

#9

CONSTRUCTION SPECIFICATIONS

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Phoenix, AZ 85009

FOR

CONTRACT FCD 97-18

CAMELBACK RANCH LEVEE SOUTH

DMJM Arizona, Inc.
300 West Clarendon Avenue, Suite 400
Phoenix, Arizona 85013
(602) 264-1397



(Engineer's Seal)

Prepared For

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Recommended by: Edward A. Raleigh Date: 2/11/97
Edward A. Raleigh, P.E., Chief
Engineering Division

Issued for Public Bidding by: Stanley L. Smith, Jr. Date: 2-11-97
Stanley L. Smith, Jr., P.E.
Interim Chief Engineer and General Manager

SUPPLEMENTARY TO MARICOPA ASSOCIATION OF GOVERNMENTS UNIFORM
STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION EDITION OF 1992
AND REVISIONS AND SUPPLEMENTS THERETO.

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ATTENTION

ALL PROSPECTIVE BIDDERS

A.R.S. Section 34-201 requires that construction bid proposals be accompanied by a certified check, cashiers check or surety bond for ten percent (10%) of the total amount of the bid.

All bonds must be executed solely by a surety company or companies holding a Certificate of Authority to transact surety business in Arizona, issued by the Director of the (State) Department of Insurance.

Bonds (bid, payment and performance) executed by an individual surety or sureties are not in compliance with the Arizona Revised Statutes. Bids received containing bid bonds not in compliance with the Arizona Revised Statutes will be considered as being non-responsive. The use of District-supplied bond forms is required.

Please submit your bids accordingly.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CONTRACT FCD 97-18
CAMELBACK RANCH LEVEE SOUTH

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

INVITATION FOR BID

BID OPENING DATE: July 31, 1997

LOCATION: This project is located at Camelback Road and the Agua Fria River.

PROPOSED WORK: The proposed work includes excavation for and construction of a 3,400 feet soil cement levee.

BIDS:

SEALED BIDS for the proposed work will be received by the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009 until 2:00 p.m. (Phoenix time) on the above date and then publicly opened and read at 2801 West Durango Street, Phoenix, Arizona 85009. All bids are to be marked in accordance with Section 102.9 of the MAG Uniform Standard Specifications and addressed to the Chief Engineer and General Manager, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009. No bids will be received after the time specified for bid opening. All bids must be submitted on proposal forms furnished by the Flood Control District and included in the Proposal Pamphlet. The Board of Directors reserves the right to reject any and all bids and to waive any informality in any bid received.

ELIGIBILITY OF CONTRACTOR:

It is the policy of the Flood Control District of Maricopa County to endeavor to ensure in every way possible that minority and women-owned business enterprises have every opportunity to participate in providing professional services, purchased goods, and contractual services without being discriminated against on the grounds of race, religion, sex, age, disability, or national origin.

The bidder shall be required to certify that it has the appropriate "A" Contractor's license in the State of Arizona to perform the before-mentioned type of work. Certification shall be on the form provided herein.

The bidder may be required to furnish an affidavit as evidence of previous satisfactory performance in the above-mentioned type of work.

CONTRACT TIME:

All work on this Contract is to be completed within two hundred ten (210) calendar days after date of Notice to Proceed.

MBE/WBE PARTICIPATION:

For this contract, a goal of five percent (5%) MBE/WBE is established for Minority/Women-Owned Business Enterprises. Instructions and required forms are included in the Minority and Women-Owned Business Enterprise Program Contracting Requirements section. The Maricopa County minority and Women-Owned Business Enterprise Program, effective January 1, 1992, is incorporated by reference.

PRE-BID CONFERENCE:

A pre-bid conference will be held at July 22, 1997 at 2:00 p.m. at the Flood Control District Harquahala/New River Conference Room., 2801 West Durango Street, Phoenix, Arizona. It is in the best interest of prospective bidders to attend the pre-bid conference.

