. The fencing wire or netting shall be placed on the side of the post opposite the area being protected except for installation along curved sections.
b. The fencing wire or netting shall be placed on the outside for installation along curved sections.
c. The fencing wire or netting shall be fastened to each end post, corner post, and pull post by wrapping each horizontal strand around the post and tying it back on itself with not less than three tightly wound wraps.

d. The fencing wire or netting shall be fastened to wooden line posts by means of steel staples. Woven-wire fencing shall be attached at alternate horizontal strands. Each strand of barbed wire shall be attached to each post. Steel staples shall be driven diagonally with the grain of wood and at a slight downward angle and shall not be driven so tightly as to bind the wire against the post.

e. The fencing wire or netting shall be fastened to steel or concrete line posts with either two turns of 14 gauge galvanized steel or iron wire or in accordance with recommendations provided by the post's manufacturer.

f. Wire shall be spliced by means of a Western Union splice or by suitable splice sleeves applied with a tool designed for that purpose. The Western Union splice shall have no less than eight wraps of each end about the other. All wraps shall be tightly wound and closely spaced. Splices made with splice sleeves shall have a tensile strength no less than 80 percent of the strength of the wire being spliced.

8. Stays

Stays shall be attached to the fencing at the spacing outlined in section 11 or as shown on the drawings to ensure maintenance of the proper spacing of the fence wire strands.

9. Crossings at depressions and watercourses

Where fencing is installed parallel to the ground surface, the line posts subject to upward pull shall be anchored.

a. If the fence wire or netting is installed parallel to the ground surface, the line posts subject to uplift shall be anchored by means of extra embedment or by special anchors as detailed on the drawings.

b. If the fence wire is installed with the top wire straight and parallel to the ground surface on either side of the depression, extra length posts shall be used to allow normal post embedment. Unless otherwise specified, excess space between the bottom of the fence and the ground shall be closed with extra strands of barbed wire or with netting.

10. Measurement and payment

Method 1—The length of each type and kind of fence is measured to the nearest foot along the profile of the fence, including gate openings. Payment for each type and kind of fence is made at the contract unit price for that type and kind of fence. Such payment constitutes full compensation for completion of the work, including fabricating and installing gates.

Method 2—The length of each type and kind of fence is measured to the nearest foot along the profile of the fence, excluding gate openings. Payment is made at the contract unit price for the specified height of fence. The number of each size and type of gate installed is determined. Payment is made at the contract unit price for that type and size of gate. Such payment constitutes full compensation for all labor, material, equipment, and all other items necessary and incidental to the completion of the work.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 11 of this specification.

11. Items of work and construction details

Instructions for use
Construction Specification 94—Contractor Quality Control

1. Applicability
Construction Specification 94 is applicable to contracts that require the contractor to provide quality control (QC), material testing, and verification of material quality before use.

2. Material specifications
No material specifications complement Construction Specification 94. Any material requirements are to be specified in section 10 (see 3 b below).

3. Included items
Items to be included in the contract specification and drawings follow:

a. Develop specific requirements for the quality control testing that the contractor is to provide. Establish, as appropriate for the method selected, the types of material the contractor is required to test, types of representative tests required, frequency of tests, and other site specific related details.

b. Provide details on the required intensity of contractor's quality control inspection efforts with emphasis on the site-specific aspects of the work, equipment, and material to be used. Specify, as appropriate for the method selected, the documentation required for verification of foundations and cutoff trench excavations, subgrade for fills, placement of reinforcement and forming before ordering concrete, equipment operational tests and available equipment backups, and safety measures specified. Prescribe specific requirements regarding:
   (1) Reliance on contractor for initial or benchmark testing, production testing, and testing to adjust to changes in material or methods.
   (2) Standards to be used as reference for quality control testing and field inspections of material, methods, and procedures.
   (3) Special testing or inspection procedures that need to be included in the quality control system.

c. Contract specific qualifications or requirements for professional registration or certification of QC personnel if necessary to meet Federal, State, or local statutes or job requirements.

d. Specify the required approvals by the contracting officer not covered in the basic specification for items, such as personnel qualifications, equipment condition, format of recordkeeping, and documentation.

e. Describe the cooperation and communication aspects for the quality control and quality assurance activities.

4. Methods
Section 3, Quality Control System, and Section 4, Quality Control Personnel

Method 1—For use with the smaller or less complex work where the contractor's staff is expected to understand and be qualified to perform routine quality control. The contractor must develop an effective quality control system. The contractor and contracting officer will meet and reach agreement on the system. Specify in section 10 if the contracting officer will document by correspondence to the contractor the understanding reached concerning the quality control system. When the project supervisor can also function as the contractor's quality control manager, so state in section 10.

Method 2—For use with large or complex work where the contractor is required to have qualified quality control testing and inspection personnel on their staff or will subcontract for these services and provide NRCS with a written quality control plan and regularly submit quality control documentation.

Selection of either method 1 or method 2 in sections 3 and 4 must be uniformly made within the specification for each contract.

Section 9, Payment

Method 1—Used for larger, more complex projects where uniformity in QC activities may not exist.

Method 2—Used for smaller, simpler projects. The use of method 2 is encouraged when fair and equitable treatment will occur.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete from the last paragraph ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 94–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 94—Contractor Quality Control

1. Scope

The work consists of developing, implementing, and maintaining a quality control system to ensure that the specified quality is achieved for all materials and work performed.

2. Equipment and materials

Equipment and material used for quality control shall be of the quality and condition required to meet the test specifications cited in the contract. Testing equipment shall be properly adjusted and calibrated at the start of operations and the calibration maintained at the frequency specified. Records of equipment calibration tests shall be available to the engineer at all times. Equipment shall be operated and maintained by qualified operators as prescribed in the manufacturer's operating instructions, the references specified, and as specified in section 10 of this specification. All equipment and materials used in performing quality control testing shall be as prescribed by the test standards referenced in the contract or in section 10.

All equipment and materials shall be handled and operated in a safe and proper manner and shall comply with all applicable regulations pertaining to their use, operation, handling, storage, and transportation.

3. Quality control system

Method 1—The contractor shall develop, implement, and maintain a system of quality control to provide the specified material testing and verification of material quality before use. The system activities shall include procedures to verify adequacy of completed work, initiate corrective action to be taken, and document the final results. The identification of the quality control personnel and their duties and authorities shall be submitted to the contracting officer in writing within 15 calendar days after notice of award.

Method 2—The contractor shall develop, implement, and maintain a system adequate to achieve the specified quality of all work performed, material incorporated, and equipment furnished before use. The system established shall be documented in a written plan developed by the contractor and approved by the contracting officer. The system activities shall include the material testing and inspection needed to verify the adequacy of completed work and procedures to be followed when corrective action is required. Daily records to substantiate the conduct of the system shall be maintained by the contractor. The quality control plan shall cover all aspects of quality control and shall address, as a minimum, all specified testing and inspection requirements. The plan provided shall be consistent with the planned performance in the contractor's approved construction schedule. The plan shall identify the contractor's onsite quality control manager and provide an organizational listing of all quality control personnel and their specific duties. The written plan shall be submitted to the contracting officer within 15 calendar days after notice of award. The contractor shall not proceed with any construction activity that requires inspection until the written plan is approved by the contracting officer.

All methods—The quality control system shall include, but not be limited to, a rigorous examination of construction material, processes, and operation, including testing of material and examination of manufacturer's certifications as required, to verify that work meets contract requirements and is performed in a competent manner.

4. Quality control personnel

Method 1—Quality control activities shall be accomplished by competent personnel. A competent person is: One who is experienced and capable of identifying, evaluating, and documenting that materials and processes being used will result in work that complies with the contract; and, who has authority to take prompt action to remove, replace, or correct such work or products not in compliance. Off-site testing laboratories shall be certified or inspected by a nationally recognized entity. The Contractor shall submit to the Contracting Officer, for approval, the names, qualifications, authorities, certifications, and availability of the competent personnel who will perform the quality control activities.

Method 2—Quality control activities shall be accomplished by competent personnel who are separate and apart from line supervision and who report directly to management. A competent person is one who is experienced and capable of identifying, evaluating, and documenting that material and processes being used will result in work that complies with the contract, and who has authorization to take prompt action to remove, replace, or correct such work or products not in compliance. Offsite testing laboratories shall be certified or inspected by a nationally recognized entity. The contractor shall submit to the contracting officer, for approval, the names, qualifications, authorities, certifications, and availability of the competent personnel who will perform the quality control activities.

5. Post-award conference

The contractor shall meet with the contracting officer before any work begins and discuss the contractor's quality control system. The contracting officer and the contractor shall develop a mutual understanding regarding the quality control system.

6. Records

The contractor's quality control records shall document both acceptable and deficient features of the work and corrective actions taken. All records shall be on forms approved by the contracting officer, be legible, and be dated and signed by the competent person creating the record.

Unless otherwise specified in section 10 of this specification, records shall include:

a. Documentation of shop drawings including date submitted to and date approved by the contracting officer, results of examinations, any need for changes or modifications, manufacturer's recommendations and certifications, if any, and signature of the authorized examiner.

b. Documentation of material delivered including quantity, storage location, and results of quality control examinations and tests.

c. Type, number, date, time, and name of individual performing quality control activities.

d. The material or item inspected and tested, the location and extent of such material or item, and a description of conditions observed and test results obtained during the quality control activity.

e. The determination that the material or item met the contract provisions and documentation that the engineer was notified.

f. For deficient work, the nature of the defects, specifications not met, corrective action taken, and results of quality control activities on the corrected material or item.

7. Reporting results

The results of contractor quality control inspections and tests shall be communicated to the engineer immediately upon completion of the inspection or test. Unless otherwise specified in section 10, the original plus one copy of all records, inspections, tests performed, and material testing reports shall be submitted to the engineer within one working day of completion. The original plus one copy of documentation of material delivered shall be submitted to the engineer before the material is used.

8. Access

The contracting officer and the engineer shall be given free access to all testing equipment, facilities, sites, and related records for the duration of the contract.

9. Payment

Method 1—For items of work for which lump sum prices are established in the contract, payment is made as the work proceeds, after presentation by the contractor of invoices showing related costs and evidence of charges by suppliers, subcontractors, and others for furnishing supplies and work performed. If the total of such payments is less than the lump sum contract price for this item, the remaining balance is included in the final contract payment. Payment of the lump sum contract price constitutes full compensation for completion of the work.

Payment is not made under this item for the purchase cost of material and equipment having a residual value.

Method 2—For items of work for which lump sum prices are established in the contract, payment is prorated and paid in equal amounts on each monthly estimate. The number of months used for prorating shall be the number estimated to complete the work. The final month's prorate amount is made with the final payment. Payment as described above constitutes full compensation for completion of the work.

Payment is not made under this item for the purchase cost of material and equipment having a residual value.

All methods—Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10.

10. Items of work and construction details

Instructions for use
Construction Specification 95—Geotextile

1. Applicability
This specification is applicable for the installation of both woven and nonwoven geotextiles used for purposes of slope protection, subsurface drains, and stabilization of soils.

2. Material specifications
Material Specification 592 complements Construction Specification 95.

3. Included items
Items to be included in the contract specifications and drawings follow:

a. The purpose or use of the geotextile (i.e., slope protection) and the selection of class I, II, III, or IV, as appropriate, woven or nonwoven, (See Design Note 24).

b. The range of apparent opening size (AOS) for woven geotextiles. Any increase or change from those parameters shown in tables 1 and 2 that are desired and based on specific design data.

c. When specified, size and configuration of panels for payment (e.g., method 2). Note: A panel represents pieces from a roll that have been seamed together to create the specified size and shape.

d. Details of panel joining and splicing; i.e., seaming, overlap or folding (method 1 or method 2 in section 5).

e. The required roll width, when necessary.

f. Details of panel placement, orientation, and anchorage, when necessary. Perimeter and toe anchorage details, as necessary. When the use of pins is acceptable as temporary anchorage, so specify.

g. Requirements of cushioning or bedding material used to cover the geotextile to protect against damage during placement of surface material, such as rock riprap.

h. Special installation requirements.

i. Ultraviolet exposure requirements for conditions where the potential exposure is considered severe (use 500 hours). The 150-hour requirement listed in tables 1 and 2 is recommended for normal exposure conditions.

j. In section 6 for measurement when method 1 or 2 is selected, note the method of measurement being horizontal or slope measurement in determining surface area of the geotextile for payment purposes.

4. Methods
Section 5, Placement

Method 1—Intended to be used when the primary use of the geotextile is to function as a filter and holes or "holidays" from anchoring pins might compromise the integrity of the installation.

Method 2—Intended to be used when the primary use of the geotextile is to function as a bedding and as a separator of material. Seepage may be present, but the potential for piping in the base soil material is not a concern.

May also need to specify whether a, b, or c in the Included items apply.

Section 6, Measurement and payment

Method 1—Intended for use when the geotextile is measured for payment based on the total surface area covered. The additional lap material needed for joining is not measured for payment.

Method 2—Intended for use when the geotextile is measured for payment based on the roll width and length used to cover the area. The measurement includes that amount needed for overlap and joining panels.

***Method 3*—**Intended for use when the quantity is not measured for payment and there is not likely to be any change in quantity.

When specifications are prepared using electronic procedures and all methods but one are deleted for use in a contract specification, delete from the last paragraph, ***All Methods The following provisions apply to all methods of measurement and payment.*** Left justify the remaining text.

5. Items of work and construction details

Starting at the top of page 95–4, prepare and outline job specific "Items of Work and Construction Details" (IWCD) in accordance with these instructions. For ease of utilization, the use of recyclable color paper for the IWCD should be considered.

Construction Specification 95—Geotextile

1. Scope
This work consists of furnishing all material, equipment, and labor necessary for the installation of geotextiles.

2. Quality
Geotextiles shall conform to the requirements of Material Specification 592 and this specification.

3. Storage
Before use, the geotextile shall be stored in a clean, dry location out of direct sunlight, not subject to extremes of either hot or cold temperatures, and with the manufacturer's protective cover undisturbed. Receiving, storage, and handling at the job site shall be in accordance with the requirements listed in ASTM D 4873.

4. Surface preparation
The surface on which the geotextile is to be placed shall be graded to the neat lines and grades as shown on the drawings. It shall be reasonably smooth and free of loose rock and clods, holes, depressions, projections, muddy conditions, and standing or flowing water (unless otherwise specified in section 7 of this specification).

5. Placement
Before the geotextile is placed, the soil surface will be reviewed for quality assurance of the design and construction. The geotextile shall be placed on the approved prepared surface at the locations and in accordance with the details shown on the drawings and specified in section 7 of this specification. It shall be unrolled along the placement area and loosely laid, without stretching, in such a manner that it conforms to the surface irregularities when material or gabions are placed on or against it. The geotextile may be folded and overlapped to permit proper placement in designated area(s).

