

KARAN

Property of  
Flood Control District of MC Library  
Please Return to  
2801 W. Durango  
Phoenix, AZ 85009

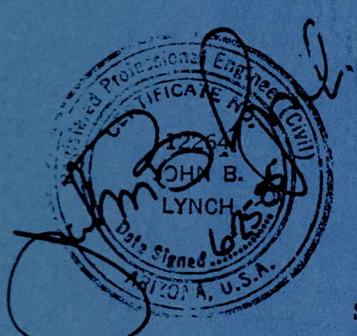
CONTRACT DOCUMENTS

AND

SPECIAL PROVISIONS

AGUA FRIA RIVER IMPROVEMENTS  
I-10 TO THOMAS ROAD

CONTRACT NO. FCD 85-16



DIBBLE & ASSOCIATES  
CONSULTING ENGINEERS

AND

SIMONS LI, & ASSOCIATES, INC.



June 20, 1985

SUPPLEMENTARY TO MARICOPA ASSOCIATION OF GOVERNMENTS UNIFORM  
STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION EDITION OF  
1979 AND REVISIONS AND SUPPLEMENTS THERETO.

A109.501

Property of  
Flood Control District of MC Library  
Please Return to  
2801 W. Durango  
Phoenix, AZ 85009

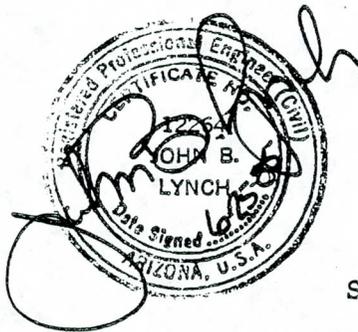
CONTRACT DOCUMENTS

AND

SPECIAL PROVISIONS

AGUA FRIA RIVER IMPROVEMENTS  
I-10 TO THOMAS ROAD

CONTRACT NO. FCD 85-16



DIBBLE & ASSOCIATES  
CONSULTING ENGINEERS

AND

SIMONS LI, & ASSOCIATES, INC.



June 20, 1985

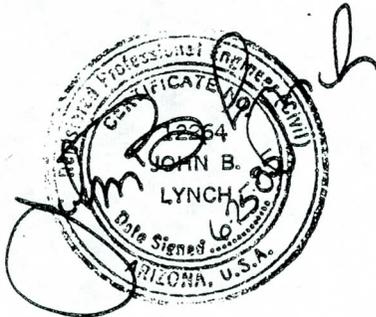
SUPPLEMENTARY TO MARICOPA ASSOCIATION OF GOVERNMENTS UNIFORM  
STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION EDITION OF  
1979 AND REVISIONS AND SUPPLEMENTS THERETO.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CONTRACT NO. FCD 85-16

TABLE OF CONTENTS

1.	Invitation for Bids	INV. 1 - 2
2.	Instruction to Bidders	I.B. 1 - 4
3.	Construction Special Provisions	S.P. 1 - 55
4.	Bid Proposal	P. 1 - 5
5.	Contract	C. 1 - 2
6.	Statutory Payment Bond	PAY. 1
7.	Statutory Performance Bond	PERF. 1
8.	No Collusion Affidavit	N.C.A. 1
9.	Certificate of Insurance	C.I. 1 - 2



INVITATION FOR BIDS  
(Construction Contract)

PROJECT: AGUA FRIA RIVER IMPROVEMENTS Ref. Invitation FCD 85-16  
INTERSTATE 10 TO THOMAS ROAD Date: July 8, 1985  
Issued by: Flood Control  
District, Maricopa  
County

LOCATION: ALONG THE AGUA FRIA RIVER FROM APPROXIMATELY 680 FEET  
SOUTH OF INTERSTATE 10 TO APPROXIMATELY 200 FEET SOUTH  
OF THOMAS ROAD IN SECTIONS 1 AND 2, TOWNSHIP 1 NORTH,  
RANGE 1 WEST AND SECTIONS 35 AND 36, TOWNSHIP 2 NORTH,  
RANGE/WEST, GILA AND SALT RIVER BASE AND MERIDIAN,  
MARICOPA COUNTY, ARIZONA

SEALED BIDS, IN SINGLE COPY FOR THE WORK DESCRIBED HEREIN WILL BE  
RECEIVED UNTIL 2:00 p.m. LOCAL TIME AT THE PLACE OF  
THE BID OPENING August 6, 1985 IN THE OFFICE OF  
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, 3335 WEST DURANGO  
STREET, PHOENIX, ARIZONA 85009, AND AT THAT TIME PUBLICLY OPENED.

A PRE-BID CONFERENCE WILL BE HELD AT THE OFFICE OF THE FLOOD  
CONTROL DISTRICT OF MARICOPA COUNTY, 3335 WEST DURANGO STREET,  
PHOENIX, ARIZONA ON July 22, 1985 AT 10:00  
A.M. ALL PROSPECTIVE BIDDERS ARE URGED TO ATTEND.

BID SECURITY IN AN AMOUNT OF NOT LESS THAN FIVE PERCENT (5%) OF  
THE TOTAL BID PRICE MUST BE SUBMITTED WITH EACH BID. THE BID  
SECURITY MAY BE IN THE FORM OF A BID BOND, CASHIERS CHECK, POSTAL  
MONEY ORDER, OR CASH. THE BID SECURITY WILL BE MADE PAYABLE TO  
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY AS A GUARANTEE THAT  
IF THE WORK IS AWARDED TO THE BIDDER, HE WILL WITHIN TEN (10)  
DAYS FROM THE DATE OF SUCH AWARD, ENTER INTO PROPER CONTRACT AND  
BOND CONDITIONS FOR THE FAITHFUL PERFORMANCE OF THE WORK. OTHERWISE,  
SAID AMOUNT WILL BE FORFEITED TO THE FLOOD CONTROL DISTRICT. BID  
SECURITY WILL BE RETURNED AS PRESCRIBED BY MAG 103.

THE SUCCESSFUL BIDDER SHALL BE REQUIRED TO FURNISH PERFORMANCE  
AND PAYMENT BONDS IN PENAL SUMS NOT LESS THAN ONE HUNDRED PERCENT  
(100%) RESPECTIVELY, OF THE ORIGINAL AMOUNT OF THE CONTRACT.

DESCRIPTION OF WORK:

THE PROPOSED PROJECT INVOLVES CHANNELIZATION OF THE AGUA FRIA  
RIVER, FROM 680 FEET SOUTH OF THE INTERSTATE-10 BRIDGE TO 195  
FEET SOUTH OF THOMAS ROAD, IN SECTIONS 1 AND 2 TOWNSHIP 1 NORTH  
AND RANGE 1 WEST, SECTIONS 35, 36 TOWNSHIP 2 NORTH, RANGE 1 WEST,  
GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

THE WORK CONSISTS OF FURNISHING ALL MATERIAL, LABOR, AND EQUIPMENT NECESSARY TO CONSTRUCT LEVEES, SOIL-CEMENT BANK PROTECTION, SOIL CEMENT GRADE-CONTROL STRUCTURES, CHANNEL EXCAVATION, UTILITY TOWER PROTECTION, AND OTHER INCIDENTAL ITEMS AS SHOWN ON THE PLANS OR AS SPECIFIED HEREIN.

THE WORK SHALL COMMENCE WITHIN SEVEN (7) CALENDAR DAYS AND BE COMPLETED WITHIN THREE HUNDRED (300) CALENDAR DAYS AFTER RECEIPT OF THE NOTICE TO PROCEED.

NOTICE: THE BID SCHEDULE, SPECIAL PROVISIONS, INSTRUCTIONS TO BIDDERS, UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1979 EDITION (MAG) AND REVISIONS AND SUPPLEMENTS THERETO, DRAWINGS LISTED UNDER THE CONTENTS, WILL BE INCORPORATED IN AND BECOME A PART OF THE RESULTANT CONTRACT.

CHERIE ELLIG, CLERK  
BOARD OF DIRECTORS  
FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY**  
**FCD NO. 85-16**  
**INSTRUCTIONS TO BIDDERS**

1. Location of the Work:

The location of the proposed work is along the Agua Fria River, from 680 feet South of the Interstate 10 bridge to 195 feet South of Thomas Road, in Sections 1 and 2 Township 1 North and Range 1 West, Sections 35, 36 Township 2 North, Range 1 West, Gila and Salt River Base and Meridian, Maricopa County, Arizona.

2. Contract Plans, Special Provisions, and Contract Documents:

Plans, Special Provisions, and forms for Proposal, Bidding Schedule, Contract Agreement and Performance Bond may be obtained from the Flood Control District of Maricopa County, 3335 West Durango Street, Phoenix, Arizona, upon payment of \$ 25.00 by check payable to the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. This payment will not be refunded.

The project consists of furnishing all materials, labor, and equipment necessary to construct levees, soil cement bank protection, soil cement grade-control structures, channel excavation, utility tower protection, and other incidental items as are necessary for the completion of the project as shown on the plans or as called for in the Special Provisions or in the Maricopa Association of Governments Uniform Standard Specifications for Public Works Construction.

3. Explanation to Bidders:

Any explanations desired by the Bidder, questions, or items for clarification regarding the meaning or interpretation of the Invitation for Bids, Drawings, Specifications, etc., may be addressed to the Chief Engineer and General Manager, preferably in writing, prior to the pre-bid conference. Any answers, interpretations, or clarifications affecting the cost will be addressed to all bidders in an addendum to the invitation. The receipt of an addendum by the Bidder must be acknowledged in the space provided on the bid form or by letter or telegram received before the time set for the bid opening. Oral explanations or instructions given before the award of the contract will not be binding.

4. Conditions Affecting the Work:

Bidders should visit the site and make such other steps as

may be reasonably necessary to ascertain the nature of the work, the general and local conditions which can affect the work and the cost thereof. Failure to do so will not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the work (see MAG 102.4).

The Contractor is hereby notified that the Maricopa County Highway Department will have a construction project #68105, McDowell Road Bridge, ongoing during the same time of this project. The Flood Control District of Maricopa County will also have a channelization project (#85-10) ongoing from Indian School Road to Thomas Road during this same time. The Flood Control District of Maricopa County also anticipates awarding a contract for channelization of the Agua Fria River from Buckeye Road to Interstate 10 during the course of construction of this project (#85-16).

The Contractor will make all efforts as directed by the Engineer to avoid any conflicts with either project. Full cooperation in this area will be expected and no time extension will be recognized.

5. Bidders Qualifications:

Before a bid is considered for award, a Bidder may be requested by the Chief Engineer and General Manager of the Flood Control District to submit a statement regarding his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the work (see Section 102 - Bidding Requirements and Conditions of the Standard Specifications and the Modifications thereto found in the Special Provisions).

6. Bid Guarantee:

Where a bid guarantee is required by the Invitation for Bids, failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

If the successful bidder, upon acceptance of his bid by the Flood Control District with the period specified herein for acceptance (sixty days if no period is specified) fails to execute such further contractual documents, if any, and give such bond(s) as may be required by the terms of the bid as accepted within the time specified (ten days if no period is specified) after receipt of the forms by him, his contract may be terminated for default. In such event, he shall be

liable for any cost of procuring the work which exceeds the amount of his bid, and the bid guarantee shall be available toward offsetting such difference.

7. Preparation of Bids:

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

No bids will be considered unless all items in the Bid Schedule are priced. In case of an error in the extension of price, the unit price shall govern. The quantities listed on the Bid Schedule on which unit prices are requested are estimates only.

Unless called for, alternate bids will not be considered.

Modifications of bids already submitted will be considered if received at the office designated in the Invitation for Bids by the time set for opening bids.

8. Submission of Bids:

Bids must be sealed, addressed to the Chief Engineer and General Manager, Flood Control District of Maricopa County, 3335 West Durango, Phoenix, Arizona 85009, and marked to identify the bid to the referenced Contract FCD number. Failure to appropriately identify the bid may result in a premature opening of, or a failure to open, such bid. The name of the Bidder shall be on the outside of the envelope (see MAG 102.9).

9. Withdrawal of Bids or Modifications:

Bids may be withdrawn by written request received from the Bidder prior to the time set for opening of bids.

10. Public Opening of Bids:

Bids will be publicly opened at the time and place set for the opening in the Invitation for Bids. Their content will be made public for the information of bidders and others interested, who may be present either in person or by representative.

11. Award of Contract:

Award and execution of a contract shall be in accordance with MAG Section 103.

12. Specifications:

Specifications referred to herein shall include all revisions and amendments in effect on the date of issuance of the Invitation for Bids. These instructions, Special Instructions to Bidders, and the herein contained Construction Special Provisions supplement the Uniform Standard Specifications herein referred to by "MAG" section number of paragraph number: however, in case of conflict, these instructions and Special Provisions supersede the Uniform Standard Specifications (MAG).

CHERIE ELLIG, CLERK  
BOARD OF DIRECTORS  
FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY

CONSTRUCTION SPECIAL PROVISIONS

Agua Fria River Improvements  
Contract FCD No. 85-16

GENERAL

Location of Work:

The location of the proposed work is along the Aqua Fria River, from 680 feet South of the Interstate-10 Bridge to 195 feet South of Thomas Road, in Sections 1 and 2 Township 1 North and Range 1 West, Sections 35, 36 Township 2 North, Range 1 West, Gila and Salt River Base and Meridian, Maricopa County, Arizona.

Scope of Work:

The project consists of furnishing all material, labor, and equipment necessary to construct levees, soil cement, bank protection, soil cement grade-control structures, channel excavation, utility tower protection, and other incidental items as shown on the plans or as specified herein.

Specifications:

The work embraced herein shall be performed in accordance with the requirements of the following separate document:

Maricopa Association of Governments (MAG) Uniform standard Specifications for Public Works Construction, Edition of 1979, inclusive of all revisions and amendments in effect on the date of issuance of the invitation for bids, which is herein referred to as the "Standard Specifications."

Intent and Purpose:

The intent and purpose of these Special Provisions is to interpret, correct, and supplement the Standard Specifications to the extent and in the manner necessary and to provide additional specifications for items of work not found in the Standard Specifications.

Permits and Approvals:

Prior to the start of construction, the Contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work. Copies of the fully executed permits shall be furnished to the Engineer.

Work Standards:

The Contractor shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor Regulations (29 CFR Part 5).

Contract Time:

The Contractor shall start work within seven (7) calendar days and complete all work on the project within three hundred (300) calendar days after the date of Notice to Proceed.

Water, Light, Power, Heat, Telephone:

All water for construction purposes, drinking water, lighting, temporary electric power, heat and telephone service shall be arranged for and provided for the requirements of the work by the Contractor at his expense.