Questions or items for clarification may be addressed to the Contracts Manager in writing, at least five (5) days prior to bid opening date. Where appropriate, any answers or clarifications affecting the cost may be addressed to all bidders in an addendum. Verbal interpretations, unless specifically addressed by addendum, shall not be binding nor have any legal effect.

PROJECT PLANS, SPECIAL PROVISIONS AND CONTRACT DOCUMENTS:

Plans and Construction Specifications may be obtained from the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009 upon payment of \$24.50 by check, payable to the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. This payment will not be refunded. Mail orders for project documents must include an additional \$7.50 for first class U.S. postage and handling. The total \$32.00 will not be refunded. Regardless of circumstances, we cannot guarantee mail delivery. Each bid must be accompanied by a Bid Bond, cashier's or certified check or postal money order equal to 10 percent (10%) of the bid, made payable to the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY as a guarantee that if the work is awarded to the bidder, the bidder will within ten (10) days of receipt of the Proposal Acceptance, enter into proper contract and bond condition for the faithful performance of the work, otherwise, said amount may be forfeited to the said BOARD OF DIRECTORS as liquidated damages.

PRINCIPLE ITEMS AND APPROXIMATE QUANTITIES

QUANTITY	UNIT	DESCRIPTION
34,400	CY	EXCAVATION
3,400	LF	SOIL CEMENT LEVEE

BID

TO THE BOARD OF DIRECTORS
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PHOENIX, ARIZONA

Gentlemen:

The following Bid is made for construction of Camelback Ranch Levee South, FCD 97-18, in the County of Maricopa, State of Arizona.

The following Bid is made on behalf of

and no others. Evidence of authority to submit the bid is herewith furnished. The bid 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 Board of Directors is personally or financially interested, directly or indirectly, in the bid, 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 certifies that the approved Plans, Supplementary General Conditions, Special Provisions, Forms of Contract, Bonds, and Sureties authorized by the Board of Directors and constituting essential parts of the bid, have been carefully examined and also that the work site 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, Construction Specifications, Special Provisions, Supplementary General Conditions, or conditions to be overcome, be pled. On the basis of the Plans, Construction Specifications, Special Provisions, Supplementary General Conditions, the Forms of Contract, Bonds, and Sureties 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 the work or materials, by the quantity thereof actually incorporated in the complete project, as determined by the Engineer or Architect.

The Undersigned understands that the quantities mentioned herein are approximate only 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.

The Undersigned further proposes to perform all extra work that may be required on the basis provided in the Specifications and to give such work personal attention and to secure economical performance.

The Undersigned further proposes to execute the Contract Agreement and furnish satisfactory Bonds and Sureties within ten (10) days of receipt of Notice of Bid acceptance, **TIME BEING OF THE ESSENCE**. The Undersigned further proposes to begin work as specified in the Contract attached hereto, and to complete the work within one hundred fifty (150) calendar days from the effective date specified in the Notice to Proceed, and maintain at all times a Payment and Performance Bond, approved by the Board of Directors, each in an amount equal to one hundred percent of the contract amount. 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 Bonds and Sureties to be in full force and effect until the work is finally accepted and the provisions of the Plans, Specifications, and Special Provisions fulfilled.

A bid bond in the amount and character named in the Invitation to Bid, and amounting to not less than ten (10) percent of the total bid, is enclosed. The bid bond is submitted as a guaranty of the good faith of the Bidder, that the Bidder will enter into a written contract to do the work, as provided, if successful in securing the award thereof; and it is hereby agreed that if at any time other than as provided in the bid requirements and conditions the Undersigned should withdraw its bid, if the bid is accepted and there should be failure on the part of the Undersigned to execute the Contract and furnish satisfactory Bonds and Sureties 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 Bid Bond as liquidated damages.

The Undersigned acknowledges receipt of the following addenda, attached these to the bid package, and has included their provisions in the proposal:

Addendum No. _____	Dated _____

The Undersigned has enclosed the required bid security to this Bid.