Method 1—The geotextile shall be joined by machine sewing using thread material meeting the chemical requirements for the geotextile fibers or yarn. The sewn overlap shall be 6 inches, and the sewing shall consist of two parallel stitched rows at a spacing of about 1 inch and shall not cross (except for any required re-stitching). The stitching shall be a lock-type stitch. Each row of stitching shall be located a minimum of 2 inches from the geotextile edge. The seam type and sewing machine to be used shall produce a seam strength, in the specified geotextile, that provides a minimum of 90 percent of the tensile strength in the weakest principal direction of the geotextile being used, when tested in accordance with ASTM D 4884. The seams may be factory or field sewn.

The geotextile shall be temporarily secured during placement of overlying material to prevent slippage, folding, wrinkling, or other displacement of the geotextile. Unless otherwise specified, methods of securing shall not cause punctures, tears, or other openings to be formed in the geotextile.

Method 2—The geotextile shall be joined by overlapping a minimum of 18 inches (unless otherwise specified) and secured against the underlying foundation material. Securing pins, approved and provided by the geotextile manufacturer, shall be placed along the edge of the panel or roll material to adequately hold it in place during installation. Pins shall be steel or fiberglass formed as a **U**, **L**, or **T** shape or contain "ears" to prevent total penetration through the geotextile. Steel washers shall be provided on all but the **U**-shaped pins. The upstream or upslope geotextile shall overlap the abutting downslope geotextile. At vertical laps, securing pins shall be inserted through the bottom layers along a line through approximately the mid-point of the overlap. At horizontal laps and across slope labs, securing shall be inserted

through the bottom layer only. Securing pins shall be placed along a line about 2 inches in from the edge of the placed geotextile at intervals not to exceed 12 feet unless otherwise specified. Additional pins shall be installed as necessary and where appropriate to prevent any undue slippage or movement of the geotextile. The use of securing pins will be held to the minimum necessary. Pins are to remain in place unless otherwise specified.

Should the geotextile be torn or punctured, or the overlaps or sewn joint disturbed, as evidenced by visible geotextile damage, subgrade pumping, intrusion, or grade distortion, the backfill around the damaged or displaced area shall be removed and restored to the original approved condition. The repair shall consist of a patch of the same type of geotextile being used and overlaying the existing geotextile. When the geotextile seams are required to be sewn, the overlay patch shall extend a minimum of 1 foot beyond the edge of any damaged area and joined by sewing as required for the original geotextile except that the sewing shall be a minimum of 6 inches from the edge of the damaged geotextile. Geotextile panels joined by overlap shall have the patch extend a minimum of 2 feet from the edge of any damaged area.

Geotextile shall be placed in accordance with the following applicable specification according to the use indicated in section 7:

Slope protection—The geotextile shall not be placed until it can be anchored and protected with the specified covering within 48 hours or protected from exposure to ultraviolet light. In no case shall material be dropped on uncovered geotextile from a height of more than 3 feet.

Subsurface drains—The geotextile shall not be placed until drainfill or other material can be used to provide cover within the same working day. Drainfill material shall be placed in a manner that prevents damage to the geotextile. In no case shall material be dropped on uncovered geotextile from a height of more than 5 feet.

Road stabilization—The geotextile shall be unrolled in a direction parallel to the roadway centerline in a loose manner permitting conformation to the surface irregularities when the roadway fill material is placed on its surface. In no case shall material be dropped on uncovered geotextile from a height of more than 5 feet. Unless otherwise specified, the minimum overlap of geotextile panels joined without sewing shall be 24 inches. The geotextile may be temporarily secured with pins recommended or provided by the manufacturer, but they shall be removed before the permanent covering material is placed.

6. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the quantity of geotextile for each type placed within the specified limits is determined to the nearest specified unit by measurements of the covered surfaces only, disregarding that required for anchorage, seams, and overlaps. Payment is made at the contract unit price. Such payment constitutes full compensation for the completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, the quantity of geotextile for each type placed with the specified limits is determined to the nearest specified unit by computing the area of the actual roll size or partial roll size installed. The computed area will include the amount required for overlap, seams, and anchorage as specified. Payment is made at the contract unit price. Such payment constitutes full compensation for the completion of the work.

Method 3—For items of work for which specific lump sum prices are established in the contract, the quantity of geotextile is not measured for payment. Payment for geotextiles is made at the contract lump sum price and constitutes full compensation for the completion of the work.

***All methods*—**The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 7 of this specification.

7. Items of work and construction details

ITEM III
BID RESPONSE FORM

Date: ____ / _____ / _____

Bid No: 24-062-2024-PWI-025 Stacks Gully Slope Stabilization Project

Bids Due: Tuesday, August 20, 2024, 10:00 A.M.

BASE BID QUANTITIES					
ITEM	**DESCRIPTION**	**UNIT**	**IN-PLACE QUANTITY**	**UNIT COST**	**TOTAL ITEM COST**
1	**Mobilization & Demobilization**	**LS**	**1**	**$**	**$**
2	**CBMP – Silt Fencing**	**LF**	**280**	**$**	**$**
3	**CBMP – Construction Entrance**	**LS**	**1**	**$**	**$**
4	**Clearing & Grubbing**	**SY**	**810**	**$**	**$**
5	**6" Topsoil Stripping & Stockpile**	**CY**	**575**	**$**	**$**
6	**Mechanically Stabilized Earth Retention Wall (Including "L" Panel, Geogrid, Support Strut, Welded Wire Facing Unit, Stone Facing Fill, Etc.)**	**SF Wall Face**	**2,225**	**$**	**$**
7	**Wall Backfill (Select Granular, Free Draining Material)**	**CY**	**1,190**	**$**	**$**
8	**Unclassified Fill**	**CY**	**575**	**$**	**$**
9	**4" Topsoil Plating (From On-Site Stockpile)**	**CY**	**90**	**$**	**$**
10	**Temporary, Biodegradable Erosion Control Blanket**	**SY**	**805**	**$**	**$**
11	**Solid Sod**	**SY**	**805**	**$**	**$**
Bid Sum Total				**$**	

Bid will include all labor, materials, equipment, shipping and postage, overhead, profit, bonds, insurance and all other costs necessary to provide the complete services outlined within this CONTRACT and scope of work.

Receipt of the following Addenda to these documents is hereby acknowledged by the undersigned (CONTRACTOR to complete below):

ADDENDUM NO.	DATE ISSUED	ADDENDUM NO.	DATE ISSUED
_____	_____	_____	_____

Each bid must give the full business address of the CONTRACTOR and must be signed by him with his usual signature. Bids by partnerships must furnish the full names of all partners and must be signed with the partnership name by one of the members of the partnership, or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed with the legal name of the corporation followed by the name of the State of Incorporation and by the signature and designation of the president, secretary, or other person authorized to bind it in the matter. The name of each person shall also be typed or printed below the signature. A bid by a person who affixes to this signature the word "president," "secretary," "agent," or other designation without disclosing his principal, may be held to be the bid of the individual signing. When requested by the City of Fairhope, Baldwin County, Alabama, satisfactory evidence of the authority of the officer signing in behalf of the corporation shall be furnished.

The undersigned agrees to furnish the goods/services as requested by you for the City of Fairhope, Baldwin County, Alabama in your invitation to bid, and certifies that they will meet or exceed the specifications called for. The undersigned has read all information pertaining to this bid and has resolved all questions. It is also understood and agreed that all prices quoted are F.O.B. described in the bid documents and specifications. The undersigned also affirms he/she has not been in any CONTRACT or collusion among BIDDERS or prospective BIDDERS in restraint of freedom of competition, by CONTRACT to bid at a fixed price or to refrain from bidding or otherwise.

Witness our hands and seals this _____ day of _____, 20____.

If Individual or Partnership

_____ _____
(Name of Individual or Partnership) (Name of Partner Print)

_____ _____
(Name of Representative Authorized to sign Bids and CONTRACTs for the firm Print) (Name of Partner Print)

Address_____

_____

_____

Phone Number ( )_____Fax Number ( )_____

E-mail address _____Alabama Contractor's License No. _____

Foreign Entity ID (if outside of Alabama)_____

If Corporation or LLC

Company_____

State of Incorporation _____

Company Representative_____
(Representative Authorized to sign Bids and CONTRACTs for the firm Print)

Company Representative_____
(Representative Authorized to sign Bids and CONTRACTs for the firm Signature)

Address_____

_____

_____

Phone Number ( )_____ Fax Number(___)_____

E-mail address _____AL Contractor's License No. _____

Foreign Vendor Id_____

BID PROPOSAL NOTARIZATION:

STATE OF _____}

COUNTY OF _____}

I, the undersigned authority in and for said State and County, hereby certify that_____, as_____ respectively, of _____, whose name is signed to the foregoing document and who is known to me, acknowledged before me on this day, that, being informed of the contents of the document they executed the same voluntarily on the day the same bears date.

Given under my hand and Notary Seal on this _____ day of _____, 20_____.

NOTARY PUBLIC _____

MY COMMISSION EXPIRES____/___/_____

ITEM IV
CONTRACTOR INFORMATION

This Section must be printed, completed, and turned in with your bid response to

Bid Number 24-062-2024-PWI-025
Stacks Gully Slope Stabilization Project
City of Fairhope Public Works Project No. 2024-PWI 025

Business Organization

Name of CONTRACTOR (exactly as it appears on W-9):

_____
Doing-Business-As Name of CONTRACTOR:

_____
Principal Office Address:

_____

_____

_____
LOCAL Telephone Number: _____ Toll- Free_____
LOCAL Fax Number: _____
Email address: _____
Website: _____

Form of Business Entity [check one ("X"]
Corporation ____
Partnership ____
Individual ____
Joint Venture ____
Other (describe): _____

Corporation Statement
If a corporation, answer the following:
Date of incorporation: _____
Location of incorporation: _____
The corporation is held: Publicly ___
Privately ___

Partnership Statement
If a partnership, answer the following:
Date of organization: _____
Location of organization: _____
The partnership is: General ___
Limited ___

Joint Venture Statement
If a Joint Venture, answer the following:
Date of organization: _____
Location of organization: _____
JV CONTRACT recorded? Yes ___ No ___

Contact: _____Email_____

Phone_____Fax_____

END OF CONTRACTOR INFORMATION SECTION
ITEM V

INSURANCE

3.0 **INSURANCE REQUIREMENTS**

Awarded **CONTRACTOR**, at its sole expense, shall obtain and maintain in full force the following insurance to protect the **CONTRACTOR** and the City of Fairhope at limits and coverages specified herein. The City of Fairhope will be listed as an additional insured under the **CONTRACTOR'S** general liability insurance and automobile liability insurance policies, and all other applicable policies and certificates of insurance. These limits and coverages specified are the minimum to be maintained and are not intended to represent the correct insurance needed to fully and adequately protect the awarded **CONTRACTOR.**

3.01 All insurance will be provided by insurers by admitted carriers in the State of Alabama, shall have a minimum A.M. Best rating of A-VII and must be acceptable to the City. Self-insured plans and/or group funds not having an A.M. Best rating must be submitted to the City for prior approval.

3.02 **NO WORK IS TO BE PERFORMED UNTIL PROOF OF COMPLIANCE WITH THE INSURANCE REQUIREMENTS HAS BEEN RECEIVED BY THE CITY.**

3.03 **Worker's Compensation and Employers Liability**

Part One: Statutory Benefits as required by the State of Alabama	
Part Two: Employers Liability	$100,000 Each Accident
	$100,000 Each Employee
	$500,000 Policy Limit

3.04 **U.S. Longshoreman & Harbor workers Act (USL&H)**

Required if CONTRACT involves work near a navigable Waterway that may be subject to the USL&H law.

3.05 **Maritime Endorsement (Jones Act)**

Endorsement required if CONTRACT involves the use of a Vessel. Or include coverage for "Master or Members or Crew" under "Protection and Indemnity" coverage (P&I), unless crew is covered under Workers Compensation.

Bodily injury by accident	$1,000,000 Each Accident
Bodily injury by disease	$1,000,000 Aggregate

3.06 **Commercial General Liability**

Coverage on an Occurrence form with a combined single limit of (Bodily Injury and Property Damage combined as follows:

Each Occurrence	$1,000,000
Personal and Advertising Injury	$1,000,000
Products/Completed Operation Aggregate	$2,000,000
General Aggregate	$2,000,000

Coverage to include:

Premises and operations
Personal Injury and Advertising Injury
Products/Completed Operations
Independent BIDDERS
Blanket Contractual Liability
Explosion, Collapse and Underground hazards
Broad Form Property Damage
Railroad Protective Liability Insurance if work involves construction, demolition or maintenance operations on or within 50 feet of a railroad.

3.07 **Automobile Liability**

Covering all Owned, Non-Owned, and Hired vehicles with a limit of no less than $1,000,000 combined single limit of Bodily Injury and property damage per occurrence.

3.08 **Certificate of Insurance**

A Certificate of Insurance evidencing the above minimum requirements must be provided to and accepted by the City PRIOR to commencement of any work on the CONTRACT. Each policy shall be endorsed to provide ten (10) days written notice of cancellation to the CITY

Such insurance as is afforded by the above policies covers the operations undertaken by the insured with respect to the construction of the project above designated. The insurance afforded by the above designated policies, specimen copies of which have been filed with the **CITY**, and to each of which is attached for following endorsement.

The insurer agrees with the insured as follows:

1. That it will furnish to said City of Fairhope a certificate of insurance in triplicate on a form approved for such purpose by said **CITY,** setting forth the pertinent information regarding the policy to which this endorsement is attached, for each project of said **CITY** to which the policy applies.

2. That it will attach to each said certificate of insurance executed copies of any endorsement other than this endorsement which are attached to said policy at the time said policy is issued, provided only that said endorsements affect the coverage of said policy in respect of operations involved in the construction of the projects of said **CITY** to which the policy applies.

3. That it will mail to the City Council of the City of Fairhope three executed copies of each endorsement subsequently issued to become a part of said policy provided only that endorsement affects the coverages of said policy in respect of operations involved in the construction of the project of said **CITY** which the policy applies, and provided further that such endorsement shall not be effective unless such notice is given to the **CITY** at the same time that notice thereof is given to the insured.

4. That it will mail to the City Council of the **CITY** of Fairhope at least ten days before the effective date thereof notice of cancellation of said policy, provided no cancellation shall be effective unless such notice is given to the **CITY.**

END OF INSURANCE REQUIREMENTS

ITEM VI

City of Fairhope
CONTRACT

This **CONTRACT** is made this _____ day of _____, 202__, by and between the City of Fairhope (hereinafter referred to as the "**OWNER**") and _____ (hereinafter referred to as the "**CONTRACTOR**"), for

Bid Number/Name

The **OWNER** and the **CONTRACTOR** agree as set forth below:

1. The CONTRACT consists of all the items contained within this CONTRACT, The Proposal Package, Proposal, Scope of Work and Specifications, drawings (if applicable), Addenda, Amendments, and City of Fairhope Standard Terms and Conditions, which are attached hereto and made a part hereof, as if fully contained herein; for the performance of all work and the furnishing of all labor and materials required for completion of the WORK.