General Comment:

The cost of all work required under this contract as shown on the plans for which there are no specific items shown on the Bidding Schedule, shall be included in the prices bid for related items.

Ground and Surface Water:

The water-table elevations at the site during certain periods of the year may create a need for dewatering during the construction of the Agua Fria River channelizing and diverting surface water. Costs for this work shall be considered incidental to and included in the bid items for Channel Excavation and the various bid items for bank protection.

## SECTION 101 - ABBREVIATIONS AND DEFINITIONS

### 101.2 - Definitions and Terms:

Superseding the Standard Specifications definition of "Engineer":

Engineer: The individual, firm, partnership, corporation or combination thereof designated by the Maricopa County Flood Control District to act as the Engineer, on the District's behalf, either directly or through a duly authorized representative.

Superseding the Standard Specifications definition of "Budget Project":

Budget Project: A project financed by funds set aside in the annual budget or otherwise approved by the Board of Directors of the Flood Control District of Maricopa County.

Superseding the Standard Specifications definition of "Owner":

Owner: The Flood Control District of Maricopa County, acting through its legally constituted officials, officers, or employees.

## SECTION 102 - BIDDING REQUIREMENTS AND CONDITIONS

In addition to the requirements of Subsection 102.1 - Eligibility and Preference of the Standard Specifications:

Each bidder shall furnish the owner satisfactory evidence of his competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of: (1) statements covering the bidder's past experience on similar work; (2) a list of equipment that would be available for the work; and, (3) a list of key personnel that would be available and their past experience on similar work. In addition, each bidder shall furnish the owner satisfactory evidence of his financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liability as of the last calendar year or the Contractor's last fiscal year. Such statement or report shall be certified by a public accountant. At the time of submitting such financial statement or report, the bidder shall further certify whether his financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect his (bidder's) true financial condition at the time

such qualified statement or report is submitted to the owner.

Unless otherwise specified, a bidder may submit evidence that he is prequalified with the State Highway Division and is on the current "bidder's list" of the State in which the proposed work is located. Such evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility and competency to perform the proposed work in lieu of the statement or report hereinbefore specified.

If awarded the Contract, the bidder will furnish certificates from the owners of leased equipment to the effect that in case of default, the bidder has the right to take over the leased equipment for use in completing the work.

Additional to the requirements of Subsection 102.4 - Examination of Plans, Special Provisions, and Site of Work:

- A. The Bidder and all subcontractors he intends to use have carefully and thoroughly reviewed the Plans, Specifications, Special Provisions, and other Contract Documents and have found them complete and free from ambiguities and sufficient for the purpose intended.
- B. The Bidder and all workmen, employees, and subcontractors he intends to use are skilled and experienced in the type of construction represented by the Plans and Contract Documents.
- C. Neither the bidder nor any of the employees, agents, intended suppliers, or subcontractors have relied upon any verbal representations, allegedly authorized or unauthorized from the Owner, his employees or agents including engineers or consultants, in assembling the bid.
- D. The bid provided is based solely on the Plans, Specifications, Special Provisions, Contract Documents and properly issued written Addenda and not upon any other written representation.
- E. The Bidder has carefully examined the site of the work and that from his own investigation(s) has satisfied himself as to the nature and location of the work and the character, quality, quantities of materials, and difficulties to be encountered, the kind and extent of equipment and other facilities needed for the performance of the work, the general and local conditions, and other items which may, in any way,

affect the work or its performance.

In addition to the requirements of Subsection 102.5 - Preparation of Proposal:

It shall be the responsibility of prospective bidders to determine, prior to submission of a bid, if any addenda have been issued. This may be accomplished by calling 602-262-1501. Any addendum issued, if not already bound into the Special Provisions, must be included as a part of the Special Provisions, and any quantities on the Bidding Schedule requiring change shall be adjusted by pen and ink to the new figure.

Bids that do not include appropriate addenda and show appropriate changes to the Bidding Schedule shall be invalid.

#### SECTION 103 - AWARD AND EXECUTION OF CONTRACT

Additional to the Standard Specification requirements of Subsection 103.6.1 - Contractor's Insurance:

Concurrently with the execution of the Contract, the Contractor shall furnish Certificates of Insurance to the Flood Control District of Maricopa County. The types of insurance and the limits of liability shall be as indicated in the INDEMNIFICATION AND INSURANCE clauses as contained in the final page of these Contract Documents and Special Provisions.

On all policies, the Flood Control District of Maricopa County shall be named as an additional insured.

#### SECTION 104 - SCOPE OF WORK

Additional to the Requirements of Subsection 104.2 - Alterations of Work:

No adjustment in the contract unit price for a minor item will be made unless it becomes a major item in accordance with the provisions of Section 104 of the Standard Specifications.

#### SECTION 105 - CONTROL OF WORK

Additional to the Requirements of Subsection 105.1 - Authority of the Engineer:

In an emergency affecting the safety of life or of the

adjoining property, the Contractor, without special instruction or authorization from the Engineer, is hereby permitted to act at his discretion to prevent such threatened loss or injury, and he shall so act, without appeal, if so instructed or authorized. Any compensation claimed by the Contractor on account of emergency work shall be determined by the Engineer.

Additional to the requirements of Subsection 105.2 - Plans and Shop Drawings:

The number of copies of plans/shop drawings required for review and/or approval shall be as follows:

Initial submittal: Three (3) copies. One (1) copy will be returned to the Contractor.

Final Submittal: Five (5) copies. Two (2) copies will be returned to the Contractor.

Additional to the Requirements of Subsection 105.6 - Cooperation With Utilities:

Utility locations, as shown on the plans, were compiled based on the best information available. Utility locations are not intended to be exact or complete. Prior to commencing construction, the Contractor shall verify the location of all utilities with the appropriate organization.

The Contractor's attention is directed to Subsection 105.6 (Cooperation With Utilities) and to Subsection 107.11(Contrator's Responsibility For Utility Property And Services) of the Standard Specifications. In addition, the Contractor's attention is directed to the requirements of Arizona Revised Statutes 40-370.21 through 40-370.29 requiring all parties excavating in public streets, alleys or utility easements to first secure the location of all underground facilities in the vicinity of the excavation.

Whenever any work is schedule which may affect a utility, the Contractor will be required to give the respective owner sufficient advance notice so that the owner may provide an Inspector to prevent damage to the utility. The following utilities are known to have facilities in the area of the construction:

Arizona Public Service	932-2300
Mountain Bell	235-3278
Salt River Project	273-8888
Tucson Electric Power Company	1-622-6661
Western Area Power Administration	293-8844

City of Avondale  
Southwest Gas Company

932-1909  
932-4860

At least forty-eight (48) hours prior to commencing excavation, the Contractor shall call Blue Stake Center between the hours of 7:30 a.m. and 4:30 p.m., Monday through Friday, for information concerning the location of buried utilities in the area of construction. The telephone number to call is: 263-1100. It shall be the responsibility of the Contractor to contact the utility companies in order to determine if there is a need for any bracing or shoring of facilities on the project. If bracing or shoring is necessary, the Contractor shall do so to the satisfaction of the utility company. No measurement or direct payment will be made for such bracing or shoring.

Additionally, Tucson Electric Power Company, the Salt River Project, and the U.S. Department of Energy, Western Area Power Administration maintain energized aerial electric power lines in the vicinity of this project. Do not consider these lines to be insulated. Construction personnel working in proximity to these lines are exposed to an extreme hazard from electrical shock. Contractors, their employees, and all other construction personnel working on this project shall be aware of the danger and instructed to take adequate protective measures as required by the NES Code for 345 kv transmission lines and OSHA Standard 1926.550(a)15. Fill material is not allowed on or near steel components of towers. Vehicular ingress and egress shall be maintained to the towers both during and after construction.

Additional to the requirements of Subsection 105.10 - Inspection of Work:

It shall be the responsibility of the Contractor and/or Materials Supplier to maintain in-house quality control. The contractor shall submit a request for density testing forty-eight (48) hours in advance. Should a density test prove unsatisfactory, one additional test will be conducted on that location, after reworking, at the contractor's request. Should this test also yield unacceptable results, additional re-testing will be done at the Contractor's expense. The unit charges for these re-tests are available from the Engineer.

#### SECTION 106 - CONTROL OF MATERIAL

Additional to the Standard Specification requirements of Subsection 106.1 - Source of Materials and Quality:

#### Construction of Stockpile:

The Engineer or his representative will inspect the construction of all stockpiles to insure that the following requirements are complied with at all times.

Stockpiles shall be constructed on level, firm ground free of brush, trees, stumps, roots, rubbish, debris and other objectionable or deleterious material. Sufficient access shall be provided around the entire stockpile to sample and remove material in accordance with these provisions.

Stockpiles shall be constructed in layers, each layer not exceeding two (2) feet in thickness.

The total height of the stockpile shall not exceed fifteen (15) feet or the reach of the equipment employed to remove material for sampling and utilization, whichever is less.

#### Sampling:

During construction of stockpiles to be utilized in the production of soil cement, the Contractor will be solely responsible for monitoring the uniformity of the material being placed therein to assure conformance with the gradation requirements specified for said soil material. The Contractor's attention is directed to the soils reports prepared for this project and which are on file at the office of the Flood Control District of Maricopa County, 3335 West Durango Street, Phoenix, Arizona. The aforementioned reports indicate that the upper three (3) to five (5) feet of material in overbank areas adjacent to the present Agua Fria Channel are very fine, falling outside the specified gradation band for soil cement. The Contractor is advised that these fine-grained soils cannot be incorporated into the stockpile without prior blending with courser material. Upon completion of the stockpile, the Contractor shall notify the Engineer in order to allow for verification of the soil-cement mix design determined during design from random site sampling.

The Contractor shall provide the manpower and equipment necessary to sample the stockpile in accordance with the following procedure:

Under the direction of the Engineer, the Contractor shall use a front-end loader to excavate a face for the full height of the stockpile, extending into the stockpile a distance specified by the Engineer, at four (4) different locations around the perimeter of the stockpile. The front-end loader shall then be used to channel the total excavated face at each location from the bottom to the top

in one operation, and the material obtained shall be dumped on the ground in piles.

The Engineer or his representative will then sample each of the four (4) piles by channeling it with a hand shovel to four (4) locations equally spaced around the perimeter.

Approval of a stockpile shall not relieve, in any degree, the full responsibility of the Contractor to furnish in its final position, a material conforming to all the specification requirements.

#### Utilization of Stockpiles:

Stockpiles of material may be used for any item for which it is acceptable.

Material removal from accepted stockpiles for project utilization shall be by side excavation for the full height of the stockpile unless otherwise approved, in writing, by the Engineer.

Unless otherwise stipulated, the Contractor shall provide and pay for all supplies, materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary for execution and completion of the project. Unless otherwise specified, all materials and supplies shall be new and of the best quality. The Contractor, if required, shall furnish satisfactory evidence as to the kind and quality of supplies and materials.

Additional to the Standard Specification requirements of Subsection 106.2 - Samples and Tests of Materials:

It shall be the responsibility of the Contractor and/or materials supplier to maintain in-house quality control of processed materials.

The Contractor shall submit a request for materials testing forty-eight (48) hours in advance. All re-testing of materials or material sources shall be done at the Contractor's expense. The unit charges for these re-tests are available from the Engineer.

#### SECTION 107 - LEGAL RELATION AND RESPONSIBILITY OF PUBLIC

Additional to the requirements of Subsection 107.2 - Permits

The Contractor shall be responsible for obtaining all permits and licenses, pay all charges, fees, taxes and give all notices necessary and incidental to the due and lawful prosecution of the Work. Permits for earth moving may be obtained from the Bureau of Air Pollution Control, Maricopa County Department of

Health Services, 1845 East Roosevelt, telephone number 258-6381.

Additional to the requirements of Subsection 107.5 - Safety, Health, and Sanitation Provisions:

The Contractor shall protect, indemnify and defend the Flood Control District the Engineer and his employees, officers, and agents against any claims of liability arising from or based on the violation of the U.S. Occupational Safety and Health Act or any other safety provisions in law or equity.

The Contractor shall provide, at the site, such equipment and medical facilities as are necessary to supply first-aid service to anyone who may be injured in connection with the work.

The Contractor must promptly report, in writing, to the Engineer all accidents whatsoever, arising out of or in connection with the performance of the work, whether on or adjacent to the site, which caused death, personal injury, or property damages, giving full details and statements of witnesses. In addition, if death or serious damages are cause, the accident shall be reported immediately by telephone or messenger to the Engineer.

If any claim is made by anyone against the Contractor or any Subcontractor on account of any accident, the Contractor shall promptly report the facts, in writing, to the Engineer, giving full details of the claim.

Additional to the requirements of Subsection 107.9 - Protection and Restoration of Property and Landscape:

All existing drainage channels of any size disturbed by construction, whether shown on the plans, or not, shall be reconstructed, at their original location, to drain properly without unnecessary erosion.

Before removing any fences, enclosed yards, or structures confining any livestock such as horses, cows, etc., the Contractor shall notify the property owner with adequate time for their safe removal or confinement elsewhere.

When requested by the property owner or the Engineer, the Contractor shall be required to erect temporary fencing, at no cost to the County or property owner, to prevent the escape or injury of said livestock during construction.

The Contractor shall be responsible for all damaged and/or destroyed Land Monuments and Property Marks. Said Monuments and Marks shall be replaced or restored by the Contractor.

Final acceptance by the Engineer will not relieve the responsibility of the Contractor to protect said Monuments and Marks. The Contractor shall receive no compensation for restoring damaged or obliterated Land Monuments, except where called for on plans.

Additional to the requirements of Subsection 107.10 - Contractor's Responsibility for Work:

The Contractor shall guarantee the work against defective workmanship or materials for a period of (1) year from the date of its final acceptance under the contract, ordinary wear and tear and unusual abuse or neglect excepted.

Any omission on the part of the Engineer to condemn defective work or materials at the time of construction shall not be deemed an acceptance, and the Contractor will be required to correct defective work or materials at any time before full acceptance and within one (1) year thereafter.

Should any defects develop within one (1) year from the date of final acceptance due to faults in workmanship or materials, the Contractor shall, within fourteen (14) calendar days of receipt of written notice from the Flood Control District of Maricopa County, begin making the necessary repairs to the satisfaction of the Engineer. Such work shall include the repair or replacement of other work or materials damaged or affected by making the above repairs or corrective work, all at no additional cost to Maricopa County.

In case of work, materials, or equipment for which written warranties are required by the Standard Specifications or Special Provisions, the Contractor shall provide or secure from the appropriate Subcontractor or supplier such warranties addressed to and in favor of the Flood Control District of Maricopa County and deliver same to the Engineer prior to final acceptance of the work. Delivery of such warranties shall not relieve the Contractor from any obligation assumed under any other provisions of the contract.