BIDDING SCHEDULE

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTEBDED AMT.
105	Partnering	LS	1	\$4,000.00	\$4,000.00
107-1	NPDES/SWPPP Permits	LS	1		
107-2	Public Relations	LS	1	\$5,000.00	\$5,000.00
107-3	Signs	EA	2		
202	Mobilization	LS	1		
206	Foundation Excavation	CY	17,000		
211	Embankment	CY	17,400		
220	Loose Rip Rap	CY	490		
221-1	Soil-Cement Bank Protection	CY	38,800		
221-2	Cement for Soil Cement	TON	7,210		
310	Aggregate Base Course	TON	4,200		
350	Removal of Existing Improvements	LS	1		
401	Traffic Control	LS	1		
421	Smooth Wire Fence (4-wire)	LF	4,123		
430	Seeding	ACRE	2		
510-1	Splash Walls	LS	1		
520-1	Safety Rail	LF	3,568		
520-2	Fence Gate	EA	2		
525	Pneumatically placed Mortar	SY	185		
	TOTAL CONSTRUCTION COSTS				

BID TOTAL _____

IF BY AN INDIVIDUAL:

By: _____ (Printed Name - Title) _____ (Address)

(Signature) _____ (Date) _____ (Telephone Number)

IF BY A FIRM, PARTNERSHIP OR L.L.C. (LIMITED LIABILITY COMPANY)

(Firm Name) _____ (Firm Address)
By: _____ (Signature - Title) _____ (Date) _____ (Telephone Number)

** Name and Address of Each Member, or each Manager of L.L.C. per Operating Agreement

** The Name and Post Office Address of each Member of the Firm or Partnership must be shown, or of each Manager of an L.L.C., also address of the registered office of the L.L.C.

IF BY A CORPORATION:

(Corporate Name) _____ (Corporation Address)

(Printed Name - Title) _____ (Telephone Number)
By: _____ (Signature) _____ (Date)

* Incorporated under the Laws of the State of Arizona Names and Addresses of Officers:

(President) _____ (Address)

(Secretary) _____ (Address)

(Treasurer) _____ (Address)

* The Name of the State under which the Laws of the Corporation was Chartered and Name, Title, and Business Address of the President, Secretary, and Treasurer must be shown.

SUBCONTRACTOR LISTING

As required in Section 102.6 of the Supplementary General Conditions, the following is a listing of Subcontractors and material suppliers, that are to be used in the event the undersigned should enter into contract with the Owner. This list shall include the subcontractors as listed on the Actual M/WBE Affidavit which is submitted within seven (7) days following the bid opening. No change in the subcontractors and material suppliers listed will be made without prior written approval of the Owner.

(Signature)

SURETY BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____, as Principal, (hereinafter called the Principal), and the _____, a corporation duly organized under the laws of the State of _____, as Surety, (hereinafter called the Surety), are held and firmly bound unto the Flood Control District of Maricopa County as Obligee, in the sum of **ten percent (10%)** of the total amount of the bid of Principal, submitted by him to the Flood Control District of Maricopa County, for the work described below, for the payment of which sum, well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, and administrators, successors and assigns, jointly and severally, firmly by these presents, and in conformance with the Arizona Revised Statutes.

WHEREAS, the said Principal is herewith submitting its proposal for FCD 97-18, Camelback Ranch Levee South.

NOW, THEREFORE, if the Flood Control District of Maricopa County shall accept the proposal of the Principal and the Principal shall enter into a contract with the Flood Control District of Maricopa County in accordance with the terms of the proposal and give the Bonds and Certificates of Insurance as specified in the Standard Specifications with good and sufficient Surety for the faithful performance of the contract and for the prompt payment of labor and material furnished in the prosecution of the contract, or in the event of the failure of the Principal to enter into the contract and give such Bond and Certificate of Insurance, if the Principal pays to the Flood Control District of Maricopa County the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Flood Control District of Maricopa County may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise it remains in full force and effect, provided, however, that this bond is executed pursuant to the provisions of Section 34-201, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of the section to the extent as if it were copied at length herein.

Signed and sealed this _____ day of _____, A.D., 1997.