2. The CONTRACTOR shall perform all the WORK described herein.

3. The **WORK** to be performed under this **CONTRACT** shall be commenced upon execution of this **CONTRACT** within number (DAYS) days of the date specified in the *Notice to Proceed* (NTP) to be issued to the **CONTRACTOR** by the **OWNER,** or its authorized representative. The work shall be completed, subject to authorized adjustments, within (DAYS) consecutive calendar days from and after the commencement date stipulated in said *Notice to Proceed.* Liquidated damages for non-completion of the work within this time limit will be assessed at the rate of (DOLLARS) per working day.

4. The **OWNER** shall pay the **CONTRACTOR** in current funds for the performance of the **WORK**, the **CONTRACT SUM** of _____DOLLARS ($). This represents a LUMP SUM payment for performance of the **WORK**, which payment shall be issued after the Contract is fully performed and the **OWNER** has inspected the **WORK**.

5. **General Conditions**
   a. **Indemnity:** The CONTRACTOR hereby agrees to indemnify and save harmless the OWNER, its officers, agent, and employees, from and against any and all liabilities, claims, demands, damages, fines, fees, expenses, penalties, suits, proceedings, actions and cost of actions, including reasonable attorneys' fees for trial and on appeal, of any kind and nature, arising or growing out of, or in any way connected with the performance of this CONTRACT, to the extent caused by a negligent act or omission of the CONTRACTOR, their agents, servants, employees, SUB-CONTRACTORS, or others associated with the CONTRACTOR. The CONTRACTOR shall be responsible for damage to any elevator equipment excluded from this agreement, or damage or injury caused by any equipment excluded from this agreement, to the extent that the damage or injury is caused by a negligent act or omission of the CONTRACTOR.

   b. **Notification and Accident Reports:** In the event of accidents of any kind, the **CONTRACTOR** shall notify the **OWNER** immediately and furnish, without delay, copies of all such accident reports to the **OWNER.** If in the performance of their Work, the **CONTRACTOR** fails to immediately report an accident to the **OWNER**, of which the **CONTRACTOR** has knowledge of and which results in a fine

levied against the **OWNER** then the **CONTRACTOR** shall be responsible for all fines levied against the **OWNER**.

6. **Termination of Agreement**
    a. Termination for Default: Performance of Work under this Agreement may be terminated by the OWNER, in whole or in part, in writing, whenever the OWNER determines that the CONTRACTOR has failed to meet the requirements of this Agreement.
        i. The Owner has a right to terminate for default if the contractor fails to make delivery of material or does not perform the work, or if the Contractor fails to perform the Work within the time specified in the Agreement, or if the Contractor fails to perform any other provision of the Agreement.

        ii. Failure on the part of the Contractor to deliver or perform the Work within the time specified, or within a reasonable time as determined by the Owner, or failure on the part of the Contractor to make replacements of rejected articles, or Work when so requested, immediately or as directed by the Owner, shall constitute authority for the Owner to purchase in the open market, articles or Work of comparable grade to replace the articles or Work rejected, not delivered or completed. On all such purchases, the Contractor shall reimburse the Owner within a reasonable time specified by the Owner for any expense incurred in excess of Agreement prices.

        iii. Such purchases shall be deducted from the Agreement sum. If public necessity demands it, the Owner reserves the right to utilize services or use and/or consume articles delivered, which are standard in quality, subject to an adjustment of price to be determined by the Owner.

    b. Termination for Convenience: The OWNER has the absolute right to terminate the Agreement upon "Award of Contract" another CONTRACTOR, to perform work referenced herein. In such event, payment of the monthly contract fee shall cease on the date of cancellation of the CONTRACT by the OWNER.

7. **Warranty**
    a. The CONTRACTOR warrants that the Work including equipment and materials provided shall conform to the professional standards of care and practice in effect at the time the Work is performed, be of the highest quality, and be free from all faults, defects, or errors. If the CONTRACTOR is notified in writing of a fault, deficiency or error in the Work, the CONTRACTOR shall at the OWNER's option, either re-perform such portions of the Work to correct such fault, defect, or error, at no additional cost to the OWNER, or refund to the OWNER the charge paid by the OWNER, which is attributable to such portions of the faulty, defective or erroneous Work, including costs for re-performance or Work provided by other CONTRACTORS. All equipment and materials provided by the CONTRACTOR shall be merchantable and for the purpose intended and meet all industry quality standards.

8. **Time of Completion**
The OWNER and CONTRACTOR understand and agree that time is of the essence in the performance of this Agreement. The CONTRACTOR or OWNER, respectively, shall not be liable for any loss or damage, resulting from any delay or failure to perform its contractual obligations within the time specified, due to acts of God, actions or regulations by any governmental entity or representative, strikes, fire, water damage, loss of power, loss of funding or any other causes, contingencies, or circumstances not subject to the OWNER or CONTRACTOR'S control, respectively, whether of a similar or dissimilar nature, which prevent or hinder the performance of the OWNER'S or CONTRACTOR'S contractual obligations, respectively. Any such causes of delay, even though existing on the date of the CONTRACT, or on the day

of the start of Work, shall extend the time of the OWNER'S or CONTRACTOR'S performance respectively, by the length of the delays occasioned thereby, including delays reasonably incident to the resumption of normal Work schedules.

However, under such circumstances as described herein, the OWNER may, at their discretion, cancel this CONTRACT for their own convenience.

9. **Insurance Requirements**
   See **ATTACHMENT B**

10. **Acceptance of Work**
    The OWNER will be deemed to have accepted the Work after the OWNER agrees the Work is completed. In the event Work furnished under the CONTRACT is found to be defective or does not conform to the intent of the CONTRACT, the CONTRACTOR shall, within ten (10) days from receipt of notice from the OWNER, correct the deficiencies. Failure on the part of the CONTRACTOR to properly correct the deficiencies within the time period allowed will constitute the OWNER'S right to cancel the CONTRACT immediately, upon written notice to the CONTRACTOR.

11. **Correction of Work**
    The CONTRACTOR shall promptly correct all Work rejected by the OWNER as faulty, defective or failing to conform to the CONTRACT, whether observed before or after completion of the Work. The CONTRACTOR shall bear all costs of correcting such rejected Work.

12. **Right to Audit**
    The CONTRACTOR shall maintain documentation of all work performed. The CONTRACTOR shall make any and all documentation available to the OWNER at all reasonable times, for inspections and audit by the OWNER, during the entire term of the CONTRACT, and for a period of three (3) years after the expiration of this CONTRACT.

13. **CONTRACT Rights and Remedies**
    The CONTRACTOR shall maintain documentation of all work performed. The CONTRACTOR shall make any and all documentation available to the OWNER at all reasonable times, for inspections and audit by the OWNER, during the entire term of the CONTRACT, and for a period of three (3) years after the expiration of this CONTRACT.

14. **Time is of the Essence**
    The Owner and CONTRACTOR agree that time is of the essence in the performance of Work called for under this CONTRACT. The CONTRACTOR agrees that all work will be accomplished regularly, diligently and uninterrupted at such a rate of progress as will ensure full completion thereof within reasonable time periods.

15. **Safety Measures**
    The CONTRACTOR shall take all necessary precautions for the safety of the OWNER'S and CONTRACTOR'S employees at the Work site, and shall erect and properly maintain at all times, all necessary safeguards for the protection of the workmen and the public. The CONTRACTOR shall post signs warning against hazards in and around the Work site.

16. **Extra Work and Associated Costs**
    a. Changes in the Work: The OWNER, without invalidating the CONTRACT, may order changes in the Work within the general scope of this CONTRACT, consisting of additions, deletions, or other revision, the CONTRACT price and time for execution of the Work being adjusted accordingly.

    b. All such changes in the Work shall be authorized by a written Amendment to the CONTRACT or a separate Change Order and shall be executed under the applicable conditions of the CONTRACT.

17. **Familiarity with the Work**
    The CONTRACTOR, by executing this CONTRACT, acknowledges full understanding of the extent and character of the Work required and the conditions surrounding the performance thereof. The OWNER will not be responsible for any alleged misunderstanding of conditions surrounding the performance thereof. It is understood that execution of the CONTRACT by the CONTRACTOR serves as his stated commitment to fulfill all requirements and conditions referred to in this CONTRACT.

18. **Scope of Work**
    See **ATTACHMENT B**

19. **Contractor Liability**
    Nothing in this CONTRACT shall be construed to mean that the CONTRACTOR assumes any liability for damages or otherwise, on account of accidents to persons or property, except those resulting from negligence on the part of the CONTRACTOR or its agents, servants, employees, and subcontractors.

20. **Miscellaneous Provisions**
    a. The CONTRACTOR shall not employ SUB-CONTRACTORS without the express written permission of the OWNER.

    b. The CONTRACTOR shall not assign the CONTRACT or sublet it as a whole without the express written permission of the OWNER. The OWNER may assign the CONTRACT, or sublet it as a whole, without the consent of the CONTRACTOR.

    c. No waiver, alteration, consent, or modification of any of the provisions of the CONTRACT shall be binding unless in writing and signed by the OWNER and CONTRACTOR.

    d. The CONTRACTOR is to procure all permits, licenses, and certificates, or any approvals of plans or specifications as may be required by Federal, State, Local Laws, ordinances, rules, and regulations, for the proper execution and completion of Work covered under this CONTRACT.

    e. The CONTRACTOR shall at all times keep the Work area free from accumulation of waste materials or rubbish caused by his operations, and promptly remove any such materials to an area designated by the OWNER or remove to a waste site as directed by the OWNER. If the CONTRACTOR fails to clean up the Work site, the OWNER will complete the task and charge the CONTRACTOR for such services.

    f. This CONTRACT is considered a non-exclusive Agreement between the parties.

    g. This CONTRACT is deemed to be under and shall be governed by and construed according to the laws of the State of Alabama.

    h. Any litigation arising out of the CONTRACT shall be heard in the Courts of Baldwin County, Alabama.

i. This CONTRACT contains all terms and conditions agreed upon by the OWNER and CONTRACTOR. No other agreement, oral or otherwise, regarding the subject matter of this CONTRACT shall be deemed to exist or to bind either party hereto.

j. This CONTRACT shall not be construed against the party or parties preparing it. It shall be construed as if all the parties and each of them jointly prepared this CONTRACT, and any uncertainty or ambiguity shall not be interpreted against one or more parties.

Section 41-16-5, Code of Alabama 1975, requires that public contracts over $15,000 include the following language:

By signing this Contract, _____ represents and agrees
COMPANY NAME
that it is not currently engaged in, nor will it engage in, any boycott of a person or entity based in or doing business with a jurisdiction with which the State of Alabama can enjoy open trade

IN WITNESS WHEREFORE, the parties hereto have executed this **CONTRACT** as of the day and year first above written.

THE CITY OF FAIRHOPE, ALABAMA

_____ ATTEST: _____
Sherry Sullivan, Mayor **Lisa A. Hanks, MMC, City Clerk**

NOTARY FOR OWNER (CITY OF FAIRHOPE)

STATE OF ALABAMA _____ }
COUNTY OF BALDWIN _____}

I, the undersigned authority in and for said State and County, hereby certify that SHERRY SULLIVAN, Mayor of the City of Fairhope whose name is signed to the foregoing document and who is known to me, acknowledged before me on this day, that, being informed of the contents of the document she executed the same voluntarily on the date the same bears date.

Given under my hand and Notary Seal on this _____ day of _____, 202__.

NOTARY PUBLIC _____

MY COMMISSION EXPIRES _____

IF INDIVIDUAL OR PARTNERSHIP

Individual or Partnership

Print Name of Partner

Print Name of Representative Authorized to Sign Contracts for the firm

Print Name of Partner

Signature of Representative Authorized to Sign Contracts for the firm

Print Name of Partner

Address

Address

City, State, Zip Code

Phone Number

Fax Number

Primary E-mail Address

AL General Contractor License No. (Attach Copy)

AL General Contractor License Major Categories

AL General Contractor Specialties

AL Foreign Corporation Entity ID (Required of Out of State Vendors)

IF CORPORATION OR LLC

Company

State of Incorporation

Company Representative

Print Name of Representative Authorized to Sign Contracts for the firm

Signature of Representative Authorized to Sign Contracts for the firm

Address

Address

City, State, Zip Code

Phone Number

Fax Number

Primary E-mail Address

AL General Contractor License No. (Attach Copy)

AL General Contractor License Major Categories

AL General Contractor Specialties

AL Foreign Corporation Entity ID (Required of Out of State Vendors)

NOTARY FOR INDIVIDUAL, PARTNERSHIP, CORPORATION, OR LLC

STATE OF _____ }
COUNTY OF _____}

I, the undersigned authority in and for said State and County, hereby certify that _____As
Name

_____ respectively of _____
Title Company Name

Whose name is signed in the foregoing document and who is known to me, acknowledged before me on this day, being informed of the contents of the document they executed the same voluntarily on the day the same bears date.

Given under my hand and Notary Seal on this _____ day of _____, 202__.

NOTARY PUBLIC_____

MY COMMISSION EXPIRES _____

ITEM VII
CITY OF FAIRHOPE
STANDARD TERMS AND CONDITIONS

1. ACCEPTANCE OF AGREEMENT

This Agreement contains all terms and conditions agreed upon by the Owner and Winning bidder. No other agreement, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind either party hereto. The Winning Bidder shall not employ Subcontractors without the express written permission of the Owner. No waiver, alteration, consent or modification of any of the provisions of the Agreement shall be binding unless in writing and signed by the Owner and Contractor. This Agreement shall not be construed against the party or parties preparing it. It shall be construed as if all the parties and each of them jointly prepared this Agreement, and any uncertainty or ambiguity shall not be interpreted against one or more parties.

2. ACCEPTANCE OF WORK

The City of Fairhope will be deemed to have accepted the Work after the City of Fairhope agrees the Work is completed by signature on delivery or service tickets. In the event Work furnished under the Contract / Agreement / Purchase Order is found to be defective or does not conform to the intent of the Contract / Agreement / Purchase Order, the awarded vendor shall, after receipt of notice from the City of Fairhope, correct the deficiencies. Failure on the part of the awarded vendor to properly correct the deficiencies within the time period allowed will constitute the City of Fairhope's right to cancel the Contract / Agreement / Purchase Order immediately, upon written notice to the awarded vendor.