The warranties and guaranties provided in this subsection of the contract documents shall be in addition to and not in limitation of any other warranties, guaranties or remedies required by law.

In the event that the Contractor should fail to make such repairs, adjustment, or other work that may be made necessary by such defects, the Flood Control District may do

so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

Additional to the Requirements of Subsection 107.11 - Contractor's Responsibility for Utility Property and Services:

The Contractor shall take full responsibility for costs incurred due to damage to utilities as a result of grading or excavation operations.

Utility locations shown on the plans are approximate and all utilities are not necessarily shown. The possibility of conflicts with utilities exists. If these conflicting utilities interfere with the Contractor's normal progress towards completion of this project, the Engineer may authorize the Contractor to relocate said conflicting utilities by Force Account.

The Contractor shall be responsible for coordination and cost of all utility relocations indicated on the plans as to be done by the Contractor.

#### SECTION 108 - COMMENCEMENT, PROSECUTION, AND PROGRESS

In addition to the requirements of the Standard Specifications:

##### 108.4 - Contractors Construction Schedule

The Contractor shall furnish, at the preconstruction conference, a proposed progress schedule for the work including miscellaneous items of construction which make up this project. The progress schedule shall be updated and submitted to the Engineer prior to approval of monthly payment requests.

After the work is in progress, the Contractor shall submit weekly work schedules indicating the number of personnel, type of equipment, and location and nature of the work to be performed. Changes in the Contractor's progress schedule requiring and increase in the Flood Control District's engineering and/or technical personnel on the project will not be put into effect for fifteen (15) days after submission of the schedule change to the Engineer or until the Engineer has made arrangements for the additional personnel, whichever is the shorter time.

##### 108.5 - Limitation of Operations:

Should the Contractor elect to perform any work after regular working hours, on weekends, or legal holidays, any charges incurred by the District for inspection of the work, surveys, or tests of materials will be deducted from monies due or to become

due to the Contractor.

108.7 - Determination and Extension of Contract Time:

The Contractor shall complete all work on the project within 365 calendar days after receipt of the notice to Proceed.

The contract time may be changed only by an executed Change Order. The Contractor must request, in writing, any extension of the contract time in accordance with Subsection 108.7 of the Standard Specifications within ten (10) days of the occurrence of the event for which the extension is requested. Delays beyond the reasonable control of the Contractor, as stated in Standard Specifications 108.7, are further defined as: war, government regulations, labor disputes, strikes, fires, floods, adverse weather necessitating cessation of work, other similar action of the elements, inability to obtain materials, equipment or labor because of Federal Government restrictions arising out of the national defense or war program, required "extra work" or other specific reasons as may be further described in the specification, which may constitute such a delay.

If delays beyond the Contractor's control are caused by reasons other than those mentioned above, but substantially equal in gravity to those enumerated, and an extension of time is deemed by the Engineer to be in the best interests of the County, an extension of time may be granted, but the Contractor shall not be entitled to damages or additional payment due to such delays. If delays beyond the Contractor's control are caused solely by action or inaction by the Maricopa County Flood Control District or its agents, such delays will entitle the Contractor to an extension of time only.

Extension of time, when granted, will be based upon the effect of delays to the project as a whole and will not be granted for noncontrolling delays to minor included portions of work unless it can be shown that such delays did, in fact, delay the progress of the project as a whole.

No work on Saturdays, Sundays, or holidays will be permitted unless written permission is obtained from the Engineer at least 48 hours in advance. If the Contractor receives permission to work on a Saturday, Sunday, or holiday, said time shall be charged against the contract time for "working day" contracts.

108.8 - Guarantee and Warrantee Provisions:

In case of work, materials, or equipment for which written warranties are required by the Standard Specifications or Special Provisions, the Contractor shall provide or secure from the appropriate Subcontractor or supplier such warranties addressed to and in favor of the Maricopa County Flood Control District and

deliver same to the Engineer prior to final acceptance of the work.

In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by defects in workmanship or materials, the Maricopa County Flood Control District may cause the work to be properly done in accordance with the provisions of the Contract Documents and to pursue whatever recourse it deems necessary to recover from the Contractor any additional expense or cost it may have incurred. The Performance Bond shall remain in full force and effect throughout the guarantee period.

108.9 - Failure to Complete on Time:

In addition to the requirements of Subsection 108.9 of the Standard Specifications:

Traffic control will not be paid for by the Maricopa County Flood Control District after the expiration of the Contract time specified for the completion of the work under Subsection 108.7 of the Special Provisions, including any time extensions granted, although necessary traffic control devices and personnel shall remain in place and be modified and maintained as required by the Standard Specifications, Special Provisions, and the Engineer.

When the work specified in the contract is not completed within the number of calendar days or working days specified therein, engineering and inspection expenses incurred by the Flood Control District of Maricopa County upon the work from the contract time originally fixed in the contract to the final date of completion of the work may be charged to the Contractor and may be deducted by the Flood Control District from the final monies due to the Contractor. Consideration of any extra work or change order added to the original contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by the Flood Control District before assessing engineering and inspection charges against the Contractor. Such charges will be assessed, however, in cases where the work has been unduly delayed by the Contractor because of unwarranted reasons, inefficient operation or for any other reason for which the Flood Control District determines the Contractor liable.

The assessing of engineering charges shall be in addition to Liquidated Damages as provided for above.

Nothing contained in this section shall prohibit the Flood Control District from deducting from monies due or to become due to the Contractor any other costs incurred by the Flood Control

District directly attributable to the delay in completing the Contract.

108.10 - Forfeiture and Default of Contract:

If, in the judgement of the Engineer, the Contractor, in connection with any job or jobs assigned hereunder, refuses or fails to supply a sufficient number of workmen, or the proper quality of material, of the required equipment, or refuses or fails in any respect to carry on the work in a workmanlike manner with promptness and diligence, or violates any of the terms or conditions of the Contract Documents, such refusal, failure or violation shall constitute a default by the Contractor under this Contract, and in such event the Owner may give the Contractor twenty-four (24) hours written notice to remedy such default.

Upon the failure of the Contractor to remedy such default within such time, the Owner shall be relieved of any further duties or obligations hereunder and the Owner reserves the right to remove the Contractor from the job, to take over any or all labor, materials and appliances on the ground, and to complete or have completed any part or all of the individual work assignments then in progress.

108.12 - Temporary Suspension of Work:

The Engineer shall have the authority to suspend the work wholly or in part, for such period as he may deem necessary, due to unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as he may deem necessary due to the failure on the part of the Contractor to carry out orders given, or to perform any provision of the Contract. The Contractor shall immediately comply with the written order of the Engineer to suspend the work wholly or in part. The suspended work shall be resumed when conditions are favorable and methods are corrected, as ordered or approved in writing by the Engineer.

In the event that a suspension of work is ordered as provided above, and should such suspension be ordered by reason of the failure of the Contractor to carry out orders or to perform any provision of the Contract, or by reason of weather conditions being unsuitable for performing any item or items of work, which work, in the sole opinion of the Engineer, could have been performed prior to the occurrence of such unsuitable weather conditions had the Contractor diligently prosecuted the work when weather conditions were suitable, the Contractor, at his expense, shall do all the work necessary to provide a safe, smooth, and unobstructed passageway through construction for use by public traffic during the period of such suspension as provided in Subsection 107.6, "Public Convenience and Safety," and as specified in the Special Provisions for the work. In the event

that the Contractor fails to perform the work above specified, the County will perform such work and the cost thereof will be deducted from moneys due or to become due to Contractor.

In the event that a suspension of work is ordered by the Engineer due to unsuitable weather conditions, and in the sole opinion of the Engineer, the Contractor has prosecuted the work with energy and diligence prior to the time that operations were suspended, the cost of providing a smooth and unobstructed passageway through the work will be paid for as extra work as provided in Subsection 104.2 - Alteration of work, or at the option of the Engineer, such work will be performed by the Department at no cost to the Contractor.

If the Engineer orders a suspension of all of the work or a portion of the work which is the current controlling operation or operations, due to unsuitable weather or to such other conditions as are considered unfavorable to the suitable prosecution of the work, the days on which the suspension is in effect shall not be counted against the Contract time set forth under Subsection 108.7.

If suspension of work is ordered by the Engineer, due to the failure on the part of the Contractor to carry out orders given or to perform any provision of the Contract, the days on which the suspension order is in effect shall be counted against the Contract time set forth under Subsection 108.7.

In the event of a suspension of work under any of the conditions set forth in this Subsection, such suspension of work shall not relieve the Contractor of his responsibilities as set forth in Section 107, "Legal Relations and Responsibility to the Public."

#### SECTION 109 - MEASUREMENTS AND PAYMENTS

In lieu of the requirements for Subsection 109.5 - Actual Cost Work, the following shall apply:

The value of extra work performed in accordance with the requirements and provisions of Section 109 shall be determined by the Engineer in one or more of the following ways:

(A) By unit bid prices or lump sum, either as set forth in the original proposal or as agreed upon by both the Contractor and the Engineer and stipulated in the change orders authorizing the work. Should both parties fail to agree on a basis of payment, the Engineer may order the work done on an actual cost basis.

(B) By actual cost, for which reimbursement will be based in the following manner:

- (1) LABOR: The actual wages paid as shown by the payrolls of the Contractor plus 15 percent, for labor and foreman in direct charge of the work, or a proportionate amount of wages paid to foreman directly in charge of the work, but not exclusively engaged in direct supervision of such work.
- (2) MATERIALS: The invoice costs, plus 15 percent, for materials actually used in the work and accepted by the Engineer including any transport charges paid by the Contractor.
- (3) EQUIPMENT: For other than small tools and manual equipment, the use of which has been authorized by the Engineer, the Contractor will be paid in accordance with the latest approved schedule of Equipment Rental Rates of the Arizona Department of Transportation, unless another rate is agreed upon, in writing, before the work is started. No percentage will be added to any of these equipment rental rates.
- (4) BONDS, INSURANCE, AND TAXES: The actual cost, plus six percent (6%), when such can be shown to have been paid for property damage, liability, and Workman's Compensation Insurance premiums, unemployment insurance contributions and social security taxes.
- (5) STATEMENTS: No payment will be made for work performed until the Contractor has furnished the Engineer with duplicate, itemized statements of the cost of such work, detailed as follows:
  - a. Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.
  - b. Quantities of materials, prices, extensions, and transportation costs. These charges shall be submitted with the reports or, if not available, they shall be submitted with subsequent reports. In the event vendor's invoices are not submitted within fifteen (15) days after acceptance of the work, the Maricopa County Flood Control District reserves the right to establish the cost of such materials at the lowest current price at which said materials are available in the quantities concerned, delivered to the location of the work.
  - c. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of equipment.

- d. Cost of property damage, liability, and Workman's Compensation Insurance premiums, unemployment insurance contribution and social security taxes.
- (6) The Engineer will compare his records with the statements furnished by the Contractor, resolve any differences and make the necessary adjustments. When the actual cost of work is agreed upon and signed by both parties, it shall become the basis of payment for the work performed.
- (7) In the case where the actual cost work is performed by a Subcontractor, the above percentages will be added only once to the actual statement costs of the work; however, the Contractor may add five percent (5%) to the Subcontractor's costs, for labor and materials only, to cover his own overhead.
- (8) The Engineer is in charge of actual cost work and has the authority to direct which labor and equipment will be used, suspend operations, and refuse to pay for any labor and/or equipment which he feels is not doing productive work.

(C) By Force Account. Should both parties fail to agree on the basis of payments, the Engineer may have the work done or cause the work to be done, by in-house forces or by parties or means other than the Contractor, by force account. This work shall not invalidate the Contract nor release the surety.

## **SECTION 120 - CORRECTIVE REQUIREMENTS FOR DEFICIENCIES**

### **120.1 - General:**

It is recognized that variations from specifications may be classified as defects and vary in degree in their effect on the quality of the work.

In cases of failure to meet specifications, the Contractor may be given the option of removing and replacing the material at his own expense or accepting a payment adjustment. This option will be determined by the Engineer.

Penalties described below are for acceptance procedure only, not for approval procedure. On approval stage any material which is not within specifications will be rejected. For additional testing of corrected materials, the Contractor will be charged, said charges being deducted from his payment estimate. The quantity of defective material that the Contractor will be penalized for will be based on the ratio of tests showing deficiencies to the total number of tests taken.

In addition to the assessment of penalties, if defective material is found during production, production shall cease immediately and shall not begin again until calibration tests indicate that material is within specification limits.

## SECTION 201 - CLEARING AND GRUBBING

This work shall consist of clearing, grubbing, removing, and disposing of all trees, brush, stumps, roots, rubbish, debris, and miscellaneous structures (i.e. abandoned wells and conc. ditches) not covered under other contract items within the construction area. The Contractor shall clear such additional areas within the limits of the right-of-way and easement lines as specified, shown on the plans or as directed by the Engineer. Work under this item shall be progressed on the basis that NO BURNING will be permitted on or off the contract site. All wood and brush shall be disposed of within seven (7) calendar days after cutting or felling unless otherwise approved. Clearing and grubbing within the limits of easement lines will be delineated by the Engineer.

The Contractor shall take care to confine his operations to the areas so specified. Cacti shall be removed by the Contractor. Removal of cacti by the Contractor shall be in accordance with the "Arizona Native Plant Law," A.R.S Chapter 7.

Superseding the requirements of Subsection 201.5 - Payment, of the Standard Specifications:

Payment for clearing and grubbing will be made on a lump sum basis for work satisfactorily completed. Monthly payments will be made in proportion to the amount of work done as determined by the Engineer. Damages to existing facilities incurred during this work shall be repaired by the Contractor at no additional cost to the Flood Control District.

The amount bid for clearing and grubbing shall not exceed one percent (1%) of the total contract bid price excluding the bid price for clearing and grubbing. Should the bidder exceed the foregoing one percent (1%), the Flood Control District will make the necessary adjustment to determine the total amount bid based on the arithmetically correct proposal.

All other details for this item of work shall conform to Section 201 of the Standard Specifications.

## SECTION 203 - CHANNEL EXCAVATION

This item of work shall include excavation, removal of existing channel, levees and bank protection, watering, grading, shaping, and compaction. Excavated material, exclusive of old tires, rubbish, and other objectional materials, shall be used in fill areas and other areas within the project limits as directed by the Engineer.

Channel fill, where designated, shall be placed in eight (8) inch loose lifts and compacted to 85.0 percent of maximum density as determined by either AASHTO T-99 Method A; and AASHTO T-191, with the percent of density adjusted in accordance with the rock correction procedure for maximum density determination, standard detail, to compensate for the rock content larger than that which will pass a 3/4 inch sieve.