Agency of Record, State of Arizona

Principal

Agency Address

By: _____

Title: _____

Surety

By: _____

Bond Number: _____

Title: _____

ATTACH SURETY POWER OF ATTORNEY

**AFFIDAVIT BY CONTRACTOR
CERTIFYING THAT THERE WAS NO COLLUSION
IN BIDDING FOR CONTRACT**

STATE OF ARIZONA)
County of Maricopa)SS

_____ being first duly sworn, deposes and says:

That he/she is _____ of _____ bidding on Contract FCD 97-18 for Camelback Ranch Levee South, in the County of Maricopa, State of Arizona.

That, in connection with the above-mentioned project, neither he/she, nor anyone associated with the aforesaid business, has, directly or indirectly, participated in any collusion, entered into any contract, combination, conspiracy or other act in restraint of trade or commerce in violation of the provisions of A.R.S. Section 34-251, Article 4, as amended.

(Signature of Affiant)

Subscribed and sworn to before me this ____ day of _____, 1997.

(Notary Public)

My Commission Expires

CERTIFICATION OF LICENSE

Pursuant to A.R.S. Section 32-1169, I hereby state that I hold a current contractor's license, duly issued by the office of the Registrar of Contractors for the State of Arizona, said license has not been revoked, that the license number is: _____ that my privilege license number (as required by A.R.S. Section 42-1305) is: _____; and that, if any exemption to the above licensing requirements is claimed;

(1) The basis for the claimed exemption is: _____ and;

(2) The name(s) and license number(s) of any general, mechanical, electrical, or plumbing contractor(s) to be employed on the work are:

IT IS UNDERSTOOD THAT THE FILING OF AN APPLICATION CONTAINING FALSE OR INCORRECT INFORMATION CONCERNING AN APPLICANT'S CONTRACTOR'S LICENSE OR PRIVILEGE LICENSE WITH THE INTENT TO VOID SUCH LICENSING REQUIREMENTS IS UNSWORN FALSIFICATION PUNISHABLE ACCORDING TO A.R.S. SECTION 13-2704.

Signature of Licensee

Date: _____

Company: _____

**MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISE PROGRAM
CONSTRUCTION CONTRACTING REQUIREMENTS**

A. The following conditions will apply in the calculations of the percentage attainment:

1. All M/WBE firms used in attainment of the goal must be certified with the Maricopa County Minority Business Office (MBO). The MBO is located at 2901 West Durango Street, Phoenix, Arizona 85009, telephone 506-4068. In addition, only those firms certified prior to the bid opening will be considered in the attainment of the goal.
2. Prime contractor subcontracts to MBE or WBE:
The M/WBE amount to be applied to the goal will be based on that portion (dollar value) of the contract that the M/WBE performs. For example, if a prime contractor subcontracts work amounting to \$100,000 of a contract for which the total project cost is \$1,000,000 the M/WBE participation will be credited as 10 percent.
3. Prime Minority Contractor:
An M/WBE prime contractor will be credited with the M/WBE participation for that portion of the contract which they themselves perform plus that portion subcontracted to other M/WBE firms. For example, if an M/WBE prime contractor proposes to perform 50 percent of a project quoted as \$1,000,000 and subcontracts 25 percent to an MBE firm and 25 percent to a non-M/WBE firm, M/WBE participation will be credited as 75 percent, or \$750,000.
4. Minority-Non Minority Joint Venture:
A joint venture consisting of M/WBE participation and non-M/WBE business enterprises, functioning as a prime contractor, will be credited with minority participation on the basis of the percentage of profit accruing to the M/WBE firm. For example, if a M/WBE and non-M/WBE joint venture proposes to perform 50 percent of a \$1,000,000 project and 50 percent of the joint venture profits (\$500,000) are to accrue to the M/WBE partner in the joint venture, M/WBE participation will be credited at 25 percent or \$250,000.
5. Lower Tier Non-M/WBE Participation:
M/WBE subcontractors proposing to further subcontract to non-M/WBE contractors shall not have that portion of subcontracting activity considered when determining the percentage of M/WBE participation.
6. M/WBE Suppliers:
Any M/WBE supplier that performs a commercially useful function, manufactures or substantially alters the material or product it supplies will have that portion of activity considered when determining the percentage of M/WBE participation.
7. M/WBE Trucking:
Credit for trucking by MBEs or WBEs will be the amount to be paid when the MBE or WBE trucker will perform the trucking with his/her trucks, tractors, and employees or when a MBE or WBE trucking broker has signed agreements with MBE and WBE truckers.