3. ADDENDA

All Addenda are part of the Contract Documents. Include resultant costs in the Bid. Addenda will be issued by email to all Bidders on record and posted to the City of Fairhope website www.FairhopeAL.gov. It is the responsibility of the bidder to verify that all addenda have been received, and to include all signed addenda in the bid submission

4. ADDITIONAL ORDERS

Unless it is specifically stated to the contrary in the bid response, the City of Fairhope reserves the option to place additional orders against a contract awarded as a result of this solicitation at the same terms and conditions; to extend the renewal date until a new bid is in place, if it is mutually agreeable.

5. APPLICABLE LAW

This Agreement is deemed to be under and shall be governed by and construed according to the laws of the State of Alabama. Any litigation arising out of the Agreement shall be heard in the Courts of Baldwin County, Alabama.

6. ASSIGNMENT

The awarded vendor shall not assign the Contract / Agreement /Purchase Order or sublet it as a whole without the express written permission of the City of Fairhope. The awarded vendor shall not assign any payment due them hereunder, without
the express written permission of City of Fairhope. The City of Fairhope may assign the Contract / Agreement / Purchase Order, or sublet it as a whole, without the consent of the awarded vendor.

7. ASSURANCE OF NON-CONVICTION OF BRIBERY

The bidder hereby declares and affirms that, to its best knowledge, none of its officers, directors, or partners and none of its employees directly involved in obtaining contracts has been convicted of bribery, attempted bribery, or conspiracy to bribe under the laws of any state or Federal government.

8. AWARD CONSIDERATION

The following factors will be considered in determining the lowest **responsible** bidder: Overall quality, Conformity with specifications both general and specific, Purposes for which materials or services are required, Delivery dates and time required for delivery, Unit acquisition cost, financial ability to meet the contract, previous performance, facilities and equipment, availability of repair parts, experience, delivery promise, terms of payments, compatibility as required, other costs, and other objective and accountable factors which are reasonable.

9. AWARD OR REJECTION OF BIDS

The Bid will be awarded to the lowest responsible bidder complying with conditions of the invitation for bids, provided his bid is reasonable and it is in the interest of the City of Fairhope to accept it. The bidder to whom the award is made will be notified at the earliest possible date. The City of Fairhope, however, reserves the right to reject any and all bids and to waiver any informality in bids received whenever such rejection or waiver is in the interest to the City of Fairhope.

10. BACK ORDERS

If it is necessary to back order any items, the vendor must notify the Purchasing Department and advice as to the expected shipping or delivery date. If this date is not acceptable, the City of Fairhope may seek remedies for default.

11. BID AND PERFORMANCE SECURITY

If bid security is required, a bid bond or cashier's check in the amount indicated on the bid cover must accompany the bid and be made payable to The City of Fairhope of Baldwin County, AL. Corporate or certified checks are not acceptable. Bonds must be in a form satisfactory to the City and underwritten by a company licensed to issue bonds in the State of Alabama. If bid security fails to accompany the bid, it shall be deemed unresponsive, unless the Purchasing Manager deems the failure to be non-substantial. All checks will be returned to the bidders after the contract has been approved. If a performance bond is required, the successful bidder will be notified after the awarding of the contract.

12. BRAND NAMES

Reference to brand names and numbers is descriptive, but not restrictive, unless otherwise specified. Bids on equivalent items meeting the standards of quality thereby indicated will be considered, providing the bid clearly describes the article offered and indicates how it differs from the referenced brands. Descriptive literature or manufacturers specifications plus any supplemental information necessary for comparison purposes should be submitted with the bid or the bid on that item may be rejected. Reference to literature submitted with a previous bid or on file with the Division of Purchasing will not satisfy this requirement. The burden is on the bidder to demonstrate that the item bid is equivalent to the item specified in the ITB. Bids without sufficient documentation to fully support equality, may be considered non-responsive. Reference by the City of Fairhope in the ITB to available existing specifications shall be sufficient to make the terms of such specifications binding on the bidder. Unless the bidder specifies otherwise in its bid, it is understood the bidder is offering a referenced brand item as specified in the ITB or is bidding as specified when no brand is referenced. Failure to examine drawings, specifications and instructions will be at the bidder's risk.

13. BUSINESS LICENSE

The vendor selected to enter into a Contract / Agreement with the City of Fairhope must be licensed to do business in the City of Fairhope prior to commencement of any work under the contract. Delivery of goods or services to the City of Fairhope by Purchase Order have detailed and varied Business License requirements. In all instances that require a business license. Awarded vendor will provide proof of possessing a current City of Fairhope Business License. Prospective bidders will not be required to possess a City of Fairhope Business License prior to award.

14. CANCELLATION OF / CONTRACT / AGREEMENT / PURCHASE ORDER / LEASE

A purchase order can be canceled in whole or in part when awarded vendor fails to deliver or perform as specified. Cancellation of a purchase order can only be made by a written purchase order change (POC) from the City of Fairhope. A term contract, lease or agreement can be canceled by the City of Fairhope, for justifiable cause, or convenience, by written notice.

15. CERTIFICATION PURSUANT TO ACT NO. 2006-557

Alabama law (section 41-4-116, code of Alabama 1975) provides that every bid submitted and contract executed shall contain a certification that the vendor, contractor, and all of its affiliates that make sales for delivery into Alabama or leases for use in Alabama are registered, collecting, and remitting Alabama state and local sales, use, and/or lease tax on all taxable sales and leases into Alabama. By submitting this bid, the bidder is hereby certifying that they are in full compliance with act no. 2006-557, they are not barred from bidding or entering into a contract pursuant to 41-4-116, and acknowledges that the awarding authority may declare the contract void if the certification is false. All corporations must register to do business in Alabama with the Office of the Secretary of State. Their address is:

Office of the Secretary of State
P.O. Box 5616
Montgomery, AL 36103
(334) 242-5324
Fax: (334) 240-3138
http://www.sos.state.al.us/index.aspx

The Foreign Corporation form is online at http://www.sos.state.al.us/downloads/dl1.cfm.

16. COST OF REMEDYING DEFECTS

All defects, indirect and consequential costs of correcting, removing, or replacing any or all of the defective materials or equipment will be charged against the awarded vendor.

17. DELIVERY OF BID

Bids must be received in the Purchasing Office by the date and time specified on the bid cover. All bids will be accepted until the time and date stated on the bid cover. No bids will be accepted that extend past the time and date on the bid cover. The time of receipt shall be determined by the time clock stamp in the Purchasing Department. Bids submitted by U.S. Mail must be received by the City of Fairhope of Baldwin County, Alabama, in the City of Fairhope offices, 555 South Section St., Fairhope, Al., unless otherwise specified.

18. DELIVERY

The number of calendar days required for delivery after receipt of a purchase order shall be stated in the RFQ / ITB / RFP and /or Purchase Orders. When no time is stated in the document, the time shall be fourteen (14) calendar days after receipt of order. If a shipment is not made within the time period specified, the Purchase Order may be canceled.

19. ENVIRONMENTAL REQUIREMENTS

All products will be clearly labeled for their intended use. Each delivery of product or materials will include a Material Safety Data Sheet (MSDS) for all materials that require an MSDS. All manufacturers/distributors of hazardous substances, including any of the items listed on this bid/quote/ contract and subsequent award must include completed material safety data sheet (MSDS) for each hazardous material. Additionally, each container of hazardous materials must be appropriately labeled with:

a) The identity of the hazardous material,

b) Appropriate hazard warnings, and manufacturer, importer, or other responsible party.

20. EQUIPMENT DEMONSTRATION

The City of Fairhope may require equipment/ product materials or service techniques to be demonstrated at a time, date, and location to be specified by the City of Fairhope.

21. EQUIPMENT ELECTRICAL CERTIFICATION

All electrical equipment purchased shall conform to, and be identified in, the applicable standard(s), or otherwise be certified as applicable, as of the bid opening date and time, by Underwriters Laboratories, Inc., or other recognized laboratory facility. Bidder must provide satisfactory documentation with returned bid that all such equipment meets the applicable product standard or has otherwise been certified as outlined above. Unless indicated in the bid document, the above certification shall apply to the equipment itself, not the individual components of that equipment.

22. ERRORS IN BID

Bidders are assumed to be informed regarding conditions, requirements, and specifications prior to submitting bids. Failure to do so will be at the bidder's risk. Bids already submitted may be withdrawn without penalty prior to bid opening. Errors discovered after the bid opening may not be corrected.

23. FORCE MAJEURE

Neither the City nor the awarded vendor shall be deemed in breach of any contract / Purchase Order or Agreement which may result from this proposal submission if it is prevented from performing any of the obligations hereunder by reason of Acts of God, acts of the public enemy, acts of superior governmental authority, strikes or labor disputes, floods, riots, rebellion, sabotage, or any similar other unforeseeable causes beyond its control and not due to its fault or negligence. Each party shall notify the other immediately in writing of the cause of such after the beginning period thereof. The awarded vendor may request cancellation and the City of Fairhope may grant the request if performance is prevented by any of the above referenced causes, or other unavoidable circumstances not attributable to the fault or negligence of the vendor. The burden of proof for such relief rests with the vendor. All correspondence pertaining to cancellation of a purchase order or term contract must be addressed to the City of Fairhope Purchasing Manager.

24. HAZARDOUS AND TOXIC SUBSTANCES

Bidder must comply with all applicable Federal, State, County and City laws, ordinances and regulations relating to hazardous and toxic substances, including such laws, ordinances and regulations pertaining to information hazardous and toxic substances, and as amended from time to time. Bidder shall provide the City of Fairhope with a "Material Safety Data Sheet" for all goods that carry one.

25. INDEMNITY

Indemnity: The awarded vendor hereby agrees to indemnify and save harmless the City of Fairhope, its officers, agent, and employees, from and against any and all liabilities, claims, demands, damages, fines, fees, expenses, penalties, suits, proceedings, actions and cost of actions, including reasonable attorney fees for trial and on appeal, of any kind and nature, arising or growing out of, or in any way connected with the performance of this Contract / Agreement / Purchase Order, to the extent caused by a negligent act or omission of the awarded vendor, their agents, servants, employees, Subcontractors, or others associated with the awarded vendor. The awarded vendor shall be responsible for damage to any equipment excluded from this agreement, or damage or injury caused by any equipment excluded from this agreement, only to the extent that the damage or injury is caused by a negligent act or omission of the awarded vendor or caused by failure of the awarded vendor's supplied product to perform as specified.

26. INSPECTION

All materials, workmanship, equipment, and supplies are subject to inspection and test at any source or time. Final inspection, acceptance or rejection will be made at delivery destination. Goods that do not meet specifications will be rejected unless substitutions have been approved by the City of Fairhope. Failure to inspect or to reject upon receipt, however, does not relieve the awarded vendor of liability. When subsequent tests, after receipt, are conducted and when such tests reveal a failure to meet specifications, the City of Fairhope will reject the goods and the awarded vendor shall immediately supply goods meeting specifications or the City of Fairhope may seek damages including but not limited to the testing expense, regardless of whether a part of or all of the goods have been consumed through the testing process. Rejected goods shall be removed by the awarded vendor promptly after rejection, at his expense. If not removed in fourteen (14) calendar days, they may be disposed of at the discretion of the City of Fairhope. Disposal costs will be the awarded vendor's responsibility.

27. INSPECTION OF PREMISES

At reasonable times, the City may inspect those areas of the awarded vendor's place of business that are related to the performance of a Contract / Agreement / Purchase Order. If the City makes such an inspection, the awarded vendor must provide reasonable assistance. The City of Fairhope reserves the right on demand and without notice all the vendor's files associated with a subsequent Contract / Agreement / Purchase Order where payments are based on the awarded vendor's record of time, salaries, materials, or actual expenses. This same clause will apply to any subcontractors assigned to the Contract / Agreement / Purchase Order.

28. INSURANCE

If a Contract / Agreement / Purchase Order results from this RFQ /ITB /RFP, or other form of solicitation, the awarded vendor shall maintain such insurance as will indemnify and hold harmless the City of Fairhope from Workmen's Compensation and Public Liability claims from property damage and personal injury, including death, which may arise from the awarded vendor's operations under this Contract / Agreement / Purchase Order, or by anyone directly or indirectly employed by him/her.

29. INVITATION TO BID

Any provisions made in the RFQ / ITB / RFP, or other form of solicitation, supersedes any provisions outlined here in the General Terms and Conditions.

30. INVOICING, DELIVERY, PACKAGING

Invoices shall be prepared only after ordered materials have been delivered. All invoices must show the purchase order number. Unless otherwise specified in writing, vendors shall not ship any material without an authorized Purchase Order from the City of Fairhope Purchasing Department. All packages delivered must show the purchase order number. The awarded vendor will be required to furnish all materials, equipment and/or service called for at the bid price quoted. In the event the awarded vendor fails to deliver within a reasonable period of time, as determined by the City of Fairhope, the right is reserved to cancel the award and subsequent purchase order and purchase from the next lowest responsible bidder the items needed. The original awarded vendor will be back charged the difference between the original contract price and the price the City of Fairhope has to pay as a result of the failure to perform by the original awarded vendor. All bids will remain firm for acceptance for 60 days from the date of bid opening. Prices shall be net F.O.B., Prepaid and Allow, City of Fairhope chosen site, Baldwin County, Al. The title and risk of loss of the goods will not pass to the City of Fairhope until receipt and acceptance takes place at the F.O.B. point.

31. LABELING

Individual shipping cartons shall be labeled with the name "City of Fairhope", Purchase Order Number, and where applicable, Contract Number, date of manufacture, batch number, storage requirements, conditions, and recommended shelf life. Bidders are encouraged to offer product packaging with recycled content.

32. LOSS OR DAMAGE IN TRANSIT

Delivery by a vendor to a common carrier does not constitute delivery to the City of Fairhope. Any claim for loss or damage incurred during delivery shall be between the vendor and the carrier. The City of Fairhope accepts title only after satisfactory receipt at the delivery point. The City of Fairhope shall note all visible damages on the freight bill and may refuse the damaged goods. The vendor shall make immediate replacement of the damaged merchandise or be subject to damages for breach of contract. If damage is to a small portion of a total shipment and the City of Fairhope will not be inconvenienced because of the shortage, the vendor may be permitted by the Purchasing Manager to deduct the amount of damage or loss from its invoice, in lieu of replacement. Risk of loss during delivery is borne by the vendor until the goods have been accepted by the City of Fairhope, unless otherwise specified in the RFQ / ITB / RFP or other form of solicitation.

33. MANDATORY SITE VISIT

If the RFQ / ITB /RFP or other form of solicitation requires a mandatory site visit, bidders must inspect the site where installation or service is to take place to obtain a full understanding of scope of work outlined therein. Date of site visit will be determined by the City of Fairhope.

34 MONITORING OF SERVICES

Performance of services will be monitored by the requisitioning department and/or the Purchasing Department, and evaluation reports may be filed with the Purchasing Department. Performance not meeting specifications will result in cancellation of Contract / Agreement / Purchase Order and may result in vendor being removed from the vendor list.