At the time of compaction, the moisture content of material to be used in fill areas shall be such that the specified relative compaction will be obtained and the fill will be firm and unyielding. Material containing excessive moisture shall not be compacted until the material is dry enough to obtain the required relative compaction. Compensation for additional work involved in drying fill material to the required moisture content shall be considered as included in the contract price for Channel Excavation and no additional compensation will be allowed.

Prior to commencing any excavation work, the Contractor shall notify the appropriate utility companies and arrange to have company line spotters present. The Contractor shall take full responsibility for costs incurred due to damage to utilities as a result of excavation or embankment operations. Utility locations shown are approximate and all utilities are not necessarily shown. No direct payment will be made for this work, the cost being included in the price for Channel Excavation.

The Contractor shall provide for continued access to private property during and after grading of the right-of-way has been accomplished, as indicated in the Plans. Any deviation from the Plans necessary for this purpose shall first be approved, in writing, by the Engineer. The Contractor shall secure written permission from the appropriate property owner prior to undertaking any work outside the designated right-of-way necessary for this purpose. No direct payment will be made for this work, the cost being included in the price for Channel Excavation.

Measurement and Payment:

The quantities of Channel Excavation will be measured by the cubic yard, in the original position. The Engineer will compute the quantities of Channel Excavation by a method which in the opinion is best suited to obtaining an accurate determination of the material moved. Over-excavation shall not be paid for unless authorized, in writing, by the Engineer.

The Contract unit price for all pay items of work encompassed by this Section, shall be full compensation for furnishing all equipment, labor, and materials as necessary to complete the work of the item, except where specific costs are designated or included in another pay item of work. All incidental costs, such as acquisition of borrow pits or material outside of the right-of-way, rock drilling and blasting, compaction and special

test requirements, stockpiling and rehandling of materials, precautionary measures to protect private property and utilities, to form and trim graded surfaces, proofing rolling, re-proof rolling, corrective work disclosed by proof rolling and any delays caused by this corrective work, shall all be included in the unit price of the pay item where such costs are incurred. When there is no pay item for Construction Water in the itemized proposal, the work shall be performed in accordance with specifications for the appropriate items but, the cost thereof shall be included in those pay items that require the application of water. Payment shall be made at the Contract unit price for Item 203-Channel Excavation and shall cover all costs of excavation and fill as indicated on the Project Plans. No additional compensation will be made for overhaul required to complete the work.

#### SECTION 211 - FILL CONSTRUCTION

Subsection 211.5 - Measurements and Subsection 211.6 - Payment is hereby deleted. No measurement or direct payment will be made for fill construction, the cost being considered as incidental to and included in the cost of channel excavation.

All excess soil material that is not used in the grade control structure and levees, soil cement protection backfilling or any other items shall be deposited in the spoil areas as indicated on the plans or in areas within the channel that are below the proposed grade line.

These areas shall have a minimum of 85% compaction as determined by Arizona test methods 225 and 230. Upon completion these areas shall be graded to a smooth surface.

This excess material shall be free of all deleterious items and shall not have any material that would be retained on a 6" inch sieve.

Wheel rolling with construction hauling equipment will be an acceptable method of compaction. Equipment specifically designed for earthwork compaction will be acceptable. If a steel wheel roller is used the resulting smooth surface shall be sufficiently roughened after compaction to insure bond to the succeeding layer.

#### SECTION 212 - LEVEES

This item of work shall consist of the construction of earthen levees including watering, grading, shaping and compaction. Levees shall be constructed to a reasonable smooth and uniform surface and in reasonable close conformity to the lines, grades, dimensions, and cross sections shown on the Plans or established by the Engineer.

Levee construction shall not be started until clearing and grubbing for the levee area is completed in accordance with the requirements of Section 201.

Earth Material for levees shall be placed in uniform horizontal layers not exceeding eight (8) inches in depth before compaction. Compaction shall be accomplished by rolling, tamping, or other suitable means utilizing equipment specifically designed for earthwork compaction. Wheel rolling with construction hauling equipment shall not be considered an acceptable method of compaction. Each layer of earth material shall be compacted to the specified density before the next layer is placed. Effective spreading equipment shall be used on each layer to obtain uniform thickness prior to compacting. As the compaction of each layer progresses, continuous leveling and manipulation of the material will be required to assure uniform density. Water shall be added or removed, if necessary, in order to obtain the required density. It shall be the Contractor's responsibility to properly place and compact all materials in the levee section, and to correct any deficiencies resulting from improper or insufficient compaction of such materials throughout the contract period.

The top six inches of ground on which levees are to be constructed shall be compacted to a density of not less than 95.0 percent of the maximum density.

Each layer of earth material for levee construction shall be compacted to a density of not less than 95.0 percent of the maximum density.

All determinations of density will be made in accordance with the requirements of Arizona Test Methods 225 and 230.

During the progression of the work, the Engineer will review the Contractor's operations with regard to the following items:

1. Lift thickness not exceeding the maximum allowed as herein stated. Thinner lifts than the maximum allowed may be necessary to obtain satisfactory results on some materials.
2. The compactive effort is uniformly applied.
3. Significant rutting, under the action of the compactor, on the final passes on a layer does not occur.
4. Proper compaction on a layer is obtained in accordance with the specifications.

Whenever a deficiency is noted in the Contractor's operations, the Engineer will prohibit placement of an overlaying lift until

the Contractor takes effective corrective action. When the Engineer determines that density tests are necessary, the Contractor shall provide any assistance to facilitate such tests. Such assistance shall include, but will not be limited to, excavation and backfill of test pits and holes. This work shall be considered to be incidental construction.

Damage to any compacted lift at any time during the course of construction, such as rutting under the loads imposed by earth moving equipment, shall be fully repaired by the Contractor, at his own expense, prior to placement of any overlaying material.

#### Measurements and Payment

The quantities of earth material for levees will be measured by the cubic yard, computed in the final compacted position. Any additional quantity of material required to compensate for foundation settlement, compaction, erosion, or other cause shall not be included in the measurement of this item. The quantities of earth material for levees shall exclude the total volume of pipes, culverts, and bank protection. Quantities shall be computed from the payment lines shown on the Plans. Cross-sectioning, for the exclusive purpose of determining quantities for payment, shall be employed only where payment lines are not shown on the plans, and cannot be reasonably established by the Engineer.

The Contract unit price for Item 212 - Levees, shall include the costs of furnishing all equipment, labor, and materials as necessary to complete the work of the item, except where specific costs are designated or included in another pay item of work. All incidental costs, such as acquisition of borrow pits or material outside of the right-of-way, rock drilling and blasting, compaction and special test requirements, stockpiling and rehandling of materials, precautionary measures to protect private property and utilities, to form and trim graded surfaces, proof rolling, re-proof rolling, corrective work disclosed by proof rolling and any delays caused by this corrective work, shall all be included in the unit price of the pay item where such costs are incurred. When there is no pay item for Construction Water in the itemized proposal, the work shall be performed in accordance with the specifications for the appropriate items but the costs thereof shall be included in those pay items that require the application of water. Payment shall be made at the Contract unit price for Item 212 - Levees and shall cover all costs of earthwork placement necessary for levee construction.

## SECTION 215 - EARTHWORK FOR OPEN CHANNELS

In addition to the requirements of the Standard Specifications:

### 215.1 - Description

Earthwork for open channels shall consist of excavation, and embankment which shall include all excavation and embankment for earthen ditches, and other earthwork items appurtenant to construction, exclusive of structure excavation and backfill.

### 215.2 - Stripping

Stripping may be required to remove a layer of silty material approximately four to six feet deep, along the west bank from station 90+55 to station 104+55, along the east bank from station 110+00 to station 116+00, and for the new construction for the extension of the I-10 outfall channel for a distance of 1300 feet.

## SECTION 220 - RIPRAP CONSTRUCTION

The requirements of Section 220 of the Standard Specifications are hereby superseded. A new section, Section 220 - Riprap Construction, is hereby established.

### 220.1 - Description

This work shall consist of furnishing all plant, labor, equipment, and materials and performing all work necessary, including toe excavation, backfill, and dewatering, to place a protective covering of erosion-resistant material on the slopes of embankments, riverbanks, or levees, at culvert inlets and outlets, on bottoms and side slopes of channels, at abutment wings, at structure foundations, at other locations shown on the plans, or as directed by the Engineer. The work shall be done in accordance with these specifications and in conformity with the lines and grades shown on the plans or established by the Engineer. The types of riprap included in this specification are:

- (a) Dumped Riprap: Dumped riprap consists of rock that is dumped in place on a filter blanket or prepared slope to form a well graded mass with a minimum of voids.

### 220.2 - Materials

#### 220.2.1 - Riprap:

Rock used for riprap shall be sound and durable, free from clay or shale seams, cracks, or other structural defects and

shall have a specific gravity of at least 2.50. Rock used to construct riprap shall be angular in shape. Rock shall have a least dimension not less than one third of its greatest dimension. Gradation of riprap shall be as follows:

<u>Rock Size</u>	<u>Percent of Total Smaller Than The Given Size</u>
36"	100
18"	50-70
9"	15-30
4"	0-5

Control of gradation will be by visual inspection. The Contractor shall provide two samples of rock of at least five (5) cubic yards each, meeting the gradation specified herein. One sample shall be provided at the quarry and one sample at the construction site. The sample at the construction site may be a part of the furnished riprap covering. These samples shall be used as a frequent reference for judging the gradation of the riprap supplied. Any difference of opinion between the Engineer and the Contractor shall be resolved by dumping and checking the gradation of two random truck loads of rock. Mechanical equipment, a sorting site, and labor needed to assist in checking gradation shall be provided by the Contractor at no additional cost to the Flood Control District. No source of rock is designated. It shall be the Contractor's responsibility to negotiate for the material, obtain the right-of-way and pay all applicable royalties and damages.

The source from which the rock will be obtained shall be selected well in advance of the time when the rock will be required in the work. The acceptability of the rock will be determined by the Engineer. If testing is required, suitable samples of rock shall be taken in the presence of the Engineer at least 45 days in advance of the time when the use of the rock is expected to begin. The approval of some rock fragments from a particular quarry site shall not be construed as constituting the approval of all rock fragments taken from the quarry. In the absence of test results from either government agencies or private testing laboratories, resistance to disintegration from the type of exposure to which the rock will be subjected will be determined by any or all of the following tests:

<u>Test</u>	<u>Test Method</u>	<u>Requirement</u>
Specific Gravity (Bulk SSD)	ASTM C127	2.50 (Minimum)
Absorption	ASTM C127	2.0% (Maximum)
Wetting & Drying	Corps of Engineers Std. Test Procedure	No Fracturing After 15 Cycles
Sulfate Soundness	ASTM C88	10% Loss ((Maximum)
Abrasion	ASTM C535	50% Loss (Maximum)

In addition, rock shall be subjected to a petrographic and x-ray diffraction analysis if required by the Engineer. Rock shall contain no swelling type clay.

#### 220.2.2 - Gravel Filter Blanket:

The gravel filter blanket shall consist of one or more layers of gravel, crushed rock, or sand of the thickness shown on the plans. All material shall be composed of durable particles, free to thin, flat, and elongated pieces, and shall contain no organic matter or soft, friable particles in quantities in excess of those approved by the Engineer. Gravel filter material shall meet the following gradation requirements:

<u>Size</u>	<u>Percent Passing Sieve</u>
4"	100
3"	85-100
2"	35-70
1"	0-15
1/2"	0-5

The material shall be tested for durability and soundness in accordance with ASTM C131 with a percentage of wear not to exceed 50% after 500 revolutions.

#### 220.2.4 - Filter Fabric:

Filter fabric for riprap construction shall be Mirafi 600X or approved equal. The Contractor's attention is directed to Standard Specifications Subsection 106.4, Trade Names and Substitutions, when considering the use of an alternate or substitute filter fabric.

Securing pins used to secure the filter fabric in place shall be steel or fiberglass. Each pin shall be 12 inches minimum length and shall be formed as a "U", "L", or "T" shape or contain "ears" to prevent total penetration. Grommets or steel washers with an outside diameter of 1 1/2 inches shall be provided for all but "U" shaped securing pins.

All brands of filter fabric shall be accepted on the following basis:

The Contractor shall furnish the Engineer, in duplicate, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the fabric. The mill certificate or affidavit shall attest that the fabric delivered to the site meets the chemical, physical, and manufacturing requirements stated herein and shall contain the following information:

- A. Name of manufacturer.
- B. Name of fabricator.
- C. Chemical composition of geotextile and coating, if any.
- D. Product description and life expectancy.
- E. Statement of specification compliance including the name of this project.
- F. Signature of authorized official attesting to the information presented.
- G. Manufacturer's recommendations for field sewing and repairs.

At least 30 days prior to delivery of geotextile material to the site, the Contractor shall inform the Engineer of the manufacturer and/or supplier from which he intends to obtain the geotextile materials. The Engineer shall have free access to the site of manufacture and subsequent area of storage for the purpose of obtaining samples for testing. All materials shall be subject to the approval of the Engineer.

During all periods of shipment and storage, the filter fabric shall be protected from direct sunlight, ultra-violet rays, temperatures greater than 140°F, and all objectionable substances. To the extent possible, the cloth shall be maintained wrapped in a heavy duty protective covering.

### 220.3 - Construction Requirements:

#### 220.3.1 - General:

Areas on which riprap is to be constructed shall be cleared, grubbed, excavated, or backfilled in accordance with the Standard Specifications and these Special Provisions. The areas shall be graded and dressed to produce a ground surface in reasonable conformance with the lines and grades shown on the plans or established by the Engineer. All soft or spongy material shall be removed to the depth directed by the Engineer and replaced with approved material. Filled areas shall be compacted as specified in Section 212-Levees. Placement of riprap, filter fabric, or gravel filter blanket through water will not be permitted unless otherwise approved, in writing, by the Engineer.

#### 220.3.2 - Dumped Riprap:

Rock for riprap shall be placed on the prepared slope or area in a manner which will produce a reasonably well-graded mass of rock with the minimum practicable percentage of voids. The entire mass of rock shall be placed so as to be in conformance with the lines, grades, and thicknesses shown on the plans. Riprap shall be placed to its full course thickness at one operation and in such a manner as to avoid displacing the underlying material. Placing the riprap in layers, or by dumping into chutes, or by similar methods likely to cause segregation, will not be permitted.

The larger rocks shall be well distributed and the entire mass of rock shall conform to the gradation specified in Subsection 220.2.1. All material going into riprap bank protection shall be so placed and distributed that there will be no large accumulations of either the larger or smaller sizes of rock.

It is the intent of these specifications to produce a fairly compact riprap protection in which all sizes of material are placed in their proper proportions. Hand placing or rearranging of individual rocks by mechanical equipment may be required to the extent necessary to secure the results specified.