B. Required forms:

Two Affidavits are included as part of this section. The first form, the "M/WBE Assurances Affidavit", must be completed and submitted with the bid - **FAILURE TO DO SO SHALL BE CAUSE FOR REJECTION OF THE BID.**

A SAMPLE of the "Actual M/WBE Participation Affidavit", that must be completed and returned by the first and second bidders to the Minority Business Office by 4:00 p.m. on the seventh calendar day after bid opening, if M/WBE goals have been established, is provided for information purposes. A copy of the sample or the sample form itself may also be used. The affidavit will list the M/WBE participation by M/WBE firm name and the relative dollar value of the M/WBE contract. The information in this affidavit is binding on the contractor, to the extent that any amounts may be increased and not decreased, and that if any listed M/WBE's are unable to enter into a subcontract with contractor, the contractor **must** provide a written report to the Procurement Officer, through the Owner's representative in accordance with instructions provided elsewhere in this document.

C. Good Faith Efforts:

Bids which fail to meet MBE or WBE minimum goals at levels which equal or exceed established goals may be considered nonresponsive unless good faith efforts can be determined. Only MBE and WBE firms certified by Maricopa County prior to the bid submittal date, and which will perform a commercially useful function will be counted toward meeting the participation goals. Any portion of the work that a proposed MBE or WBE firm will subcontract to other than a certified firm, regardless of tier, will not be counted toward the applicable goals.

The apparent first and second low bidders who do not fulfill the established MBE and WBE goals must demonstrate, through detailed and comprehensive documentation, that "good faith" efforts have been made to solicit, assist and utilize MBE and WBE firms to meet participation goals.

The County minority Business Office (MBO) will assist prime contractors in identifying possible qualified and interested MBE and WBE subcontractors to meet designated MBE and WBE goals. **A M/WBE listing will be furnished with the bidding documents**, which contractors must utilize in identifying M/WBE firms. It will be the responsibility of the prime contractors to obtain the MBE and WBE firms necessary to meet the MBE and WBE goals. **FAILURE TO CONTACT THE MBO FOR ASSISTANCE IN COMPLYING WITH THESE GOALS MAY RESULT IN NOT HAVING IMPLEMENTED "GOOD FAITH" EFFORTS.** Contact may be in writing, by telephone, or in person. If by phone or in person, name of MBO person spoken to should be obtained and written within the "CONTRACTOR CERTIFICATE OF GOOD FAITH" SUBMITTAL FORM (supplied if a contract has M/WBE goals).

(The Minority Business Office is located at 2901 West Durango Street, Phoenix, Arizona. Telephone number is 506-4068.)

FAILURE TO IMPLEMENT "GOOD FAITH" EFFORTS IN ACCORDANCE WITH THE MARICOPA COUNTY MINORITY BUSINESS ENTERPRISE PROGRAM TO THE SATISFACTION OF MARICOPA COUNTY MAY RESULT IN THE REJECTION OF THE BID.

If information submitted by a prime contractor indicates that established MBE and WBE goals have not been met, the contractor must be required to provide sufficient documentation to demonstrate that he/she has complied with MBE and WBE requirements or good faith efforts. Good faith efforts will be determined by both quality and intensity of these efforts. Documentation provided to the MBO must include:

1. The date bidder requested assistance in writing, in person, or by telephone from the MBO. The bidder should request assistance from the MBO office in order for a determination to be made. **As Maricopa County M/WBE listings are updated frequently, bidders shall contact the MBO to ensure that they have the most recent edition.**
2. Names, addresses and telephone numbers; and dates of notification of Maricopa County certified MBEs and WBEs solicited by direct mail for this project; and dates and methods used for follow up of initial solicitations to determine with certainty whether MBEs or WBEs were interested in subcontracting. (SEE FOLLOWING NOTE).