35. NONCONFORMING MERCHANDISE

When merchandise received from the lowest responsible bidder is not in accordance with the purchase order, it will be returned to the bidder, at bidder's expense.

36. NON-DESCRIMINATION

The City of Fairhope is an Equal Opportunity Employer and requires that all contractors comply with the Equal Employment Opportunity laws and the provisions of the Contract / Agreement / Purchase Order documents in this regard. The City also encourages and supports the utilization of Minority Business Enterprises on this and all public bids.

37. NON-EXCLUSIVE

Unless otherwise specified, this Contract / Agreement / Purchase Order is considered a non-exclusive Contract /Agreement / Purchase Order between the parties.

38. NOTIFICATION AND ACCIDENT REPORTS

In the event of accidents of any kind, in the performance of a Contract / Agreement / Purchase Order, the awarded vendor shall notify the City of Fairhope immediately and furnish, without delay, copies of all such accident reports to the City of Fairhope. If in the performance of their Work, the awarded vendor fails to immediately report an accident to the City of Fairhope, of which the awarded vendor has knowledge of and which results in a fine levied against the City of Fairhope then the awarded vendor shall be responsible for all fines levied against the City of Fairhope.

39. PACKAGING

All goods must be packaged in new packing containers. Packing that meets the requirements of common carriers is acceptable, unless otherwise required. A packing slip or invoice must accompany all shipments and must reference the purchase order number. Unless otherwise specified, goods are to be packaged in cartons meeting federal specifications and shipped on non-returnable pallets.

40. PATENTS

Awarded Vendor guarantees that the sale and / or use of goods will not infringe upon any U.S. or foreign patent. Awarded vendor will at his / her own expense, indemnify, protect and save harmless the City of Fairhope, on any patent claims arising from the purchase of goods or services.

41. PAYMENT

Invoices -- Upon completion of service and delivery of materials specified in the applicable Contract / Agreement / Purchase Order, awarded vendor will submit an invoice and signed delivery ticket to:

City of Fairhope
Accounts Payable Department
P.O. Box 429
Fairhope, Al. 36533

All invoices must reference appropriate Purchase Order Numbers Payment of Invoice: All invoices received by the City of Fairhope are payable within thirty (30) days from the date of receipt by the City of Fairhope, provided they are approved by the City of Fairhope.

42. PAYMENT WITHHELD

Payment may be withheld until all items have been delivered and all requirements of the Contract / Agreement / Purchase Order have been fulfilled

43. PRODUCT TESTING

Vendor shall incur all cost involved in obtaining an Independent Laboratory Test if the City deems necessary during the term of the Contract / Agreement / Purchase Order. The City of Fairhope reserves the right to request a demonstration of any and all items bid before making the award.

44. PERMITS LICENSES AND CERTIFICATES

The awarded vendor is to procure all permits, licenses, and certificates, or any approvals of plans or specifications as may be required by Federal, State, Local Laws, ordinances, rules, and regulations, for the proper execution and completion of Work covered under the Contract / Agreement / Purchase Order.

45. PREPARATION OF BID

All bids / proposals shall be typewritten or in ink on the form(s) prepared by the City of Fairhope. Bids / proposals prepared in pencil will not be accepted. All bids / proposals must be signed by officials of the corporation or company duly authorized to sign bids / proposals. Any bid / proposal submitted without being signed will automatically be rejected. All corrections or erasures shall be initialed and dated by the person authorized to sign quotations /bids / proposals. If there are discrepancies between unit prices quoted and extensions, the unit price will prevail.

46. QUESTIONS / CONTACT

Commencing with the issuance of the RFQ / ITB / RFP, or other form of solicitation, no vendor or anyone acting on a vendor's behalf, shall make direct or indirect contact with City personnel or undertake any activities or take any action to otherwise promote its quotation / bid / proposal to the City or its personnel. All communications shall be made to the contact identified in the quotation / bid / proposal documents. Violation of this requirement may, at the City's sole and absolute discretion, be grounds for disqualifying a vendor from further consideration.

47. RECEIPT BY CITY OF FAIRHOPE

If not otherwise stated in the order, the City of Fairhope will be said to have received goods when they have been delivered, unloaded, and placed on the agency's dock or if there is no dock, inside an accessible building, and signed for by an authorized City employee. Shipments will be checked against the receiving copy of the Purchase Order. If the purchase order requires grading certificates, USDA Stamps, or any proof of quality, such proof must accompany the shipment.

48. REJECTION OF BIDS

The City of Fairhope reserves the right to accept or reject any or all bids in whole or in part for any reason, to waive technicalities or informalities, or to advertise for new proposals, if, in the judgment of the awarding authority, the best interest of the City of Fairhope will be promoted thereby. Bidders may be disqualified and rejection of proposals may be recommended for any of (but not limited to) the following causes: Failure to use the bid forms furnished by the City of Fairhope, Lack of signature by an authorized representative on the bid form, Failure to properly complete the bid form and vendor compliance, Evidence of collusion among bidders, Unauthorized alteration of the bid form.

49. RIGHT TO AUDIT

The awarded vendor shall maintain documentation of all work performed. The awarded vendor shall make any and all documentation available to the City of Fairhope at all reasonable times, for inspections and audit by the City of Fairhope for a period of Three (3) years after expiration of the Contract / Agreement / Purchase Order.

50. SAMPLES

Bidders will not be required to furnish samples at the time of bid opening, unless specifically called for. The City of Fairhope reserves the right to request samples after bid opening to assist in the evaluation of proposals submitted.

51. SAFETY MEASURES

The awarded vendor shall take all necessary precautions for the safety of the City of Fairhope's and awarded vendor's employees at the Work site, and shall erect and properly maintain at all times, all necessary safeguards for the protection of the workmen and the public. The awarded vendor shall post signs warning against hazards in and around the Work site.

52. SET-UP AND INSTALLATION

Unless otherwise specified, bid / quotation to include cost of all uncrating, disposal of shipping materials, set-up, testing and initial instruction to agency personnel.

53. SPILL CLEAN UP

The awarded vendor shall be responsible for spillage caused by their negligence, which occurs during transit or unloading operations. The awarded vendor shall immediately report and clean up any spillage. Upon failure to do so, the awarded vendor shall remain responsible for all actual related costs.

54. SUBSTITUTIONS

Substitutions on a purchase order shall require the approval of the Originating Buyer. The City of Fairhope reserves the right to reject at destination and hold at the vendor's risk and expense any goods supplied by the vendor which do not conform to the specification or description embodied in the order or are inferior in any respect to the good specified. Any good bought by sample which is inferior in quality to the sample submitted by vendor will be rejected. Any goods delivered that do not meet specifications may be returned to the vendor at its expense. When a good is returned, the vendor must make immediate replacement with acceptable merchandise, or the City of Fairhope may seek remedies for default.

55. TABULATION

Bid results are posted on The City of Fairhope's web site: www.FairhopeAL.gov. The awarded vendor will be sent a written notification.

56. TAXES

Prices quoted shall be delivered prices, exclusive of all federal or state excise, sales, and manufacturer's taxes. The City will assume no transportation or handling charges other than specified in the RFQ, ITB, RFP or other form of solicitation. The City is tax exempt by law – Code of Alabama 1975.

57. TERMINATION FOR CONVENIENCE

Any Contract / Agreement / Purchase Order may be terminated for convenience by the City of Fairhope, in whole or in part, by written notification to the awarded vendor.

58. TERMINATION FOR DEFAULT

Performance of Work under the Contract / Agreement / Purchase Order Agreement may be terminated by the City of Fairhope, in whole or in part, in writing, whenever the City of Fairhope determines that the awarded vendor has failed to meet the requirements of the Contract / Agreement / Purchase Order.

59. TERMINATION FOR NON-APPROPRIATION

Termination for Non-appropriation – The continuation of any financial obligation beyond the current fiscal year is subject to and contingent upon sufficient funds being appropriated, budgeted, and otherwise made available by the local source, State Legislature and/or federal sources. The City of Fairhope may terminate any financial obligation, and awarded vendor waives any and all claim(s) for damages, effective immediately upon receipt of written notice (or any date specified therein) if for any reason the City of Fairhope's funding from local, State and/or federal sources is not appropriated, withdrawn or limited.

60. TIME IS OF THE ESSENCE

The City of Fairhope and awarded vendor agree that time is of the essence in the performance of work called for under this Contract / Agreement / Purchase Order. The awarded vendor agrees that all work will be accomplished regularly, diligently, and uninterrupted at such a rate of progress as will ensure full completion thereof within reasonable time periods.

61. TITLE

All titles, fees, as well as other charges, are to be paid by awarded vendor. Awarded vendor is to furnish prepaid certificate of title in the name of the City of Fairhope, Title shall change upon acceptance of delivery at the City of Fairhope approved delivery location.

62. VENDOR LIST

A vendor may be removed from the City of Fairhope's Bidders List if a vendor fails to respond to three (3) consecutive ITB's. A properly submitted "No Bid" is considered as a response and the vendor will receive credit for the response.

63. WARRANTY

The awarded vendor expressly warrants that all articles, materials, and work offered shall conform to each and every specification, drawing, sample, or other description which is furnished to or adopted by the City of Fairhope, and that it will be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defects. The awarded vendor further warrants all items for a period of one year, unless otherwise stated, from the date of acceptance of the items delivered and installed or work completed. All repairs, replacements, or adjustments during the warranty period will be at the awarded vendor's sole expense. Awarded vendor will provide written warranty for all parts and labor for a period of (1) one year commencing from date of written acceptance of delivery by City of Fairhope. Awarded vendor will provide written copies of all other applicable warranties, such as, Manufacturer's warranty. Those warranties, if any, will be in addition to the awarded vendor's warranty, and the terms of which will not be altered by the awarded vendor's warranty.

64. IMMIGRATION LAW

The Contractor agrees that it shall comply with all of the requirements of the **Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No 2011-535**, Alabama Code (1975) Section 31-13-1, et. Seq., (also known as the Alabama Immigration Act) see Section 31-13-9, and the provisions of said Act, including all penalties for violation thereof, are incorporated herein.

ITEM VIII

ALABAMA IMMIGRATION ACT CONTRACT REQUIREMENTS

1.0 Background

The **Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No 2011-535**, **as amended by Act No 2012-491, *Code of Alabama* (1975) Section 31-13-1** through **Section 31-13-30** (also known as and hereinafter referred to as "the Alabama Immigration Act") is applicable to CONTRACTs with the City of Fairhope, Alabama. All business entities entering into CONTRACTs with the City of Fairhope, Alabama will comply with the Alabama Immigration Act.

2.0 Definitions

ALIEN. Any person who is not a citizen or national of the United States, as described in 8 U.S.C. § 1101, et seq., and any amendments thereto.

BUSINESS ENTITY. Any person or group of persons employing one or more persons performing or engaging in any activity, enterprise, profession, or occupation for gain, benefit, advantage, or livelihood, whether for profit or not for profit. Business entity shall include but not be limited to the following:

a. Self-employed individuals, business entities filling articles of incorporation, partnerships, limited partnerships, limited liability companies, foreign corporations, foreign limited partnerships, foreign liability companies authorized to transact business in this state, business trusts, and any business entity that registers with the Secretary of State.
b. Any business entity that possesses a business license, permit, certificate, approval, registration, charter, or similar form of authorization issued by the state, any business entity that is exempt by law from obtaining such a business license, an any business entity that is operating unlawfully without a business license.

CONTRACTOR. A person, employer, or business entity that enters into a CONTRACT to perform any service or work or to provide a certain product in exchange for valuable consideration. This definition shall include, but not be limited to, a general CONTRACTOR, SUB-CONTRACTOR, independent CONTRACTOR, CONTRACT employee, project manager, or a recruiting or staffing entity.

EMPLOYEE. Any person directed, allowed, or permitted to perform labor or service of any kind by an employer. The employees of an independent CONTRACTOR working for a business entity shall not be regarded as the employees of the business entity, for the purposes of this chapter. This term does not include any inmate in the legal custody of the state, a county, or a municipality.

EMPLOYER. Any person, firm, corporation, partnership, joint stock association, agent, manager, representative, foreman, or other person having control or custody of any employment, place of employment, or of any employee, including any person or entity employing any person for hire within the State of Alabama, including a public employer. This term shall not include the occupant of a household contracting with another person to perform casual domestic labor within the household.

E-VERIFY. The electronic verification of federal employment authorization program of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, P.L. 104-208, Division c, Section 403 (a); 8 U.S.C. §1324(a) and operated by the United States Department of Homeland Security, or its successor program.

STATE-FUNDED ENTITY. Any governmental entity of the state or a political subdivision thereof or any other entity that receives any monies from the state or a political subdivision thereof; provided, however, an entity that merely provides a service or a product to any governmental entity of the state or a political subdivision thereof, and receives compensation for the same, shall not be considered a state-funded entity.

SUB-CONTRACTOR. A person, business entity, or employer who is awarded a portion of an existing CONTRACT by a CONTRACTOR, regardless of its tier.

UNAUTHORIZED ALIEN. An alien who is not authorized to work in the United States as defined in 8 U.S.C. § 1324a (h) (3) .

3.0 Mandatory Clause

All CONTRACTS or CONTRACTS to which the state, a political subdivision, or state-funded entity are a party shall include the following clause:

> ***"By signing this CONTRACT, the CONTRACTING parties affirm, for the duration of the CONTRACT, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the state of Alabama. Furthermore, a CONTRACTING party found to be in violation of this provision shall be deemed in breach of the CONTRACT and shall be responsible for all damages resulting therefrom."***

For purposes of this section, "CONTRACT" shall mean a CONTRACT awarded by the state, any political subdivision thereof, or any state-funded entity that was competitively bid or would, if entered into by the state or an agency thereof, be required to be submitted to the CONTRACT Review Permanent Legislative Oversight Committee.

4.0 CONTRACTs Involving Business Entity, or Employer

As a condition for the award of any CONTRACT, grant, or incentive by the state, any political subdivision thereof, or any state-funded entity to a business entity or employer that employs one or more employees, the business entity or employer shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama.

As a condition for the award of any CONTRACT, grant, or incentive by the state, any political subdivision thereof, or any state-funded entity to a business entity or employer that employs one or more employees within the state of Alabama, **the business entity or employer shall provide documentation establishing that the business entity or employer is enrolled in the E-Verify program.** During the performance of the CONTRACT, the business entity or employer shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations.

5.0 CONTRACTS Involving Subcontracting

Any SUB-CONTRACTOR on a project paid for by CONTRACT, grant, or incentive by the state, any political subdivision thereof, or any state-funded entity shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama and shall also enroll in the E-Verify program prior to performing any work on the project. Furthermore, during the performance of the CONTRACT, the SUB-CONTRACTOR shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations. This subsection shall only apply to SUB-BIDDERS performing work on a project subject to the provisions of this section and not to collateral persons or business entities hired by the SUB -CONTRACTOR.