The Contractor shall maintain the riprap protection until accepted, and any material displaced by any cause shall be replaced to the lines and grades shown on the plan at no additional cost to the Flood Control District.

#### 220.3.4 - Gravel Filter Blanket:

When indicated on the plans, a gravel filter blanket shall be placed on the prepared slope or area to the full specified thickness of each layer in one operation, using methods which will not cause segregation of the materials. The surface of the finished layer shall be reasonably even and free from mounds, depressions, or windrows. Gradation of the gravel filter material shall conform to the requirements of Subsection 220.2.2 of these Special Provisions.

#### 220.3.5 - Filter Fabric:

When filter fabric is required, it shall be placed in the manner and at the locations shown on the project plans. Filter fabric shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation or storage. Filter fabric stored at the site shall be covered with an ultraviolet

stabilized tarp to protect it. Filter fabric shall not be exposed to direct sunlight for more than two days. The surface to receive the fabric shall be graded to a relatively smooth condition free of obstructions, projections, depressions, debris, and soft or yielding areas. The fabric shall be placed to provide a minimum 24 inches of overlap for each joint. Where overlaps do not lie flat against each other and the possibility exists that rock could move between the laps, a greater overlap shall be used to insure at least two (2) feet of matted overlap. Fabric shall be laid smooth and free of tension, stress, folds, wrinkles, and creases. On horizontal joints, the uphill strip shall overlap the downhill strip. On vertical joints, the upstream strip shall overlap the downstream strip.

At vertical laps, securing pins shall be inserted through both layers along a line through the approximate midpoint of the overlap. At horizontal laps, securing pins shall be inserted through the bottom layer only. The pins shall be placed at not greater than four (4) foot intervals. Securing pins shall be placed along a line approximately four (4) inches in from the edge of the outer limits of the completed filter fabric area at intervals not greater than four (4) feet. Additional pins, regardless of location or spacing, shall be installed as necessary to prevent slippage of the filter fabric.

Rock shall be carefully placed on the gravel filter blanket filter fabric in such a manner as not to damage the fabric. If, in the opinion of the Engineer, the fabric is damaged or displaced to the extent that it cannot function as intended, he will order the Contractor to remove the rock, regrade the area if necessary, and replace the filter fabric.

#### 220.4 - Measurement:

Dumped riprap will be measured by the cubic yard of material placed by computing the surface area measured parallel to the riprap surface and the total thickness of the riprap measured normal to the surface.

Gravel filter blanket will be measured by the cubic yard of material placed by computing the surface area measured parallel to the riprap surface and the total thickness of the blanket measured normal to the surface. Filter fabric (i.e., geotextile fabric) will be measured by the square yard, placed as shown on the plans or as directed by the Engineer.

Riprap or gravel filter blanket placed outside the specified limits will not be measured or paid for, and the Contractor may be required to remove and dispose of the excess material without cost to the County.

## 220.5 - Basis of Payment

The accepted quantities of dumped riprap, gravel filter blanket, and geotextile fabric measured as provided in Subsection 220.4, will be paid for at the Contract unit price per cubic yard, as designated in the Bidding Schedule. Geotextile fabric shall be paid for at the Contract unit price per square yard as provided in the Bidding Schedule as Item No. 215.3 - Fabric. These unit prices shall be full compensation for the work, complete in place, including preparation of the work area, toe excavation, backfill, dewatering, and furnishing and installing rock, filter blanket, grout, and other incidental items and operations.

## SECTION 221 - SOIL-CEMENT BANK PROTECTION, GRADE-CONTROL STRUCTURE & UTILITY TOWER PROTECTION

### 221.1 - Description

The work shall consist of the construction of soil-cement bank protection channel lining, grade-control structures, and utility tower protection as required by the Plans, including excavation, backfill and dewatering for the construction of all soil cement falling below the proposed channel bed profile as indicated on the plans.

### 221.2 - Materials:

#### 221.2.1 - Portland Cement:

Portland Cement shall be Type II, low alkali and shall comply with MAG 725.2, ASTM C150, CSA A-5, or AASHTO M85.

#### 221.2.2 - Water:

Water shall be clear and free from injurious amount of oil, acid, alkali, organic matter, or other deleterious substances. Water shall contain not more than 1,000 parts per million of chlorides as Cl or of sulfates as SO<sub>4</sub>. Water shall be sampled and tested in accordance with the requirements of AASHTO T26.

#### 221.2.3 - Aggregate:

The soil used in the soil-cement mix shall not contain any material retained on a one and one-half (1-1/2) inch sieve, nor any deleterious material. Soil for soil-cement shall be obtained from the required excavations, or from other borrow areas approved by the Engineer and stockpiled on the job site as specified herein. The actual soil to be used shall be analyzed by laboratory tests in order to determine the job mix as set forth herein. The distribution and gradation of materials in the soil-cement lining shall not result in

lenses, pockets, streaks, or layers of material differing substantially in texture or gradation from surrounding material.

221.3 - Proportioning:

The Contractor shall use the soil aggregate, fly ash content, cement content, and moisture content determined by the Engineer in accordance with laboratory tests. The Contractor shall allow a minimum of eight (8) days for the cement content results. During the course of the work, the Engineer shall adjust the job mix proportions whenever necessary in order to achieve the minimum design strength shown in Subsection 221.8. The Contractor may have a blend overbank silty soils with the clean in-situ sands to maintain ideal soil gradations as specified below and avoid cement overrun. Special blending shall require constructing separate stockpiles for materials to be blended and it shall be performed by the utilization of the separate storage feed bins at the plant to the satisfaction of the Engineer.

<u>Sieve Size</u>	<u>Percent Passing (Dry Weight)</u>
1-1/2"	98% - 100%
#4	60% - 90%
#200	5% - 15%

The Plasticity Index shall be a maximum of 5.

Clay and silt lumps larger than one-half (1/2) inch shall be screened out of the raw soil prior to mixing. The amount of cement required shall be determined by tests performed by the Engineer in accordance with the procedure specified in Subsection 221.11 herein. The required cement content is shown in Subsection 221.9 herein. Testing during the life of the project may require changes in the cement requirements which shall be made promptly by the Contractor at the direction of the Engineer.

221.4 - Equipment:

The soil-cement bank protection may be constructed with any combination of machines and/or equipment, except as noted herein, that will produce a completed soil-cement lining meeting the requirements for soil pulverization, cement and water application, mixing, transporting, placing, compacting, finishing, and curing as provided in these Specifications.

## 221.5 - Construction Requirements:

### 221.5.1 - Required Contractor Submittals:

Prior to the start of construction, the Contractor shall submit, in writing, for approval, the following items:

1. The approximate length of soil cement to be placed prior to starting compaction operations.
2. The type of compaction equipment to be used.
3. The number and type of watering equipment to be used.
4. The method used to keep surfaces continually moist until subsequent layers of soil cement are placed.
5. The method used to cure permanently exposed surfaces.
6. The proposed source of soil, if other than required excavations.

### 221.5.2 - Preparation:

Before soil-cement processing begins, the area on which soil-cement will be placed shall be graded and shaped to lines and grades as shown on the Plans or as directed by the Engineer. The subgrade shall be compacted to a minimum of ninety-five (95%) percent.

Excavation, backfilling & dewatering necessary to construct soil cement bank protection, grade control structures, and utility tower protection below the channel bed profile elevations as shown on the plans shall be considered incidental to the construction of the soil cement and included in the cost for item 221.1 Soil Cement (Levees, dikes, towers, grade control structures).

Immediately prior to placement of soil-cement mixture, the subgrade shall be moistened if necessary. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.

### 221.5.3 - Mixing:

Soil cement shall be central-plant mixed in an approved twin shaft continuous-flow or batch-type pugmill. The plant shall be equipped with screening, feeding and metering devices that will add the soil, cement (Fly Ash, if utilized), and water into the mixer in the specified

quantities. It should also be equipped with a hydraulically or mechanically operated discharge hopper having a minimum capacity of six (6) cubic yards. Scales are required at both the cement feed, and either to soil or total mix feed locations. Each scale shall record weight of the material and have a digital readout, such that the total discharged weight per hour is displayed. These shall also be calibrated, certified and approved by the Engineer at least forty-eight (48) hours prior to the start of production. Each scale shall be calibrated to an accuracy of plus/minus 2.0%. Soil and cement shall be mixed sufficiently to prevent balls from forming when water is added.

The mixing type shall be that time which is required to secure a homogeneous, intimate, uniform mixture of the soil, cement, and water.

Free and safe access to the plant must be provided to the Engineer at all times for inspection of the plant's operation and for sampling the soil-cement mixture and its components.

#### 221.5.4 - Required Moisture:

At the time of compaction, the moisture content shall not be below optimum and shall not be more than two (2) percentage points above optimum when the mean air temperature during construction hours does not exceed 90 degrees F. When the mean air temperature does exceed 90 degrees F, or there is a breeze or wind which promotes the rapid drying out of the soil-cement mixture, the moisture content of said mix shall be increased as needed at the direction of the Engineer, but shall be less than that quantity that will cause the soil-cement to become unstable during compaction and finishing operations.

#### 221.5.5 - Handling:

The soil-cement mixture, if transported, shall be transported from the mixing area to the embankment in clean equipment provided with suitable protective devices in unfavorable weather. The total elapsed time between the addition of water to the mixture and the start of compaction shall be the minimum possible. In no case shall the total elapsed time exceed thirty (30) minutes. (This time may be reduced by the Engineer when the air temperature exceeds 90 degrees F or when there is a breeze or wind which promotes rapid drying of the soil-cement mixture.)

The Contractor shall take all necessary precautions to avoid damage to completed soil cement by the equipment and to avoid the deposition of raw earth or foreign materials

between layers of soil cement. Earth ramps crossing completed soil cement must have at least two (2) foot compacted thickness. Where ramps are constructed over soil cement that is not to grade, all foreign materials and the uppermost one (1) inch of the previously place soil-cement mixture must be removed prior to the continuation of the soil-cement construction.

221.5.6 - Placing:

The mixture shall be placed on the moistened subgrade embankment, or previously completed soil cement with spreading equipment that will produce layers of such widths and thicknesses as are necessary for compaction to the required dimensions of the completed soil-cement layers.

The compacted layers of soil-cement shall not exceed eight (8) inches in thickness, nor be less than four (4) inches in thickness.

Each successive layer shall be places as soon as practicable after the preceding layer is completed and certified.

All soil-cememnt surfaces that will be in contact with succeeding layers of soil cement shall be kept continuously moist by fog spraying until placement of the subsequent layer, provided that the Contractor will not be required to keep such surfaces continually moist for a period longer than seven (7) days. Mixing shall not proceed when the soil aggregate or the area on which the soil-cement is to be placed is frozen. Soil cement shall not be mixed or placed when the air temperature is below forty-five (45) degrees F (7 degrees C), unless the air temperature is at least forty (40) degrees F (5 degrees C) and rising.

221.5.7 - Compaction:

Soil cement shall be uniformly compacted to a minimum of 98% of maximum density as determined by field density tests. Optimum moisture and maximum density shall be determined in accordance with Arizona 221, 222B, 223 procedures; however, Arizona 231 is not acceptable. Wheel rolling with only hauling equipment shall not be an acceptable method of compaction.

At the start of compaction, the mixture shall be in a uniform, loose condition throughout its full depth. Its moisture content shall be as specified in Subsection 221.5.4 herein. No section shall be left undisturbed for longer than thirty (30) minutes during compaction operations. Compaction of each layer shall be done in such a manner as to produce a dense surface, free of compaction planes, in

not longer than one (1) hour from the time water is added to the mixture. Whenever the Contractor's operation is interrupted for more than two (2) hours, the top surface of the completed layer, if smooth, shall be scarified to a depth of at least one (1) inch with a spike-tooth instrument prior to placement of the next lift. The surface, after said scarifying, shall be swept using a power broom or other method approved by the Engineer to completely free the surface of all loose material prior to actual placement of the soil-cement mixture for the next lift.

221.5.8 - Finishing:

After compaction, the soil cement shall be further shaped, if necessary, to the required lines, grades, and cross sections and rolled to a reasonably smooth surface. The force of soil cement above the riverbed shall be trimmed at the end of each day's placement.

221.5.9 - Curing:

Temporarily exposed surfaces shall be kept moist as set forth in Subsection 221.5.6.

Care must be exercised to ensure that no curing material other than water is applied to the surfaces that will be in contact with succeeding layers.

Permanently exposed surfaces shall be kept in a moist condition for seven (7) days, or they may be covered with some suitable curing material, subject to the Engineer's approval. Any damage to the protective covering within seven (7) days shall be repaired to the satisfaction of the Engineer.

Regardless of the curing material used, the permanently exposed surfaces shall be kept moist until the protective cover is applied. Such protective cover is to be applied as soon as practicable, with a maximum time limit of twenty-four (24) hours between the finishing of the surface and the application of the protective cover or membrane. When necessary, the soil cement shall be protected from freezing for seven (7) days after its construction by a covering of loose earth, straw, or other suitable material approved by the Engineer.

221.5.10 - Construction Joints:

At the end of each day's work, or whenever construction operations are interrupted for more than two (2) hours, a transverse construction joint shall be formed by cutting

back into the completed work to form a full-depth vertical face.

221.5.11 - Maintenance:

The Contractor shall be required, within the limits of the Contract, to maintain the soil cement in good condition until all work is completed and accepted. Maintenance shall include immediate repairs of any defects that may occur. This work shall be done by the Contractor at his own expense and repeated as often as necessary. Faulty work shall be replaced for a full depth of the layer.

221.6 - Inspection and Testing:

The Engineer, with the assistance and cooperation of the Contractor, will make such inspections and tests as he deems necessary to insure the conformance of the work to the Contract Documents. These inspections and tests may include, but will not be limited to: (1) the taking of test samples of the soil cement and its individual components at all stages of processing and after completion, and (2) the close observation of the operation of all equipment used on the work. Only those materials, machines, and methods meeting the requirements of the Contract Documents shall be approved by the Engineer.

All testing of soil cement or its individual components, unless otherwise provided specifically in the Contract Documents, shall be in accordance with the latest applicable ADOT, ASTM, or AASHTO Specifications in effect as of the date of advertisement for bids on the project.

Testing for proper compaction shall be done on at least every other lift of compacted soil cement at any location chosen by the testing personnel. If the lift being tested does not pass the minimum 98% density requirements, it must be reworked as directed by the Engineer until it passes or be removed at the Contractor's expense. The Contractor shall not be permitted to continue placing lifts of soil cement on any lift which has failed the compaction tests until such time as that lift has been reworked, retested, and passed as to meeting density requirements.