3. Items of work for which bidder requested subbids, proposals or materials to be supplied by MBEs and WBEs; information furnished to interested MBEs and WBEs such as specifications and requirements of the work; plans; and any breakdown of items of work into economically feasible units to facilitate MBE and WBE participation.
4. Names of MBEs and WBEs who submitted bids for any of the work indicated above and were not accepted by the prime contractor. An explanation of why MBEs or WBEs contacted will not be awarded subcontracts. If price was the reason for rejection of the bid, the price bid of rejected MBEs or WBEs and price bid of the selected subcontractor shall be submitted. Since utilization of available MBEs and WBEs is the program objective, price differences will not automatically be considered as cause for a prime contractor's rejection of MBE and WBE bids.
5. Documentation of written notices or telephone calls to a reasonable number of M/WBEs soliciting their participation in sufficient time to allow M/WBEs to participate effectively. All M/WBEs listed on the Maricopa County Certification list which provide applicable goods and services for subject procurement/project should be contacted.

NOTE: THE ABOVE GOOD FAITH EFFORTS MUST HAVE BEEN CONDUCTED DURING THE BIDDING PERIOD AND PRIOR TO THE BID OPENING WITH SUBSTANTIAL TIME IN ORDER TO ALLOW FOR A RESPONSE FROM POTENTIAL M/WBE SUBCONTRACTORS. ORIGINAL CONTACT BY A PRIME CONTRACTOR JUST PRIOR TO OR ON THE BID OPENING WILL NOT BE CONSTRUED AS HAVING PROVIDED SUFFICIENT RESPONSE TIME FOR SUBMISSION OF SUBCONTRACT BIDS.

The following efforts can also be utilized in demonstrating "Good Faith" in soliciting M/WBE participation.

1. A description of the efforts made to assist MBEs and WBEs whose bids were rejected to be more competitive in their subcontracting bids. These efforts could include assistance in meeting bonding or insurance requirements.
2. Names and dates of advertisement of each newspaper, trade paper, and minority focus paper in which a request for MBE and WBE participation for this project was placed by the bidder.

Contractors are encouraged to seek M/WBEs in the same geographical area in which the work is to be performed or goods provided. If the bidder cannot meet the established goals using M/WBEs from the geographical area, the bidder should expand its search to a reasonable wider geographical area.

The MBO will make the final decision as to whether good faith efforts were met, based on the information submitted.

D. Appeal Process for Bid Award:

If the Owner is considering award of a contract to a bidder other than the low bidder because of failure to meet MBE and WBE participation goals or good faith efforts, the low bidder will be notified and given an opportunity to protest the decision. This protest will be made in accordance with the Maricopa County Procurement Code, Article 9, MCI-905, which is incorporated by reference.

E. Contract Compliance:

Failure of any bidder, contractor or subcontractor to comply with any of the requirements of the Maricopa County minority and Women-Owned Business Program shall be a material breach of contract. During the term of an awarded contract, the prime contractor shall:

1. Fulfill the MBE and WBE participation commitments submitted with their bid;
2. Continue to make every effort to utilize MBEs and WBEs;

3. Require that their subcontractors make every effort to utilize MBEs and WBEs;
4. Maintain records necessary for monitoring their compliance with provisions contained in the M/WBE Program.

The primary responsibility for assuring contractor's compliance with these M/WBE contract requirements after award rests with the Owner's designated representative. The Owner's designated representative should ascertain that no one other than the approved MBE or WBE contractors or subcontractors are performing the work, and that MBE and WBE subcontractor substitutes have been approved in advance. The prime contractor shall not perform any MBE or WBE contract work items without prior approval by the Owner's Procurement Officer, through the Owner's designated representative.