6.0 Proof of E-Verify documentation will be in the form of a copy of the signed Memorandum Of Understanding (MOU) generated upon completion of the E-Verify program.

END OF ALABAMA IMMIGRATION ACT CONTRACT REQUIREMENTS

ITEM IX

INVITATION SUMMARY

Bid Number 24-062-2024-PWI-025
Stacks Gully Slope Stabilization Project
City of Fairhope Public Works Project No. 2024-PWI 025

Bid Name:	**BID 24-062-2024-PWI-025** **Stacks Gully Slope Stabilization Project**
Issue Date:	July 26, 2024
Certificate of Insurance Requirements:	See Item V
Deadline for Questions Date:	Friday, August 16, 2024, 11:00 A.M.
Bid Due Date:	Tuesday, August 20, 2024, 10:00 A.M.
City Internet Site:	www.FairhopeAL.gov
SEALED Bid Response Copies to submit:	One (1) Original Paper Copy
Purchasing Department Contact for questions:	Purchasing@FairhopeAL.gov (251) 928-8003

END OF INVITATION SUMMARY

ITEM X
BID BOND INFORMATION

Bids shall be accompanied by a Bid Security equal to 5% (percent) of the bid price, but in no event more than $10,000.00. Bid Security shall be in the form of a Bid Bond or a cashier's check payable to The City of Fairhope. All bonds and/or cashier's check will be made payable to the City of Fairhope for an amount not less than five (5) percent of the City's or its engineers or architects estimated cost of the Project or of the total bid in the proposal, but in no event more than $10,000.00.

Return of Bid Bonds: All bid bonds, except those of the three lowest bona fide bidders, will be returned immediately after bids have been checked, tabulated and the relation of the bids established. The bid bonds of the three lowest bidders may be retained and if so, will be returned as soon as the contract bonds and the contract documents of the successful bidder have been approved and properly executed.

In the event it is necessary to defer a contract award for longer than fifteen (15) days, after opening of bids, then all bid bonds, except that of the potential successful bidders will be returned.

Award of the contract will be made within the time specified after the opening of bids. In the event no award is made within such time, all bids may be rejected, and all bonds returned.

Provided; however, the potentially successful bidder may enter into a written agreement with the City for an extension of time for consideration of its bid, in which case, the bidder's bond shall remain in full force and effect, or the City may permit said bidder to substitute a satisfactory surety for the cashier's check if submitted as a guaranty to the bid bond.

Forfeiture of Bid Bonds: Should the successful bidder or bidders to whom a contract is awarded fail to execute a contract(s) and furnish acceptable contract securities and evidence of insurance, as required, within thirty (30) days after the prescribed forms have been presented to him/her, the City may retain from the proposal guaranty, if it is a cashier's check or recovered from the principal or the sureties, if the guaranty is a bid bond, the difference between the amount of the contract as awarded, and the amount of the proposals of the new lowest bidder. If no other bids are received, the full amount of the proposal guaranty may be so retained and recovered as liquidated damages for such default. Any sum so retained or recovered shall be the property of the awarding authority.

END OF BID BOND INFORMATION

ITEM X

BID BOND

The PRINCIPAL (Bidder's name and address)

The OWNER
City of Fairhope
P.O. Drawer 429
Fairhope, Al 36533

The PROJECT for which the Principal's Bid is submitted: (Project name as it appears in the Bid Documents)

PROJECT NO.
PROJECT NAME:

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned Principal and Surety, jointly and severally, hereby bind ourselves, our heirs, executors, administrators, successors, and assigns to the OWNER in the PENAL SUM of five percent (5%) of the amount of the Principal's bid, but in no event more than TEN THOUSAND DOLLARS ($10,000.00).

THE CONDITION OF THIS OBIGATION is that the Principal has submitted to the OWNER the attached bid, which is incorporated herein by reference, for the Project identified above.

NOW, THEREFORE, if, within the terms of the Bid Document, the OWNER accepts the Principal's bid and the Principal thereafter either:

(a) executes and delivers a Construction Contract with the required Performance and Payment Bonds (each in the for contained in the Bid Documents and properly completed in accordance with the bid) and delivers evidence of insurance as prescribed in the Bid Documents, or fails to execute and deliver such Construction Contract with such Bonds and evidence of insurance, but pays the OWNER the difference, not to exceed the Penal Sum of this Bond, between the amount of the Principal's Bid and the larger amount for which the OWNER may award a Construction Contract for the same Work to another Bidder, then, this obligation shall be null and void, otherwise it shall remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that the obligation of the Surety under this Bond shall not in any manner be impaired or affected by any extension of the time within which the OWNER may accept the Principal's bid, and the Surety does hereby waive notice of any such extension.

SIGNED AND SEALED this _____ day of _____, 202____.

_____
(Principal (Company)

ATTEST
_____ By_____

_____
Print Name and Title

SURETY
ATTEST

_____
Surety Company

_____ By_____

_____
Print Name and Title

CORPORATION

_____
Name of Corporation, Partnership, or Joint Venture

Business Mailing Address: _____
_____

email_____ phone_____

BY: _____ _____

(Signature of Officer Authorized to sign Bids and Contracts for the Firm) (Position or Title)

_____ _____

(General Contractor's License Number) Foreign Corporation Entity Id (Required of out-of-state-vendors)

Attest:

_____ _____

(Secretary) (Name of State under the laws of which incorporated)

_____ BY: _____

(Name of Surety) (Attorney in Fact)

ITEM XI
PERFORMANCE BOND

KNOW ALL MEN: That _____ as Principal,
(name & address of legal title of contractor)

and _____ and
(name & address of legal title of one or more sureties)

_____
(name & address of legal title of one or more sureties)

Hereinafter called the Surety or Sureties, are held and firmly bound unto the CITY OF FAIRHOPE, ALABAMA, hereinafter called the OWNER in the sum of _____Dollars ($_____), for the payment whereof the Principal and the Surety or Sureties bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, The Principal has, by means of a written agreement, dated ___/___/____, entered into a contract with the OWNER for **Bid No. 24-062-2024-PWI-025 Stacks Gully Slope Stabilization Project**, which agreement is by reference made a part hereof.

NOW THEREFORE, the conditions of this obligation is such that if the Principal shall faithfully perform the contract on his part, and satisfy all claims and demands, incurred for the same, and shall fully indemnify and save harmless the OWNER from all cost and damage which he may suffer by reason of failure to do so, and shall reimburse and repay OWNER all outlay and expense which the OWNER may incur in making good for any such default thence this obligation shall be null and void: otherwise, it shall remain in full force and effect.

PROVIDED, HOWEVER, that no suit, action or proceedings, by reason of any default whatever be brought on his Bond after twelve months from the day on which the final payment under the Contract falls due.

PROVIDED, further, that the said surety or sureties, for value received hereby stipulate and agree that no change, extension of time, or addition to the terms of the Contract or to the work to be performed thereunder of the specifications thereof shall in any way effect their obligations on this bond, and they do hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work, or to the Specifications.

WITNESS our hands this _____day of _____, 202___.

IF INDIVIDUAL

_____, Doing Business As, _____
(SIGNATURE of Individual Bidder) (Business Name)

Business Mailing Address_____

IF CORPORATION

_____
(Name of Corporation, Partnership , or Joint Venture)

Business Mailing Address_____

By:_____ _____
(SIGNATURE of officer authorized to sign Bids and Contracts for the company) (Position or Title)

ATTEST:

_____ _____
(Secretary) (Name of State of incorporation)

_____ By: _____
(Name of Surety) (Attorney in Fact)

ITEM XII
LABOR AND MATERIAL BOND

KNOWN ALL MEN BY THESE PRESENTS, that we, _____ (hereinafter called the "Contractor") of _____ as principal and (hereinafter called the "Surety"), as Surety, do hereby acknowledge ourselves indebted and firmly bound and held unto the City of Fairhope, Alabama, (hereinafter called the "**City**"), a municipal corporation, existing under and by virtue of the Laws of the State of Alabama, for the use and benefit of those entitled thereto, in the penal sum of _____ ($_____) for the payment of which well and truly to be made in lawful money of the United States, we do hereby bind ourselves, or successors, assigns and personal representatives, jointly and severally, firmly by these presents.

BUT THE CONDITION OF THE FOREGOING OBLIGATION OR BOND IS THIS:

WHEREAS, the **City** has entered into a certain written contract with said Contractor for **Bid No. 24-052-2024-PWI-025 Stacks Gully Slope Stabilization Project**, in accordance with contract documents heretofore on file in the Office of the **City of Fairhope** at the price of, to-wit: _____ ($_____) as more fully appears in said written Contract bearing date of _____, 20____, which Contract is hereby referred to and made a part hereof to the same extent as if set out herein in full.

NOW, THEREFORE, if said Principal and all subcontractors to whom any portion of the work provided for in said contract is sublet and all assignees of said Principal and of such subcontractors shall promptly make payment to all persons supplying him or them with labor, foodstuffs, or supplies for or in the prosecution of the work provided for in such contract, or in any amendment or extension of or addition to said contract, and for the payment of reasonable attorney's fees, incurred by the claimant or claimants in suits on said bond, then the above obligation shall be void; otherwise, it shall remain in full force and effect.

PROVIDED, however, that this bond is subject to the following conditions and limitations:

(a) Any person, firm or corporation that has furnished labor, foodstuffs, or supplies for or in the prosecution of the work provided for in said contract, payment for which has not been made, shall have a direct right of action in his or their name or names against the principal and surety on this bond, which right of action shall be asserted in a proceeding, instituted in the county in which the work provided for in said contract is to be performed and in any county in which said Principal or Surety does business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or claimants for his or their use and benefit against said Principal and Surety or either of them (but not later than one year after the final settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

(b) In addition to any other legal mode of service, service of summons and other process in suits on this bond brought in Baldwin County may be had on the Principal or the Surety in accordance with Title 27, Chapter 3, Section 24 of the Ala. Code (1975) by serving a copy of the summons and complaint or other pleading or process, with the Commissioner of Insurance of the State of Alabama or his/ her designee and the Principal and Surety agree to be bound by such mode of service above described and consents that such service shall be the same as personal service on the Principal or Surety.

(c) The Surety shall not be liable hereunder for any damages or compensation recoverable under any workmen's compensation or employer's liability statute.

(d) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than one year after the final settlement of said contract.

(e) This bond is given pursuant to the terms of Title 39, Chapter 1, Section 1 of the Ala. Code (1975), and all the provisions of law with reference to this character of bond as set forth in said section or as may hereinafter be enacted are hereby made a part hereof to the same extent as if set out herein in full.

IN WITNESS WHEREOF, the said Contractor has hereunder affixed its signature and said Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers on the ____ day of _____, 20____.

_____
Principal

By:
_____

_____
Title

_____
Surety

ATTEST:

By:
_____

_____
Title

PLANS FOR:

FAIRHOPE BLUFF REPAIR

SOUTH MOBILE STREET
FAIRHOPE, ALABAMA

PREPARED FOR:

MAISON JAYCIE

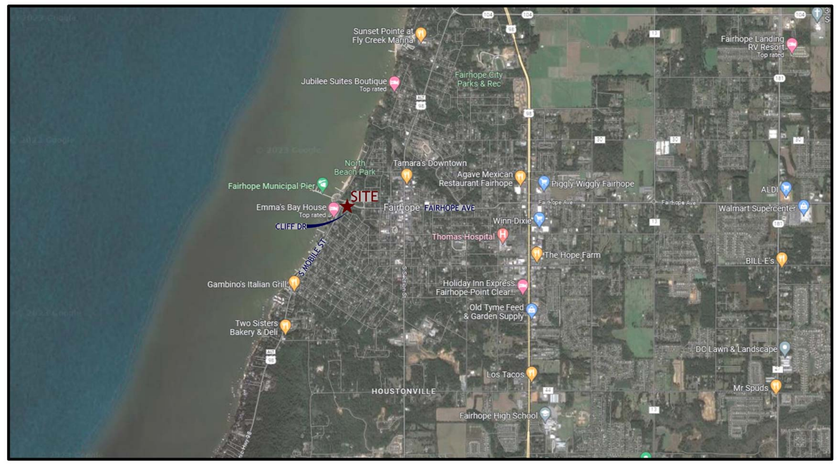
50 FAIRHOPE AVENUE
FAIRHOPE, ALABAMA 36532

PREPARED BY:

WOOTEN ENGINEERING
CIVIL PLANNING + DESIGN

1249 PENCARRO BLVD
FOLEY, ALABAMA 36535
(251) 269-8689
jww@wooteneng.com

REGIONAL MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

SHEET INDEX:

NOTE:

THIS PLAN SET IS NOT FOR CONSTRUCTION.
PLANS ARE PRESENTED FOR REVIEW/PROJECT BUDGET
FINAL WALL DESIGN PENDING.

ALABAMA LICENSED PROFESSIONAL ENGINEER JASON W. WOOTEN No. 28687

OCTOBER 30, 2023

DRAWING NOT VALID WITHOUT DATE & SIGNED STAMP

PROJECT DATA:

PROJECT NO: WE23-13-077	DATE: 10/30/2023
PROJECT NAME: FAIRHOPE BLUFF REPAIR	PREPARED BY: JWW
PROJECT LOCATION: S MOBILE ST, FAIRHOPE, ALABAMA	PROJECT FILE: WE23-13 FAIRHOPE BLUFF.dwg

REVISION NO:	REVISION DESCRIPTION:	REVISION DATE:
1	...	00/00/2023

PROJECT PERMITTING HISTORY	
...	00/00/2023

UTILITY PROVIDERS	
WATER	FAIRHOPE UTILITIES
SANITARY SEWER	FAIRHOPE UTILITIES
ELECTRICITY	FAIRHOPE UTILITIES
TELECOMMUNICATIONS	...
CABLE	...