The initial acceptance of material shall in no way preclude further examination and testing at any time, during the course of construction or subsequent warranty period, the Engineer suspects that the material is no longer properly represented by the acceptance sample. The acceptance at any time of any material incorporated into the work shall not bar its future rejection if it is subsequently found to be defective in quality or uniformity.

221.7 - Measurement and Payment:

221.7.1 - Measurement:

This work shall be measured (1) in Cubic yards of completed-in-place soil-cement bank protection channel lining grade-control structure and utility tower protection as determined by the specified lines, grades, and cross sections shown on the Plans; and (2) in tons of cement incorporated into the soil cement used for tests and for the slope protection and/or grade-control structure in accordance with the instructions of the Engineer. Any waste of cement and/or soil cement by the Contractor during the handling, mixing, placing, etc., operations shall not be paid for.

221.7.2 - Payment:

This work shall be paid for at the Contract unit price per cubic yard of soil-cement bank protection channel lining grade-control structure and utility tower protection and at the Contract unit price per ton of cement furnished, multiplied by the quantities obtained in accordance with Subsection 221.7.1. Such payment shall constitute full reimbursement for all work necessary to complete the soil-cement slope protection and grade-control structures, dewatering, trench excavation, backfilling, watering, mixing, placing, compacting, curing, inspection and testing assistance, and all other incidental operations.

221.8 - Mix Design Methodology:

The design requirements for the soil-cement bank protection shall be such that it has a compressive strength of 750 psi at the end of seven (7) days plus 2% additional cement added for erosion resistance. The minimum acceptance strength shall be that developed as a result of adding 2% cement to the base amount determined. For example, if the mix design shows that 6% cement is required to achieve 750 psi in seven (7) days, the total cement content shall be  $6.0\% + 2.0\% = 8.0\%$ . Hence, the governing strength shall be that strength which is acquired by the mix design at 8%. A 24-hour test will be run to monitor the mix design on a daily basis. Experience has shown that 24-hour compressive strength results for moist cured samples are approximately 50 to 60 percent of the corresponding seven (7) day compressive strength results {moist cured for six (6) day and soaked in water for 24 hours}. In the example cited herein, once the design strength mix of  $6.0\% + 2.0\%$  or  $8.0\%$  cement is determined, a 24-hour test will be run using the mix to obtain a 24-hour compressive strength which will be used to monitor the daily output of the central plant. Seven (7) day samples will also be taken for final acceptance. The amount of cement thus

determined by laboratory testing shall continue to be monitored throughout the life of the project with modification as required to meet existing field conditions. This methodology shall also pertain to the development of a mix design for grade-control structures and utility tower protection with the exception that soil cement utilized for the aforementioned purposes shall have a compressive strength of 1000 psi at the end of seven (7) days plus 2% additional cement.

221.9 - Mix Design for This Project:

For bidding purposes only, the estimated mix design for this project shall be as follows:

	<u>Bank Protection &amp; Channel Lining</u>	<u>Grade Control &amp; Utility Tower Protection</u>
Base Cement Content	11%	13%
Addition for Durability & Erosion	<u>2%</u>	<u>2%</u>
<u>TOTAL CEMENT REQUIRED</u>	13%	15%

The percent of cement to be used in the mix shall be calculated to be the weight of cement divided by the total weight of the dry compacted soil cement. The actual mix design used on this project shall be determined by laboratory tests on material stockpiled after construction of the stockpile has been completed in accordance with Section 106 - Control of Material.

Fly ash may be used with the approval of the Engineer. A maximum of fifteen (15) percent of the total weight of cement may be replaced with fly ash, in accordance with the requirements detailed in Section 725 of the Standard Specifications. An additional scale shall be required for the fly ash and shall conform to Section 221.5.3 - Mixing, of these Special Provisions. Fly ash will be considered for incorporation into the mix design upon receipt of a Value Engineering proposal from the Contractor.

221.10 - Stockpiling of Aggregate:

Soil aggregate stockpile shall be constructed on level, firm ground free of brush, trees, stumps, roots, rubbish, debris, and other objectionable or deleterious material and shall be located so as to provide a distance of not less than fifty (50) feet from the outside bottom edge of the conical stockpile built up under the processing plant conveyor or any other existing stockpile. The stockpile shall be constructed in layers, each layer not exceeding two (2) feet in thickness. Ramps formed

for stockpile construction shall be of the same material as that being stockpiled, and will be considered a part of the stockpile. Before steepening a ramp, any contaminated surface material shall be removed.

Stockpiled material should be thoroughly mixed throughout its depth, width, and length before utilization. The material should be homogeneous and uniform in color, gradation, and moisture throughout. Stockpiled material shall conform to the requirements of Section 106 - Control of Material, as revised by these Special Provisions.

Stockpile sampling will be done by the Engineer after the required amount of soil aggregate for the entire soil-cement job has been excavated and stockpiled. After the stockpile has been sampled and approved, no material will be added to it without the approval of the Engineer.

Stockpile(s) shall be completed and approved at least eight (8) days prior to start of soil-cement production. Mix design shall then be performed by the Engineer, to determine job mix proportions.

221.11 - Testing Procedure for Determination of Cement Content Required for Soil-Cement Mixtures (A Modification of Arizona 220 Test Method):

221.11.1 - Description:

- (A) This method of test is intended for determining the percentage of Portland Cement required in developing soil-cement mixtures by the determination of the compressive strength of molded specimens at varying cement contents.
- (B) Equipment Required:
- (1) Mold - A cylindrical metal mold having a capacity of 1/30 cubic foot with an internal diameter of 4.0 inches plus/minus .005 inch and a height of 4.585 inches plus/minus .005 inch equipped with a detachable collar approximately 2-1/2 inches in height.
  - (2) Rammer - A metal rammer manually or mechanically operated having a 2 inch diameter circular face and weighing 5.5 lbs. The rammer shall be equipped with a suitable arrangement to control the height of drop to a free fall of 12 inches above the elevation of the cement treated mixture.

- (3) Balance - A balance or scale of at least 5 kg. capacity sensitive to 0.5 gm.
- (4) Drying Oven - A thermostatically controlled drying oven capable of maintaining a temperature of 230 degrees plus/minus 9 degrees F ( 110 degrees plus/minus 5 degrees C).
- (5) Straightedge - A rigid steel straightedge 12 inches in length having one beveled edge.
- (6) Sieve - 3/4 inch sieve conforming to the requirements of the Specifications for sieves for Testing Purposes (ASTM E11-81 and AASHTO M 92).
- (7) Miscellaneous mixing tools and pans.
- (8) Speedy Moisture Tester (optional).
- (9) Equipment required for the determination of the Compressive Strength of Cylindrical Concrete Specimens (ASTM C39, C42, C511).

221.11.2 - Sample Preparation:

- (A) If the sample is damp when received, it shall be dried until it becomes friable under a trowel. Drying may be accomplished by air drying or by the use of drying apparatus such that the temperature of the sample does not exceed 140 degrees F (60 degrees C).
- (B) After drying prepare the sample for testing by separating the aggregate retained on the 3/4 inch sieve and breaking up the remaining soil aggregations to pass the 3/4 inch sieve in a manner which will avoid reducing the natural size of individual particles.
- (C) Select and prepare eight separate test charges of dry soil cement of approximately 2500 gm. each. Two samples are to be made for every cement percentage selected.
- (D) Add the first of the cement contents to be used and mix thoroughly together.

Example: If the percent cement selected is 10%

Dry Soil Weight = 2250 gms. (90%)  
Portland Cement = 250 gms. (10%)

TOTAL = 2500 gms. (100%)

- (E) The moisture content to be added to each test charge is determined by making a maximum density-optimum moisture determination with the anticipated required cement content (according to AASHTO T 99-74 Method C) and using this developed optimum-moisture thereafter for all specimens prepared.

221.11.3 - Compaction:

- (A) Form a specimen by compacting a prepared mixture in the mold with the collar attached in three equal layers to give a total compacted depth of 5 inches. Compact each layer by applying 25 uniformly distributed blows from a 5.5 lb. (2.5 kg.) rammer dropping free from a height of 12 inches (305 mm). Following compaction, remove the extension collar, carefully trim the compacted mixture even with the top of the mold by means of a straightedge and weigh. Multiply the weight of the specimen (in gms.) by 0.06614 to obtain the wet weight per cubic foot. The factor 0.06614 is valid only if the volume of the mold is 1/30 cubic foot. If calibration shows any change in volume, a new factor shall be calculated.

Assuming the mold has a volume of 1/30 (0.0333) cubic foot the factor is derived as follows:

$$.06614 = \frac{1}{0.0333 \text{ cu. ft.} \times 453.6 \text{ g./lb.}}$$

In case of a change in volume of the mold 0.0333 cu. ft. shall be replaced by the decimal fraction for the new volume.

- (B) Compact a duplicate specimen in same manner as Step (A).
- (C) Extrude both samples from their respective molds using caution and place on glass or non-absorptive plates and store for curing in a moist condition, (i.e., a moist cabinet or a Moist Room meeting the requirements of ASTM C-511-80).
- (D) Determine the moisture content of the prepared samples from the residue.
- (E) Determine the Wet Density and Dry Density of the samples.

- (F) Repeat steps (A) through (D) on additional samples with increased cement content (in 2% increments) until a complete bracketing of specification requirements is met.

221.11.4 - Determination of Compressive Strength:

- (A) All specimens must be cured as specified in a moist condition for six (6) days and then immersed for a period of 24 hours in water maintained at 73.4 plus-minus 3 degrees F (23 plus-minus 1.7 degrees C).
- (B) Specimens shall then be prepared for the compression test in accordance with ASTM C 617.
- (C) The compressive strength of the cylinders shall then be determined in accordance with ASTM C-39 and ASTM C-42.
- (D) The results shall be reported in a format similar to that shown in the following report form.

SECTION 225 - WATERING

In addition to the requirements of the Standard Specifications:

225.1 - Description:

The work under this section shall consist of furnishing and applying all water required for the control of dust as considered necessary, by the Engineer, for the safety and convenience of the traveling public, for the reduction of the dust nuisance to adjacent property, and for other purposes as directed by the Engineer.

The Contractor shall obtain the necessary permits required under the County Air Pollution Statutes. It shall be the responsibility of the Contractor to keep the construction site sufficiently moistened to the satisfaction of the Engineer, in order to control dust pollution.

225.3 - Construction Equipment:

The use of pressure pumps and spray bars on all sprinkling equipment used for the application of water will be required. The use of gravity flow spray bars and splash plates will not be permitted.

MARICOPA COUNTY FLOOD CONTROL DISTRICT  
SOIL-CEMENT COMPRESSIVE STRENGTH TEST REPORT

MATERIAL \_\_\_\_\_ PROJECT NAME \_\_\_\_\_  
 IDENTIFICATION \_\_\_\_\_ LOT NUMBERS \_\_\_\_\_  
 SOURCE OF SAMPLE \_\_\_\_\_ CONTRACTOR \_\_\_\_\_  
 LOCATION OF SUPPLY \_\_\_\_\_ SAMPLED BY \_\_\_\_\_ DATE \_\_\_\_\_

% Cement By Weight																			
I.D. Number																			
Diameter (D)																			
Area (In <sup>2</sup> )																			
Height (L)																			
Max. Load (LBS.)																			
Compressive Strength (PSI)																			
ASTM C42	L/D																		
	Correction Factor																		
Corrected Compressive Strength (PSI)																			
Moisture %																			
Wet Density - PCF																			
Dry Density - PCF																			
Time Sampled																			
Location Placed (STA.)																			

Tested By \_\_\_\_\_ Date \_\_\_\_\_ Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Remarks \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SECTION 350 - REMOVAL OF EXISTING IMPROVEMENTS

In addition to Requirement of the Standard Specifications.

350.2 - Removal and Replacement or Reconstruction of Wire  
Tied Rip Rap

Any rock, wire, Filter Blanket, Geotextile Fabric or basket broken during removal for new construction shall be replaced in kind.

SECTION 401 - TRAFFIC CONTROL

In addition to the requirements of the Standard Specifications:

The Contractor shall not be allowed to close the existing McDowell Rd. alignment, until the Maricopa County Highway Department has completed and opened the McDowell Road Bridge.

It will be the Contractors responsibility to take all necessary measures to ensure that all personel and materials are provided for when the work schedule dictates crossing McDowell Road.

No direct payment will be made for traffic control devices or Flag man.

SECTION 420 - REMOVE AND RESET FENCE, SIGNS AND BASES

420.1 - Description

This work shall consist of removal, relocation, and, if necessary, repair of the existing wire fence as shown on the plans and the removal, relocation, and, if necessary, repair of any signs within the construction area.

420.2 - Materials

Existing fencing or signs damaged in any manner by the Contractor's forces shall be replaced in kind or as approved by the Engineer.

420.3 - Construction Methods

420.3.1

Line posts shall be reset and spaced as the existing posts. Intermediate and corner post assemblies shall be reset and anchored in kind. Any breakage or damage to existing assemblies or fencing appurtenances shall be repaired, regalvanized, or replaced with new at the discretion of the Engineer.

Any sign post assemblies that are broken or damaged, shall be repaired, regalvanized or replaced with new at the discretion of the Engineer.

420.5 Payments

The price bid and paid as lump sum for wire fence and sign relocation shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all the work involved in removal and relocation, complete in place, as specified on the plans, and in the special provisions.

SECTION 501 - DRIVING PILES

In addition to the requirements of the Standard Specifications:

SECTION 501.1.1 DESCRIPTION OF WORK

Western Areas Power Administration owns and operates a 161 K transmission line which has two wooden structures within the right-of-way of this project. The Contractor is to reinforce these four (4) 60 foot wooden poles as described in the Plans and these Special Provisions.

Contractor is to notify (WAPA) one (1) week prior to any scheduled outages and forty-eight (48) hours before and work begins.

SECTION 501.2 - DRIVING EQUIPMENT

In addition to the Standard Specification the following items shall be incorporated:

The Contractor shall complete any site grading necessary for his driving operation prior to commencement of driving operations.

The Contractor shall have and supply verification that the pile hammer is capable of developing 22,000 foot-pounds of energy per blow.

#### SECTION 501.5 - BEARING VALUE

This section shall be superseded by the following:

Piles will have no minimum bearing value. However, the Contractor will be requested to drive the pile section to the required depth as described in the Plans.

#### SECTION 501.7 - LOAD TESTING

This section shall be deleted from this project, but the Contractor will demonstrate to the Engineer that the required depth has been attained and the following tolerances adhered to.

Plumbness - + 2% from vertical in any given interval  
Line -  $\pm$  6" from the actual plan location

If during the pile driving operation these tolerances fall out of specification the Contractor will discontinue operation and execute any measures necessary to bring the pile back to design tolerances.