N

SCALE: 1" = 10'

0 10' 20'

SHEET LEGEND:

- PROPOSED PARKING COUNT
- PROPOSED ADA PARKING
- PROPOSED TRAFFIC CONTROL SIGN
- PROPOSED EXTERIOR LIGHTING
- PROPOSED DUMPSTER
- PROPOSED WHEEL STOP
- PROPOSED RETAINING WALL
- PROPOSED BUILDING
- PROPOSED CONCRETE PAVING
- PROPOSED ASPHALT PAVING
- PROPOSED GRAVEL SURFACE
- PROPOSED GRASSED AREAS
- PROPOSED SURFACE WATER
- PROPOSED WOOD DECKING
- EXISTING GRAVEL SURFACE
- EXISTING CONCRETE PAVING
- EXISTING ASPHALT PAVING
- EXISTING SURFACE WATER
- SEE TOPOGRAPHIC LEGEND FOR OTHER EXISTING CONDITIONS SYMBOLS

PREPARED FOR:

MAISON JAYCIE
50 FAIRHOPE AVENUE
FAIRHOPE, ALABAMA 36532

ALT HWY 98 (R/W VARIES)
(AKA SOUTH MOBILE ST)

CONCRETE SIDEWALK

CONCRETE WALL

TBM# EL=46.87
TOP OF SANITARY SEW MANHOLE
NEAR WEST PROPERTY CORNER

SANITARY SEWER MANHOLE TOP=46.87

HEDGE ROW

CR (CAP MISSING)

APPROX LOCATION OF PROPERTY LINE (NO BOUNDARY SURVEY PERFORMED)

GAZEBO

WOOD PICKET FENCE

BUILDING

APPROX 21 FT WALL TRANSITION EX GRADE

"S" INLET
TOP=47.03
INV.=43.54

S1
47.03
S2
47.03

HDPE STORM SEWER ON NATURAL GROUND

OUTLET STRUCTURE
TOP=33.02
INV.=16.02

CONTRACTOR TO INSTALL SILT FENCE AROUND EXISTING DRAINAGE STRUCTURE.

N 63°19'32" W

220.00'

SOD STABILIZED 3:1 SLOPE
(APPROX 7000 SQ FT)

APPROX 125 FT MECHANICALLY STABILIZED EARTH RETAINING WALL

CONTRACTOR TO INSTALL SILT FENCE ALONG TOE OF DISTURBED AREA. LOCATE WHERE NOT TO CONFLICT WITH WALL CONSTRUCTION

APPROX 25 FT TRANSITIONAL WALL SECTION.
TIE TO EX WALL STRUCTURE.
CONTRACTOR TO FIELD VERIFY LOCATION & HT PRIOR TO ORDERING MATERIALS

VINYL PICKET FENCE

GRAVEL PARKING

S 28°42'32" W

PIN 15478
FST PRESTWOOD, JAMES A
2451 MONTE VISTA DR
VESTAVIA, AL 35216

CONCRETE WALL

WOOD PRIVACY FENCE

N.I.S.

WOOD WALL

APPROVED MATERIALS NOTES:

1. THE MECHANICALLY STABILIZED EARTH RETAINING WALL SYSTEMS, GEOGRIDS & GEOTEXTILES PRESENTED IN THE PLANS ARE FOR CONTRACTOR REFERENCE FOR QUANTITIES & COST ESTIMATION.
2. APPROVED SUPPLIERS FOR WELDED WIRE WALL FACING ARE: MACCAFERRI, MODULAR GABION SYSTEMS, TENSAR, AND US FABRICS.
3. APPROVED SUPPLIERS FOR GEOGRIDS & GEOPTEXTILES ARE: ADS, CARTHAGE MILLS, MIRAFI, MACCAFERRI, TENSAR, AND US FABRICS.
4. ALTERNATE SYSTEMS & MATERIALS MAY BE APRPOVED UPON REQUEST AND SUBMISSION OF SUPPORTING DATA.
5. SHOP DRAWINGS AND TECHNICAL DATA FOR EACH SYSTEMS AND MATEIRALS SHALL BE SUBMITTED FOR PROJECT APPROVAL.

ALABAMA 811

SURVEY PROVIDED BY:

POLY SURVEYING
E-Mail: MAIL@Polysurveying.Com, InterNet: www.Polysurveying.Com

MOBILE CO.
5588 JACKSON RD, MOBILE, AL 36619
P: (251) 666-2010 F: (251) 666-1792

BALDWIN CO.
28810 HWY 98, SUITE F, DAPHNE, AL 36526
P: (251) 626-0905 F: (251) 626-7581

SURVEYOR LEGEND

C.R.	= 1/2" CAPPED REBAR IRON FOUND
N.I.S.	= NO IRON SET
TBM.	= TEMPORARY BENCH MARK
R/W	= RIGHT OF WAY
EL.	= ELEVATION
INV.	= INVERT
H.D.P.E.	= HIGH DENSITY POLY ETHYLENE PIPE
x	= FENCE LINE
S	= SANITARY SEWER MANHOLE
	= POWERLINE POLE
	= GUY WIRE
	= LIGHT POLE
E	= ELECTRIC METER
P	= OVERHEAD POWERLINE
AC	= A/C UNIT
D	= STORM SEWER MANHOLE
G	= GAS METER

SURVEYOR NOTES:

1. TYPE OF SURVEY: SPECIFIC PURPOSE
2. BEARINGS BASED ON RTK GPS DATUM.
3. PROPERTY IS LOCATED IN FLOOD ZONE "X" (UNSHADED) AS SCALED FROM FEDERAL INSURANCE ADMINISTRATION FLOOD HAZARD BOUNDARY PANEL NO. 01003C0643M DATED 04/19/2019.

FAIRHOPE AVE @ S MOBILE ST
FAIRHOPE, ALABAMA
LOCAL AREA TOPOGRAPHY

NOTE:

THIS PLAN SET IS NOT FOR CONSTRUCTION.
PLANS ARE PRESENTED FOR REVIEW/PROJECT BUDGET
FINAL WALL DESIGN PENDING.

WOOTEN ENGINEERING
CIVIL PLANNING + DESIGN
1249 Pencarro Blvd
Foley, Alabama 36535
(251) 269-8689
jww@wooteneng.coom
www.wooteneng.com

ALABAMA LICENSED NO. 28562 PROFESSIONAL ENGINEER JASON W. WOOTEN

DRAWING DATA:

PROJECT NUMBER: WE23-13-077
DRAWING FILE: WE23-13 FAIRHOPE BLUFF.DWG
DATE: October 30, 2023
DRAWN BY: JWW

REVISIONS:			
			00/00/2023
			...
			1

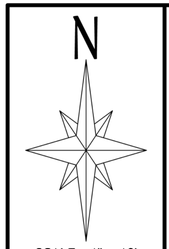
SITE PLAN

FAIRHOPE BLUFF REPAIR

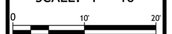
SOUTH MOBILE STREET
FAIRHOPE, ALABAMA

SHEET NUMBER:

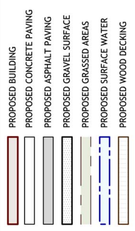
C-02 OF 5

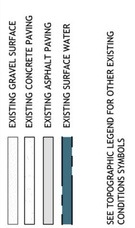


SCALE: 1" = 10'



SHEET LEGEND:





PREPARED FOR:

MAISON JAYCIE
50 FAIRHOPE AVENUE
FAIRHOPE, ALABAMA 36532

GENERAL SITE PREPARATION NOTES:

1. THE GEOTECHNICAL REPORT BY GEOCON TESTING & MATERIALS SHALL BE CONSIDERED PART OF THESE PLANS. ANY DISCREPANCY BETWEEN THE DRAWINGS AND THE GEOTECHNICAL REPORT SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER. THE GEOTECHNICAL REPORT SHALL HOLD PRECEDENCE IN ALL INSTANCES, UNLESS NOTIFIED IN WRITING FROM ENGINEER.
2. SITE PREPARATION FOR ALL CONSTRUCTION AREAS SHALL FIRST CONSIST OF CLEARING & GRUBBING / REMOVING THE GRASS, WEEDS, BRUSH, ORGANIC SOILS AND ANY OTHER DELETERIOUS MATERIAL. ORGANIC SOILS SHALL BE STOCKPILED OUTSIDE CONSTRUCTION AREAS FOR USE IN LANDSCAPING AND FINAL SITE DRESSING, BUT SHALL NOT BE USED AS STRUCTURAL FILL.
3. TOPSOIL IN CUT AND FILL AREAS SHALL BE STRIPPED AND STOCKPILED IN DESIGNATED AREAS. UPON COMPLETION OF THE PROJECT, STOCKPILED TOPSOIL SHALL BE SPREAD UNIFORMLY TO DRESS SLOPES AND DISTURBED NON-STRUCTURAL AREAS.
4. UPON COMPLETION OF THE JOB, THE CONTRACTOR SHALL DRESS THE ENTIRE PROJECT, SPREAD STOCKPILED TOPSOIL, AND GRASS OR SOD ALL DISTURBED AREAS ACCORDING TO PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SEEDING AND SODDEN AREAS UNTIL A SUITABLE STAND OF GRASS EXISTS. SOD OR SEED AND MULCH DISTURBED AREAS AS REQUIRED TO ESTABLISH A PERMANENT, STABLE PLANTING.
5. ANY WORK DEEMED SUBSTANDARD BY ENGINEER, OWNER, OR GOVERNMENTAL ENTITY, WILL BE REMOVED AND REPLACED IN A SATISFACTORY MANNER AT NO COST TO THE OWNER.
6. THE OWNER WILL PAY FOR ALL TESTING FEES TO ENSURE CONSTRUCTION PASSES SPECIFICATION REQUIREMENTS. RETESTING SHALL BE PAID FOR BY THE CONTRACTOR.
7. ALL OVERTIME INSPECTION FEES SHALL BE PAID FOR BY CONTRACTOR.

QUALITY CONTROL TESTING SCHEDULE:

EARTHWORK

1. A MINIMUM OF ONE (1) STANDARD PROCTOR SHALL BE PERFORMED PER 1000 CUBIC YARDS OF MATERIAL, OR PER CHANGE IN MATERIAL UTILIZED.
2. A MINIMUM OF 1 FIELD DENSITY TEST SHALL BE PERFORMED PER 250 LINEAR FEET OF ROADWAY PER LIFT OF COMPACTED MATERIAL.
3. A MINIMUM OF 1 FIELD DENSITY TEST SHALL BE PERFORMED PER 1000 SQUARE FEET OF STRUCTURAL FILL OUTSIDE OF CURB PER LIFT OF COMPACTED MATERIAL.
4. A MINIMUM OF 1 FIELD DENSITY TEST SHALL BE PERFORMED PER 2500 SQUARE FEET OF NON-STRUCTURAL FILL PER LIFT OF COMPACTED MATERIAL.

CONCRETE

5. ONE SET OF FIVE (5) TEST CYLINDERS SHALL BE CAST PER 100 CUBIC YARDS OF CONCRETE PLACED WITH A MINIMUM OF ONE SET PER DAY OF PRODUCTION. TWO CYLINDERS SHALL BE USED TO PERFORM A 7-DAY COMPRESSIVE STRENGTH TEST; TWO CYLINDERS SHALL BE USED TO PERFORM A 28-DAY COMPRESSIVE STRENGTH TEST, AND THE REMAINING CYLINDER SHALL BE STORED BY THE TESTING LABORATORY FOR 72 DAYS AS A CONTINGENCY FOR INADEQUATE "BREAKS."
6. TESTING REQUIRED PER SET OF TEST CYLINDERS:
   A. SLUMP (MAX. SLUMP SHALL BE 4.5", UNLESS DIRECTED OTHERWISE BY ENGINEER)
   B. ENTRAINED AIR (MIN AIR SHALL BE 2%; MAX. AIR SHALL BE 5%)
   C. TEMPERATURE (MAX. SHALL BE 95° FOR FIRST DELIVERY TRUCK PER DAY OF PRODUCTION; MAX. SHALL BE 90° FOR ALL SUBSEQUENT TRUCKS.)
7. EXTRA TEST CYLINDERS NEEDED TO WRECK FORMS, ETC. SHALL BE CHARGED TO CONTRACTOR.
8. ALL CONCRETE SHALL BE PLACED IN FORMS WITHIN 1.5 HOURS OF TRUCKS ARRIVAL ON JOB-SITE.
9. OWNER SHALL NOT BE CHARGED FOR ANY CONCRETE REJECTED DUE TO NOT MEETING PROJECT SPECIFICATIONS.
10. ALL TEST CYLINDERS SHALL BE MADE, STORED, AND TESTED IN ACCORDANCE WITH CURRENT ASTM SPECIFICATIONS.
11. ALL TESTS SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT ASTM SPECIFICATIONS.

ASPHALT PAVING

12. SUPPLIER SHALL PROVIDE MIX DESIGN AND QUALITY CONTROL TESTS FOR EACH PRODUCTION DAY. CONTRACTOR SHALL ENSURE THESE TESTS ARE PERFORMED AND DOCUMENTATION IS PROVIDED TO ENGINEER.
13. CONTRACTOR SHALL CUT CORES WITH TESTING REPRESENTATIVE PRESENT AND DIRECTING LOCATION OF CORES. TESTING REPRESENTATIVE SHALL TAKE POSSESSION OF CORES UPON COMPLETION.
14. TESTING AGENCY SHALL OBTAIN DENSITY AND THICKNESS TESTS FOR EACH CORE, AND SHALL PROVIDE TESTING RESULTS TO ENGINEER.

GENERAL

15. ALL TESTING SHALL BE PERFORMED BY A CERTIFIED TESTING LABORATORY OPERATING UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ALABAMA.
16. RETESTING DUE TO FAILURE SHALL NOT BE CHARGED TO OWNER.

ALABAMA 811

NOTE:

THIS PLAN SET IS NOT FOR CONSTRUCTION.
PLANS ARE PRESENTED FOR REVIEW/PROJECT BUDGET
FINAL WALL DESIGN PENDING.

WOOTEN ENGINEERING
CIVIL PLANNING + DESIGN
1249 Pencarro Blvd
Foley, Alabama 36535
(251) 269-8689
jww@wooteneng.com
www.wooteneng.com

DRAWING DATA:

PROJECT NUMBER: WE23-13-077
DRAWING FILE: WE23-13 FAIRHOPE BLUFF.DWG
DATE: October 30, 2023
DRAWN BY: JWW

REVISIONS:			
		1	00/00/2023

PROJECT NOTES

FAIRHOPE BLUFF REPAIR

SOUTH MOBILE STREET
FAIRHOPE, ALABAMA

SHEET NUMBER:

C-03 OF 5

N

SCALE: 1" = 10'

0 10' 20'

SHEET LEGEND:

PROPOSED PARKING COUNT
PROPOSED ADA PARKING
PROPOSED TRAFFIC CONTROL SIGN
PROPOSED EXTERIOR LIGHTING
PROPOSED DUMPSTER
PROPOSED WHEEL STOP
PROPOSED RETAINING WALL

PROPOSED BUILDING
PROPOSED CONCRETE PAVING
PROPOSED ASPHALT PAVING
PROPOSED GRAVEL SURFACE
PROPOSED GRASSED AREAS
PROPOSED SURFACE WATER
PROPOSED WOOD DECKING

EXISTING GRAVEL SURFACE
EXISTING CONCRETE PAVING
EXISTING ASPHALT PAVING
EXISTING SURFACE WATER

SEE TOPOGRAPHIC LEGEND FOR OTHER EXISTING CONDITIONS SYMBOLS

PREPARED FOR:

MAISON JAYCIE
50 FAIRHOPE AVENUE
FAIRHOPE, ALABAMA 36532

NOTE:

THIS PLAN SET IS NOT FOR CONSTRUCTION.
PLANS ARE PRESENTED FOR REVIEW/PROJECT BUDGET
FINAL WALL DESIGN PENDING.