#### SECTION 501.8 - MEASUREMENT

This section shall be superseded by the following items:

The Contractor is required to furnish all material, labor and equipment necessary to complete the work described in the Plans.

Any splices, damage to piles, unacceptable material, etc. shall be the Contractor's responsibility and will not be accepted for payment until the Contractor has completed the entire scope of this pile driving project.

#### SECTION 501.9 - PAYMENT

This section shall be superseded by the following:

Payment for all material, labor and equipment supplied shall be a lump sum item.

#### SECTION 525 - PNEUMATICALLY PLACED MORTAR

##### 525.3 - Wet Process

As described in this section shall be used.

## SECTION 901 - MOBILIZATION

### 901.1 Description:

The work under this section shall consist of preparatory work and operations, including but not limited to, the movement of personnel, equipment, plant, supplies, and incidentals to the project site; the establishment of all offices, buildings, and other facilities necessary for work on the project; and for all other work and operations that must be performed and costs incurred prior to beginning work on the various items on the project.

### 901.2 Method of Measurement:

Mobilization will be measured for payment by the lump sum as a single complete unit of work.

### 901.3 Basis of Payment

The amount bid for mobilization shall not exceed three percent (3%) of the total Contract bid price excluding the bid price for mobilization. Should the bidder exceed the foregoing three percent (3%), the Flood Control District will make the necessary adjustment to determine the total amount bid based on the arithmetically correct Proposal.

The amount bid shall include the furnishing and maintaining of services and facilities noted under Subsection 901.1 - Description, to the extent and at the time the Contractor deems them necessary for his operations, consistent with the requirements of the work and the Contract.

The amount bid shall be payable to the Contractor whenever he shall have completed ten percent (10%) of the contract work. For the purposes of this item, 10% of the work shall be considered complete when the total of payments earned, as reflected by estimates of the work done, as set forth in Subsection 109.7 - Payment for Bond Issue and Budget Projects, not including the amount bid for this work, shall exceed 10% of the total amount of the Contractor's bid for this Contract.

Unless provided for elsewhere, the cost of required insurance, bonds, and permits and/or any initiation of the Contract Work may be included in this work.

The adjustment provisions in Section 104 and the retention of funds provisions in Section 109 shall not apply to the item of Mobilization.

When other Contract items are adjusted as provided in Section 104, and if the costs applicable to such items of work include mobilization costs, such mobilization costs will be considered as

recovered by the Contractor in the lump sum paid for mobilization, and will be excluded from consideration in determining compensation under Section 104.

## SECTION 902 - FIELD OFFICE

### 902.1 - Description:

This work shall consist of providing and maintaining a furnished Field Office for the exclusive use of and occupancy by Flood Control District and/or Consultant field personnel.

The office shall be a building or mobile trailer, meeting the requirements specified, which shall be erected at a location convenient to the Project. The office may be in the same building or mobile trailer as office space of the Contractor provided that such office is separated from the area used by the Contractor by a wall or door with an adequate locking device and has at least one door to the outside.

The Contractor may furnish equivalent facilities in an existing building provided such facilities and buildings are located to provide convenient service.

### 902.2 - Materials:

General Construction: The Field Office shall be an approved and weatherproof building or mobile trailer meeting the specified requirements. The structures shall have a minimum ceiling height of seven (7) feet and shall be provided with a weatherproof door equipped with adequate locking devices. Windows shall also be provided with adequate locking devices.

#### 902.2.1 - General Requirements:

- (A) Lighting - Electric light, non-glare type luminaires to provide a minimum illumination level at desk height level.
- (B) Heating & Cooling - Adequate equipment to maintain an ambient air temperature of 72 degrees F plus or minus 8 degrees.
- (C) Telephone - A separate phone for the exclusive use of Department and/or Consultant personnel. Long distance phone calls made on this line will be paid for by the Flood Control District.
- (D) Toilet - A separately enclosed room, properly ventilated and complying with applicable sanitary

codes. Said facilities may be portable and separate but adjacent to the Field Office.

- (E) Maintenance - The Contractor shall maintain all facilities and furnished equipment in good working condition.
- (F) Fire Extinguisher - Non-toxic, dry chemical, fire extinguisher meeting Underwriters Laboratories, Inc. approval for Class A, Class B, and Class C fires with a minimum rating of 2A:10B:10C.

#### 902.2.2 - Specific Requirements:

In addition to the general requirements, the office shall have a minimum of 140 square feet of floor space with one outside door. The furnishings shall be as follows:

- 1 - Suitable office desk with drawers and locks.
- 2 - Office chairs
- 1 - Table, three feet by six feet,
- 1 - Stool.

#### 902.3 - Construction Details:

The office shall be fully equipped and made available for use and occupancy by Flood Control District personnel as well as comparable personnel employed by a Consultant prior to the start of any Contract work. The Engineer will notify the Contractor, in writing, of the acceptability of the Field Office provided.

All buildings shall be maintained in good condition and appearance by the Contractor for the designated period, after which all portable buildings or trailers, fencing, surfacing, and utilities shall be removed from the site, the areas cleaned and seeded if required and left in a neat and acceptable condition.

#### 902.4 - Payment:

Payment will be by the Lump Sum for all services specified. However, incremental payment of 1/10 the Lump Sum shall be made for each month of occupancy by the field engineers during the period of Contract. Payment will begin the first month that the office is fully equipped, services as specified, and made available for occupancy.

No payment will be made for occupancy and services during periods of Contract extension of time where engineering charges are assessed.

The Lump sum price shall include the cost of all labor, material, equipment, ground rental and utility charges (including monthly service charges, but excluding charges for long distance phone calls) necessary to complete the work.

## SECTION 903 - CONSTRUCTION SURVEYING AND LAYOUT

### 903.1 - Description:

The work under this section shall consist of furnishing all materials, personnel, and equipment necessary to perform all surveying required to construct all elements of the project as shown on the Plans, specified in the Contract Documents, or as directed by the Engineer. This shall include, but shall not be limited to stake out, layout, and elevations for roadways, channels, bank protection, structures, forms, and appurtenances as shown and required, consistent with the current practices of the Flood Control District. The work shall be performed by competently qualified personnel acceptable to the Flood Control District. All work shall be done under the direction of a Registered Land Surveyor employed by the Contractor. All right-of-way monuments, lines, and property corners shall be established by a Registered Land Surveyor employed by the Contractor.

Measurement of all pay quantity items will be the responsibility of the Flood Control District or its designated agent.

When utility adjustments are a part of the contract, the Contractor shall perform all layout work and set all control points, stakes, and references necessary for carrying out all such adjustments.

The Contractor shall not employ or engage the services of any person or persons in the employ of the Flood Control District or its designated agent on the project for the performance of any of the work as described herein.

### 903.2 - Materials, Personnel, and Equipment:

Materials and equipment shall include, but not necessarily be limited to, vehicles for transporting personnel and equipment; properly adjusted and accurate survey equipment; straightedges, stakes, flagging, and all other devices necessary for checking, marking, establishing, and maintaining lines, grades, and layout to perform the work called for in the contract. The Contractor shall furnish competent personnel to perform the survey work and layout.

The Contractor shall furnish all necessary traffic control including flagging for survey and staking operations. Traffic control shall be in accordance with the requirements of Section 401 of the Standard Specifications.

The type of field book used for recording data and field notes shall be approved by the Flood Control District prior to use. Field notes, maps of survey, etc. shall be stamped by a Registered Land Surveyor and all set monuments shall be tagged or stamped pursuant to Arizona Revised Statute 32-101, Article 5. All field notes, sketches, etc. shall be neat, well organized and legible. Erasures shall not be permitted in the field book. If it is determined that the original figure is incorrect, a line shall be drawn through it and the correction will be made above it.

### 903.3 - Construction Requirements:

Prior to beginning any survey operations, the Contractor shall furnish to the Engineer for his approval, a written outline detailing the method of staking and marking of stakes, grade control for various courses of materials, referencing, structure control, etc.

The Contractor shall trim trees, brush, and other interfering objects, not inconsistent with the plans, from survey lines in advance of all survey work to permit accurate and unimpeded work by his stake-out survey crews.

The location and length shown on the plans for pipe and structural plate culverts shall be considered to be approximate. The ordered length of culverts will be determined by the Engineers after the Contractor accurately stakes the proposed culvert in the planned location as approved by the Engineer and after appropriate and necessary engineering study.

The exact position of all work shall be established from control points, baseline transit points, or other points of similar nature which are shown on the plans and/or modified by the Engineer. Any error, apparent discrepancy, or absence in or of data shown or required for accurately accomplishing the stake-out survey shall be referred to the Engineer for interpretation or furnishing when such is observed or required.

The Contractor shall place two offset stakes or references at each centerline station and at such intermediate locations as the Engineer may direct. From computations and measurements made by the Contractor, these stakes shall be clearly and legibly marked with the correct centerline station number, offset and cut or fill so as to permit the establishment of the exact centerline location and elevation during construction. If markings become faded or blurred for any reason the markings shall be restored by

the Contractor and at the request of the Engineer. He shall locate and place all cut, fill, slope, fine grade, or other stakes and points, as the Engineer may direct for the proper progress of the work. All control points shall be properly guarded and flagged for easy identification.

Drainage structures shall be staked out by the Contractor at the locations and elevations shown on the plans or specified by the Engineer.

Structures shall be accurately profiled and structure control points shall be set and checked to assure the proper construction or installation of each structure. Profiles shall be approved by the Engineer prior to construction or installing each structure. All profile survey data shall be entered in furnished field books and preserved as a permanent project record.

All required rights-of-way and easement limits shall be established, staked, and referenced by the Contractor concurrent with the construction stake-out survey. Rights-of-Way and easement limits shall be staked by or under the direction of a Registered Land Surveyor. The Contractor shall supply proof to the Engineer that such work is being performed by or supervised by a Registered Land Surveyor.

Reference points, baselines, stakes, and bench marks for borrow pits shall be established by the Contractor.

Permanent survey marker locations, if required, shall be established and referenced by the Contractor.

The Contractor shall be responsible for the accuracy of his work and shall maintain all reference points, stakes, etc. throughout the life of the contract. Damaged or destroyed points, bench marks or stakes, or any reference points made inaccessible by the progress of the construction shall be replaced or transferred by the Contractor. Any of the above points, which may be destroyed or damaged shall be transferred by the Contractor before they are damaged or destroyed. All control points shall be referenced by ties to acceptable objects and recorded. Any alterations or revisions in the ties shall be so noted and the information furnished to the Engineer immediately. All stake-out survey work shall be referenced to the centerline shown on the Plans. All computations necessary to establish the exact position of the work from control points, shall be made and presented by the Contractor. All computations, survey notes and other records necessary to accomplish the work shall be neatly made. Such computations, survey notes, and other records shall be made available to the Engineer upon request and shall become the property of the Flood Control District and delivered to the Engineer not later than the date of acceptance of his work.

Any discrepancies in grade, alignment, earthwork quantities, locations, and/or dimensions detected by the Contractor shall immediately be brought to the attention of the Engineer. No changes in the Project plans will be allowed without the approval of the Engineer and a supplemental agreement to the contract.

During the progress of the construction work, the Contractor will be required to furnish all of the surveying and stake-out incidental to the proper location by line and grade for each phase of the work. For paving and any other operation requiring extreme accuracy, the Contractor will restake with pins or other acceptable hubs located directly adjacent to the work at a spacing directed by the Engineer.

Any existing stakes, iron pins, survey monuments, or other markers defining property lines which may be disturbed during construction, shall be properly tied into fixed reference points before being disturbed and accurately reset in their proper position upon completion of the work.

Just prior to completion of the contract, the Contractor shall re-establish if necessary and retie all control points as permanently as possible and to the satisfaction of the Engineer.

903.4 - Method of Measurement:

Construction surveying and layout will be measured as a single complete unit of work.

Two and three person survey party will be measured by the hour to the nearest half hour.

903.5 - Basis of Payment:

Payment for construction survey and layout will be by the lump sum and will be made as follows:

For each of the first and second months of the contract, a payment in the amount of either \$10,000.00 or 15 percent of the contract amount bid for construction survey and layout, whichever is the lesser amount, will be made.

Ninety percent of the remaining contract amount for construction survey and layout will have been paid when 80 percent of the total contract amount, excluding the items of construction surveying and layout, and mobilization, has been paid. The 90 percent will be paid on a monthly basis prorated on the basis of the Contractor's progress. The remaining portion of the contract amount bid for construction survey and layout will be paid upon completion and acceptance of the contract work.

The total amount to be paid under the item of construction surveying and layout shall not exceed the contract amount bid for that item.

The items of two and three person survey party are contingent items and are established for the purpose of compensating the Contractor for additional staking and layout required as a result of extra work ordered by the Engineer. The Engineer will be the sole judge as to whether the additional work shall be performed by the Contractor or by the Flood Control District.

The amount bid per hour for a two-person or three-person survey party shall include the cost of all materials, equipment, labor, subsistence, and benefits necessary to complete the extra work. The amount bid shall include the cost necessary to mobilize the crews and the travel time to and from the project for one time only, for each instance of extra work required.

Payment for traffic control and flagging required for surveying and layout shall be considered as included in the lump sum amount bid for construction surveying and layout.

Traffic control and flagging necessary because of the additional staking and layout required as a result of extra work ordered by the Engineer, shall conform to the requirements of Section 401 - Traffic Control. No direct payment will be made for traffic control, its cost being considered incidental to the survey work.

No payment will be made for resetting of stakes, references, bench marks, and other survey control.

Payment will be made as follows:

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Surveying and Layout	Lump Sum
Two-Person Survey Party	Hour
Three-Person Survey Party	Hour

R40/R577

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
(Construction Contract)  
**BID PROPOSAL**

PROJECT: AGUA FRIA RIVER IMPROVEMENTS Ref. Invitation FCD 85-16  
INTERSTATE 10 TO THOMAS ROAD Date: July 8, 1985  
Issued by: Flood Control  
District, Maricopa  
County

LOCATION: ALONG THE AGUA FRIA RIVER FROM APPROXIMATELY 680 FEET  
SOUTH OF INTERSTATE 10 TO APPROXIMATELY 200 FEET SOUTH  
OF THOMAS ROAD IN SECTIONS 1 AND 2, TOWNSHIP 1 NORTH,  
RANGE 1 WEST AND SECTIONS 35 AND 36, TOWNSHIP 2 NORTH,  
RANGE/WEST, GILA AND SALT RIVER BASE AND MERIDIAN,  
MARICOPA COUNTY, ARIZONA

To: Chief Engineer and General Manager  
Flood Control District of Maricopa County  
3335 West Durango  
Phoenix, Arizona 85009

The following Proposal is made on behalf of \_\_\_\_\_  
\_\_\_\_\_ and no others. The Total  
contract amount of this proposal is (in words) \_\_\_\_\_  
\_\_\_\_\_ and \_\_\_\_\_/100 dollars,  
(in figures) \_\_\_\_\_. This amount being  
the sum total of the extended amount for each pay item on the  
Bidding Schedule.

Evidence of authority to submit the Proposal is herewith furnish-  
ed. The Proposal is in all respects fair and is made without  
collusion on the part of any person, firm, or corporation  
mentioned above, and no member or employee of the Flood Control  
District Board of Directors is personally or financially inter-  
ested, directly or indirectly in the Proposal, or in any purchase  
or sale of any materials or supplies for the work in which it  
relates or in any portion of the profits thereof.

The Undersigned certified that the approved Plan, Uniform Standard Specifications for Public Works Construction, 1979 Edition (MAG) and revisions and supplements thereto, together with the Special Provisions, forms of Contract and Bond authorized by the Board of Directors and constituting essential parts of this Proposal, have been carefully examined, and also that the site of the work has been personally inspected.

The Undersigned declares that the amount and nature of the work to be done is understood and that at no time will misunderstanding of the Plans, Specifications, Special Provisions, or conditions to be overcome, be plead. On the basis of the Plans, Specifications, Special Provisions, the forms of Contract, and the Bond proposed for use, the Undersigned proposes to furnish all the necessary machinery, equipment, tools, apparatus, and other means of construction, to do all the work and to furnish all the materials in the manner specified and to finish the entire project within the time hereinafter proposed and to accept, as full compensation therefore, the sum of various products obtained by multiplying each unit price, herein bid for work or materials, by the quantity thereof actually incorporated in the completed project, as determined by the Chief Engineer and General Manager, Flood Control District of Maricopa County.

The Undersigned understands that the quantities mentioned herein are approximate and are subject to increase or decrease and hereby proposes to perform all quantities of work, as either increased or decreased, in accordance with the provisions of the Specifications, at the unit price bid in the Bidding Schedule.

MARICOPA COUNTY FLOOD CONTROL DISTRICT  
 BIDDING SCHEDULE

DATE: \_\_\_\_\_

Item No.	Item Description	Unit	Quantity	Unit Price (Dollars)	Amount (Dollars)
201	Clearing and Grubbing	L.S.	1		
203	Channel Excavation (Includes Fill, see Sect. 211)	C.Y.	1,083,200		
212	Levee Embankment	C.Y.	439,200		
215.3	Geotextile Fabric	S.Y.	1,000		
220.1	Dumped Riprap	C.Y.	5,530		
220.3	Gravel Filter Blanket	C.Y.	130		
221.1	Soil Cement (Levees, Towers & Grade Control)	C.Y.	267,400		
221.2	Cement for Soil Cement	TON	64,800		
350.1	Removal of Existing Improvements	L.S.	1		
420	Remove & Reset Fence, Signs & Bases	L.S.	1		
501	Driving Piles	L.S.	1		
525	Pneumatic Placed Mortar	S.Y.	440		
727	Reinforcing Steel	LB	3,500		
901	Mobilization	L.S.	1		
902	Field Office	L.S.	1		
903.1	Construction Surveying & Layout	L.S.	1		
			<b>TOTALS:</b>		
	2 Man Survey Party @ _____/HR				
	3 Man Survey Party @ _____/HR				

The Bidder hereby acknowledges receipt of and agrees his proposal is based on the following Addendum:

Signed: \_\_\_\_\_

The Undersigned further proposes to execute the Contract Agreement and furnish satisfactory Bonds within ten (10) days from the date of award, time being of the essence. The Undersigned further proposes to begin the work as specified in the Contract attached hereto, and to complete the work within the time limits as specified in the Special Provisions and maintain at all times a Contract Bond, approved by the Board of Directors, in an amount equal to one hundred percent (100%) of the total bid. This bond shall serve not only to guarantee the completion of the work on the part of the Undersigned, but also to guarantee the excellence of both workmanship and material and the payment of all obligations incurred, said Bond to be in full force and effect until the work is finally accepted and the provisions of the Plans and Specifications, and Special Provisions are fulfilled.

A Proposal guaranty is the amount and character named in the Invitation for Bids is enclosed amounting to not less than five percent (5%) of the total bid, which Proposal guaranty is submitted as a guaranty of the good faith of the Bidder and that the Bidder will enter into written contract, as provided, to do the work, if successful in securing the award thereof; and it is hereby agreed that if at any time other than as provided in the Proposal requirements and conditions the Undersigned should withdraw this Proposal, or if the Proposal is accepted and there should be failure on the part of the Undersigned to execute the Contract and furnish satisfactory Bond as herein provided, the Flood Control District of Maricopa County in either of such events, shall be entitled and is hereby given the right to retain the said Proposal guaranty as liquidated damages.

Date: \_\_\_\_\_, 19\_\_\_\_.

IF BY AN INDIVIDUAL:

\_\_\_\_\_  
(Name) (Address)

IF BY A FIRM OR PARTNERSHIP\*:

By: \_\_\_\_\_  
(Firm Name) (Firm Address)

By: \_\_\_\_\_

\*Name and Address of Each Member:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_, 19 \_\_\_\_.

IF BY A CORPORATION\*\*:

\_\_\_\_\_  
(Corporate Name) (Corporate Address)

By: \_\_\_\_\_

\*\*Incorporated under the Laws of \_\_\_\_\_

Names and Addresses of Officers:

\_\_\_\_\_  
(President) (Address)

\_\_\_\_\_  
(Secretary) (Address)

\_\_\_\_\_  
(Treasurer) (Address)

\*The name and post office address of each member of the firm or partnership must be shown.

\*\*The name of the State under which the laws of the Corporation was chartered and names, title, and business address of the President, Secretary, and Treasurer must be shown.

**CONTRACT**

THIS AGREEMENT, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_  
\_\_\_\_\_ 19 \_\_\_\_, by and between \_\_\_\_\_

of the City of \_\_\_\_\_, County of \_\_\_\_\_,  
State of \_\_\_\_\_, party of the first part, hereinafter  
designated the CONTRACTOR, and the FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY, acting by and through its BOARD OF DIRECTORS, a  
political subdivision of the State of Arizona, a body politic  
with corporate power, party of the second part, hereinafter  
designated OWNER.

WITNESSETH: That the said Contractor, for and in consideration  
of the sum to be paid him by the said Owner, in the manner and  
the time hereinafter provided, and of the other covenants and  
agreements herein contained, and under the penalties expressed in  
the bonds provided, hereby agrees, for himself, his heirs,  
executors, administrators, successors, and assigns to as follows:

ARTICLE I - SCOPE OF WORK: The Contractor shall furnish any and  
all labor, materials, equipment, transportation, utilities,  
services and facilities required to perform all work for the  
construction of Project No. \_\_\_\_\_

and to completely and totally construct the same and install the  
material therein for the Owner, in a good and workmanlike and  
substantial manner and to the satisfaction of the Owner through  
its Engineers and under the direction and supervision of the  
Engineer, or his properly authorized agents and strictly pursuant  
to and in conformity with the Plans and Specifications prepared  
by the Engineers for the Owner, and with such modifications of  
the same and other documents that may be made by the Owner  
through the Engineer or his properly authorized agents, as  
provided herein.

ARTICLE II - CONTRACT DOCUMENTS: The Invitation for Bids, Plans,  
Standard Specifications and Details, Special Provisions, Addenda,  
if any, and Proposal, as accepted by the BOARD OF DIRECTORS,  
Performance Bond, Payment Bond, Certificates of Insurance, and  
Change Orders, if any, are by this reference made a part of this  
Contract to the same extent as if set forth herein in full.

ARTICLE III - TIME OF COMPLETION: The Contractor further  
covenants and agrees at his own proper cost and expense, to do  
all work as aforesaid for the construction of said improvements  
and to completely construct the same and install the material  
therein, as called for by this agreement free and clear of all  
claims, liens, and charges whatsoever, in the manner and under  
the conditions specified within the time, or times, stated in the  
Proposal pamphlet.

ARTICLE IV - PAYMENTS: For and in consideration of the faithful performance of the work herein embraced as set forth in the Contract Documents, which are a part hereof and in accordance with the directions of the Owner, through its Engineer and to his satisfaction, the Owner agrees to pay the said Contractor the amount earned, computed from actual quantities of work performed and accepted or materials furnished at the unit bid price on the Proposal made a part hereof, and to make such payment within forty (40) days after final inspection and acceptance of the work.

IN WITNESS WHEREOF: Four (4) identical counterparts of this Contract each of which shall for all purposes be deemed an original thereof, have been dully executed by the parties hereinabove named, on the date and year first above written.

The Contractor agrees that this Contract, as awarded, is for the stated work, and understands that payment for the total work will be made on the basis of the indicated amount(s), as bid in the Proposal.

FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY  
PARTY OF THE SECOND PART

By: \_\_\_\_\_  
Chairman, Board of Directors

Date: \_\_\_\_\_

RECOMMENDED BY:

ATTEST:

\_\_\_\_\_  
Chief Engineer and  
General Manager  
Flood Control District of  
Maricopa County

\_\_\_\_\_  
Clerk of the Board

Date: \_\_\_\_\_

LEGAL REVIEW

Approved as to form and within the powers and authority granted under the laws of the State of Arizona to the Flood Control District of Maricopa County.

By: \_\_\_\_\_

Date: \_\_\_\_\_

**STATUTORY PAYMENT BOND PURSUANT TO TITLE 34**  
**CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES**  
(Penalty of this Bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That, \_\_\_\_\_  
(hereinafter called the Principal, as Principal, and

\_\_\_\_\_ a corporation organized and existing under the laws of the State of \_\_\_\_\_ with its principal office in the City of \_\_\_\_\_, (hereinafter called the Surety, as Surety, are held and firmly bound unto the Flood Control District of Maricopa County, State of Arizona (hereinafter called the Obligee) in the amount of \_\_\_\_\_

\_\_\_\_\_ dollars ( \_\_\_\_\_ ), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, for \_\_\_\_\_

\_\_\_\_\_ which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if said Principal shall promptly pay all moneys due to all persons supplying labor or materials to him or his subcontractors in the prosecution of the work provided for in said contract, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, of the Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions, of said Title Chapter, and Article, to the extent as if it were copied at length herein.

The prevailing party or any party which recovers judgement on this bond shall be entitled so such reasonable attorney's fees as may be fixed by the court or a judge thereof.

Witness our hands this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

\_\_\_\_\_  
PRINCIPAL SEAL

BY: \_\_\_\_\_

\_\_\_\_\_  
AGENCY OF RECORD

\_\_\_\_\_  
SURETY SEAL

\_\_\_\_\_  
AGENCY ADDRESS

BY: \_\_\_\_\_

\_\_\_\_\_  
POWER OF ATTORNEY SEAL

BY: \_\_\_\_\_

**STATUTORY PERFORMANCE BOND PURSUANT TO TITLE 34**  
**CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES**  
(Penalty of this Bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That, \_\_\_\_\_  
(hereinafter called the Principal, as Principal, and

\_\_\_\_\_ a corporation organized and existing under the laws of the State of \_\_\_\_\_ with its principal office in the City of \_\_\_\_\_, (hereinafter called the Surety), as Surety, are held and firmly bound unto the Flood Control District of Maricopa County, State of Arizona in the amount of \_\_\_\_\_ dollars ( \_\_\_\_\_ ), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Flood Control District of Maricopa County, dated the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, for \_\_\_\_\_

\_\_\_\_\_ which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Surety, and during the life of any guaranty required under the takings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived; the then above obligation shall be void, otherwise to remain in full force and effect;

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, to the extent as if it were copied at length herein.

The prevailing party in a suit on this bond shall be entitled to such reasonable attorney's fees as may be fixed by the judge of the court.

Witness our hands this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

\_\_\_\_\_  
PRINCIPAL SEAL

BY: \_\_\_\_\_

\_\_\_\_\_  
AGENCY OF RECORD

\_\_\_\_\_  
SURETY SEAL

\_\_\_\_\_  
AGENCY ADDRESS

BY: \_\_\_\_\_

\_\_\_\_\_  
POWER OF ATTORNEY SEAL

BY: \_\_\_\_\_



INDEMNIFICATION AND INSURANCE

- a. Contractor shall indemnify, defend and save harmless the Flood Control District of Maricopa County and/or any of its agents, officials and employees, from any and all claims, demands, suits, actions proceedings, loss, cost, and damages, including any attorney's fees and/or litigation expenses, which may be bought or made against or incurred by the Flood Control District of Maricopa County on account of loss of or damage to any property or for injuries to or death of any person, caused by, arising out of, or contributed to, in whole or in part by reasons of anyu alleged negligent act, professional error or omission, or negligence of Contractor, its employees, agents, representatives, or subcontractors, their employees, agents or representatives in connection with or incident to the performance of this Agreement, or arising out of Workers' Compensation Claims of Employees of Contractor and/or its Subcontractor or claims under similar such laws or obligations. Contractor's obligation under this Section shall not extend to any liability caused by the negligence of the Flood Control District of Maricopa County, or its employees.
- b. The Contractor shall provide and maintain, and cause its subcontractors to provide and maintain, the following minimum insurance coverage:
- (1) Comprehensive General Liability Insurance with the minimum combined single limit of Fifty Million Dollars (\$50,000,000) each occurrence. The policy shall include coverage for bodily injury and personal injury, broad form property damage, blanket contractual, contractor's protective and products and completed operations.
  - (2) Comprehensive Automobile Liability Insurance with a combined single limit for bodily injury and property damage of not less than Five Million Dollars (\$5,000,000) each occurrence with respect to Contractor's vehicles (whether owned, hired, non-owned), assigned to or utilized in the performance of this Contract.
- c. The policies required by Sections b(1) and (2) shall name the Flood Control District of Maricopa County, its agents, officials and employees as additional insured and shall specify that the insurance afforded Contractor shall be primary insurance and that any insurance coverage carried by the Flood Control District of Maricopa County, shall be excess coverage and not

contributory insurance to that provided by the Contractor. Said policy shall contain a severability of interest provision.

- d. Failure on the part of the Contractor to procure and maintain the required liability insurance and provide proof thereof to the Flood Control District of Maricopa County within thirty (30) days following the commencement of a new policy, shall constitute a material breach of the Contractor upon which the département may immediately terminate this Agreement. Prior to the effective date of this Contract, the Contractor shall furnish the Flood Control District of Maricopa County with copies of a Certificate of Insurance drawn in conformity with the above insurance requirements. The Flood Control District of Maricopa County reserves the right to request and receive certified copies of any or all of the above policies and/or endorsements.

\_\_\_\_\_

Date

\_\_\_\_\_

Contractor