ALT HWY 98 (R/W VARIES)
(AKA SOUTH MOBILE ST)

CONCRETE SIDEWALK
CONCRETE WALL
TBM 1 EL=46.87
TOP OF SANITARY SEW MANHOLE
NEAR WEST PROPERTY CORNER
SANITARY SEWER MANHOLE TOP=46.87
HEDGE ROW
CR (CENTERLINE ROAD)
"S" INLET TOP=47.03 INV.=43.54
HDPE STORM SEWER ON NATURAL GROUND
OUTLET STRUCTURE TOP=33.02 INV.=16.02
APPROX LOCATION OF PROPERTY LINE (NO BOUNDARY SURVEY PERFORMED)
TURN WALL UPSLOPE TO TRANSITION EX GRADE
GAZEBO
WOOD PICKET FENCE
FG=55.40
FG=55.85
FG=57.09
FG=57.69
BUILDING
FG=59.16
VINYL PICKET FENCE
GRAVEL PARKING
FG=59.16
FG=59.60
N 63°19'32" W
320.00'
FG=60.52
VINYL PICKET FENCE
FG=61.40
CONCRETE WALL
WOOD PRIVACY FENCE
WOOD WALL
PIN 15478
FST PRESTWOO
2451 MONTE VI
VESTAVIA, AL 3
TOE=35.00 TOP=49.25
TOE=35.00 TOP=50.75
TOE=35.00 TOP=52.35
TOE=35.00 TOP=50.75
TOE=35.00 TOP=50.75
TOE=35.00 TOP=49.25
TOE=35.00 TOP=47.75
TOE=35.00 TOP=46.25
MECHANICALLY STABILIZED EARTH RETAINING WALL TYP GRADING SECTION
TRANSITION WALL SECTION TO EX WALL STRUCTURE

DISTURBED AREA TO RECEIVE SOLID SOD OR LANDSCAPING & MULCH AT END OF PROJECT
EX PICKET FENCE
5 FT
SLOPE AWAY FROM EX FENCE AT 5%
EX GRADE
INSTALL TEMPORARY, BIODEGRADABLE EROSION CONTROL BLANKET OVER FINAL GRADED SLOPE. (INSTALL PER MANUFACTURER SPEC'S)
SLOPE TO RECEIVE SOLID SOD AT END OF PROJECT. PIN/STAPLE SOD THROUGH EROSION CONTROL BLANKET TO GRADED SLOPE
3:1 GRADED SLOPE TO TOP OF WALL
MACCAFERRI 'L' PANEL OR APPROVED EQUAL
10
1
11.25 TO 17.25 FT WALL HT
18" NOMINAL
BIAXIAL GEOGRID
DISTURBED AREA ALONG TOE OF WALL TO RECEIVE SOLID SOD AT END OF PROJECT
EX GRADE APPROX EL 35.00
27" MIN
FOUNDING SOILS

TYPICAL RETAINING WALL GRADING SECTION
(FINAL DESIGN PENDING)
NOT TO SCALE

ALABAMA 811

WOOTEN ENGINEERING
CIVIL PLANNING + DESIGN
1249 Pencarro Blvd
Foley, Alabama 36535
(251) 269-8689
jww@wooteneng.coom
www.wooteneng.com

ALABAMA LICENSED NO. 28562 PROFESSIONAL ENGINEER JASON W. WOOTEN

DRAWING DATA:

PROJECT NUMBER: WE23-13-077
DRAWING FILE: WE23-13 FAIRHOPE BLUFF.DWG
DATE: October 30, 2023
DRAWN BY: JWW

REVISIONS:			
		4	00/00/2023

GRADING PLAN

FAIRHOPE BLUFF REPAIR

SOUTH MOBILE STREET
FAIRHOPE, ALABAMA

SHEET NUMBER:

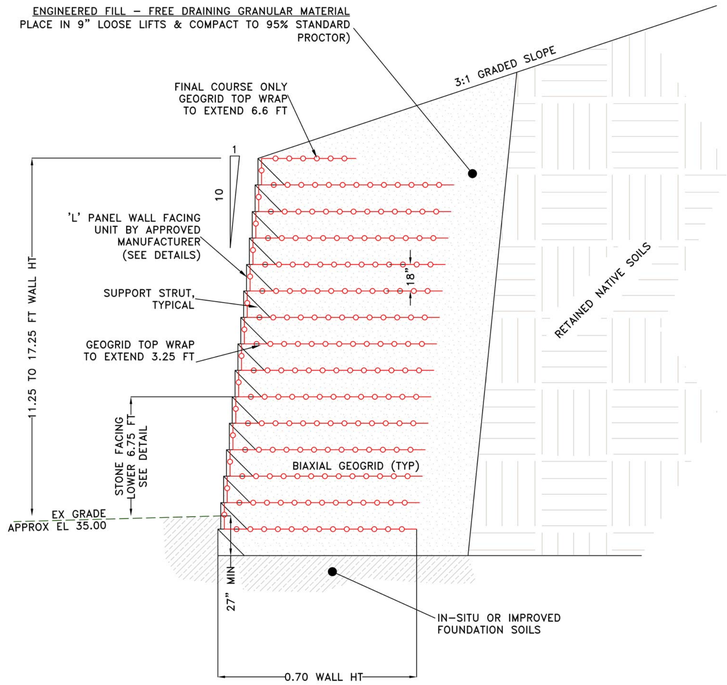
C-04 OF 5

PROJECT SPECIFICATIONS:

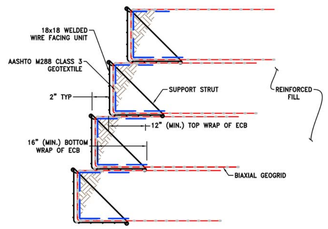
1. THE PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE, BUT NOT LIMITED, TO THE SPECIFICATIONS NOTED IN THESE PLANS. IT IS THE CONTRACTORS RESPONSIBILITY TO BE FAMILIAR WITH AND ABIDE BY THE RESPECTIVE SPECIFICATION. FAILURE TO FOLLOW THE SPECIFICATIONS OR THE ENGINEER'S DIRECTION SHALL LEAD TO REWORK NOT PAYABLE BY THE DEVELOPER.
2. ALABAMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.
3. CITY OF FAIRHOPE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.
4. MATERIALS MANUFACTURER SPECIFICATIONS.
5. WOOTEN ENGINEERING, LLC PROJECT SPECIFICATIONS

PREPARED FOR:

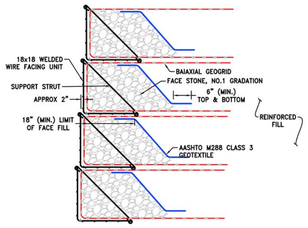
MAISON JAYCIE
50 FAIRHOPE AVENUE
FAIRHOPE, ALABAMA 36532



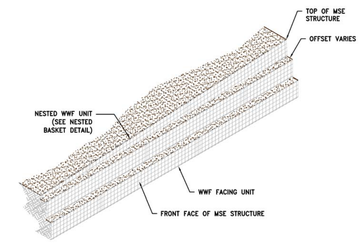
TYPICAL MECHANICALLY STABILIZED EARTH RETAINING WALL SECTION
(FINAL DESIGN PENDING)
NOT TO SCALE



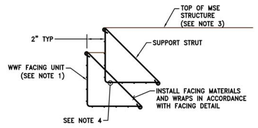
TYPICAL WELDED WIRE FORM FACING DETAIL
NOT TO SCALE



STONE FACING DETAIL
NOT TO SCALE



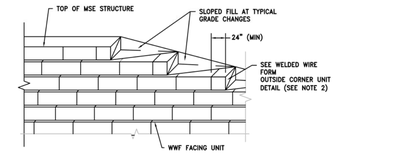
ISOMETRIC VIEW – NESTED BASKET AT TOP OF MSE STRUCTURE DETAIL (OFFSET)
NOT TO SCALE



NOTES:

1. SEE WELDED WIRE FORM (WWF) FACING DETAIL FOR FACING MATERIALS AND DIMENSIONS.
2. OFFSET AS NEEDED TO ACHIEVE OVERALL BATTER AS SHOWN IN THE CROSS-SECTIONS.
3. SET TOPMOST WWF FACING UNIT INSIDE WWF FACING UNIT BELOW TO FOLLOW GRADE.
4. HORIZONTAL WIRES OF TOPMOST WWF FACING UNIT MAY BE CUT TO ALLOW INSTALLATION OVER STRUTS OF WWF FACING UNIT BELOW.

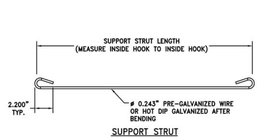
NESTED BASKET DETAIL (OFFSET)
NOT TO SCALE



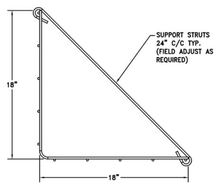
NOTES:

1. SEE WELDED WIRE FORM (WWF) FACING DETAIL AND WWF OUTSIDE CORNER UNIT DETAIL FOR FACING MATERIALS AND DIMENSIONS.
2. BEND BASKET 90° PER OUTSIDE CORNER UNIT DETAIL AT STEPS TO ENSURE REINFORCED FILL IS CONTAINED.

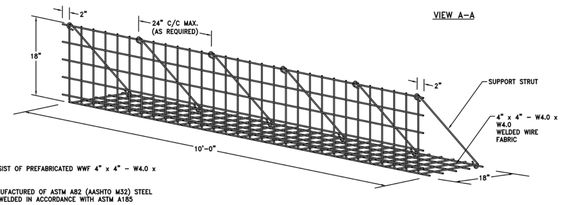
TOP OF MSE STRUCTURE FINISHING DETAIL (OFFSET)
NOT TO SCALE



SUPPORT STRUT

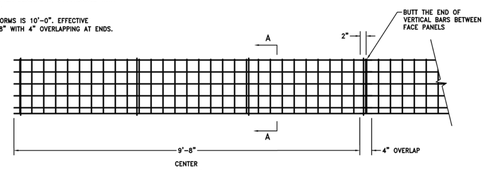


VIEW A–A

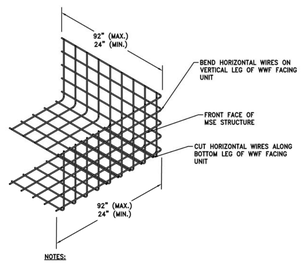


NOTES:

1. FACING TO CONSIST OF PREFABRICATED WWF 4" x 4" – W4.0 x W4.0 FORMS.
2. WWF'S ARE MANUFACTURED OF ASTM A82 (AASHTO M32) STEEL WIRE AND ARE WELDED IN ACCORDANCE WITH ASTM A185 (AASHTO M55).
3. ALL FORMS SHALL BE HOT DIP GALVANIZED AFTER BENDING IN ACCORDANCE WITH ASTM A123 (AASHTO M111).
4. STRUTS ARE MANUFACTURED OF MEDIUM TEMPER PRE-GALVANIZED WIRE, IN ACCORDANCE WITH ASTM A641 OR ARE HOT-DIP GALVANIZED AFTER BENDING IN ACCORDANCE WITH ASTM A153 (AASHTO M232).
5. OVERALL LENGTH OF WIRE FORMS IS 10'-0". EFFECTIVE CONSTRUCTED WIDTH IS 9'-8" WITH 4" OVERLAPPING AT ENDS.



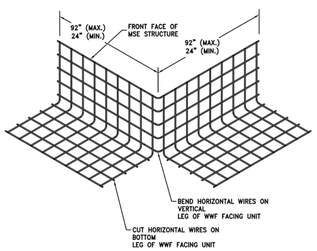
WELDED WIRE FORM FACING UNIT
NOT TO SCALE



NOTES:

1. MAINTAIN 24" (MIN.) OF WIRE FORM ON EACH SIDE OF BEND.
2. SEE WELDED WIRE FORM (WWF) FACING UNIT DETAIL FOR FACING MATERIAL AND DIMENSIONS.

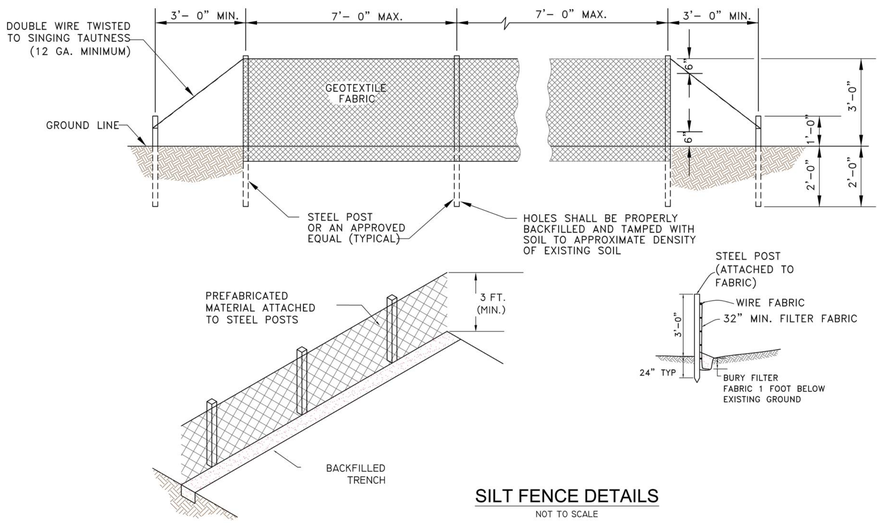
WELDED WIRE FORM OUTSIDE CORNER UNIT
NOT TO SCALE



NOTES:

1. MAINTAIN 24" (MIN.) OF WIRE FORM ON EACH SIDE OF BEND.
2. SEE WELDED WIRE FORM (WWF) FACING UNIT DETAIL FOR FACING MATERIAL AND DIMENSIONS.

WELDED WIRE FORM INSIDE CORNER UNIT
NOT TO SCALE



SILT FENCE DETAILS
NOT TO SCALE

WOOTEN ENGINEERING
CIVIL PLANNING + DESIGN
1249 Pencarro Blvd
Foley, Alabama 36535
(251) 269-8689
jww@wooteneng.coom
www.wooteneng.com

ALABAMA LICENSED NO. 28562 PROFESSIONAL ENGINEER JASON W. WOOTEN

DRAWING DATA:

PROJECT NUMBER: WE23-13
DRAWING FILE: WE23-13 FAIRHOPE BLUFF.DWG
DATE: October 30, 2023
DRAWN BY: JWW

REVISIONS:					
				1	00/00/2023

DETAILS

FAIRHOPE BLUFF REPAIR

SOUTH MOBILE STREET
FAIRHOPE, ALABAMA

SHEET NUMBER:

C-05 OF 5