The Owner's Procurement Office shall advise the Minority Business Office immediately of any circumstances where a contractor appears to be in violation of the MBE and WBE contract requirements. An investigation will be held by the MBO and a recommendation for corrective action shall be forwarded to the Owner's Procurement Officer. Intentional noncompliance with the MBE and WBE requirements may result in withholding funds on the items already completed, in termination of the contract, and/or formal debarment from future contracts. The Maricopa County Minority Business Office reserves the right to inspect all records of the contractor, MBEs and WBEs concerning this project.

The MBO will conduct MBE and WBE compliance reviews on a regular basis.

F. Substitution of Subcontractors:

The prime contractor shall request approval to replace an approved MBE or WBE subcontractor that is unable or unwilling to perform successfully on a contract with another MBE or WBE. This failure does not remove the contractor's responsibility for meeting the MBE and WBE participation goals on the contract. A written request for substitution must be made to the Owner's Procurement Officer, through the designated Owner's representative, of the Procurement Agency. The substitute MBE or WBE, obtained to perform an equal or greater dollar value of work, must be approved by the Owner's Procurement Officer, through the designated Owner's representative, prior to beginning of any work by the substitute MBE or WBE. The request for substitution must include, but is not limited to the following:

1. Reason for substitution.
2. Name, address, and telephone number of the approved MBE or WBE.
3. Name, address and telephone number of the MBE or WBE substitute.
4. Item, numbers, description of work and the proposed MBE and/or WBE dollar amount.
5. Good faith effort documentation if the substitute subcontractor is not an MBE or WBE.

G. Requests for Pay:

Each Request for Pay must be accompanied by a Maricopa County Minority/Women-Owned Business Enterprise Program "MBE/WBE PARTICIPATION REPORT" in the form as provided by the Flood Control District of Maricopa County.

The final pay request shall include a listing of total contract MBE/WBE participation. Line numbers and a description of actual work performed shall also be included. If, at the time of contract completion, the MBE and WBE commitments are not actually attained, the report is to provide an explanation of failure to comply. These reports shall be submitted within thirty (30) days of contract completion, PRIOR TO RELEASE OF ANY REMAINING CONTRACT RETENTION.

CONTRACTOR CERTIFICATE OF GOOD FAITH*

The intent of this certification is to document the good faith efforts implemented by the apparent low bidder in soliciting and utilizing M/WBE firms to meet the established M/WBE goals for County contracts. This certificate will assist Maricopa County in determining whether the apparent low bidder has implemented "good faith" efforts in accordance with the Maricopa County Minority Business Program. The burden of proof rests with the apparent low bidder.

(NOTE: Prior to filling out this certificate it is important that contractors review the "good faith" efforts requirements in the M/WBE section of the project specification booklet).

Failure to implement "good faith" efforts to the satisfaction of Maricopa County will result in rejection of the proposal.

I, _____, do hereby acknowledge that I am the _____ of _____ who has been identified as the selected contractor on Flood Control District Project/Contract FCD 97-18.

Provide a brief summary of why the established M/WBE goal for this project has not been met. (Attach additional sheets if necessary).

I hereby certify that I have made comprehensive "good faith" efforts to solicit and utilize County certified M/WBEs to meet the established M/WBE goal of this project as demonstrated by my responses to the following questions:

A. IDENTIFYING SUBCONTRACTOR WORK ITEMS

Contractors are encouraged to select portions of work to be subcontracted in a manner which will increase the likelihood of meeting the established M/WBE goal for the project. In selecting work to be performed, contractors will consider, where appropriate, breaking down the project into economically feasible units to facilitate M/WBE participation. Contractors are reminded that only M/WBE certified by the County can be used as participants towards meeting the project goals. A County M/WBE Certification listing will be provided to all contractors interested in submitting bids for projects. This listing is the only authorized source from which to select M/WBEs for project participation. Current copies of this listing may be obtained by calling the Minority Business Office at (602) 506-4068.

1. Which portions of the contract proposal, in terms of the nature of the work were selected to be subcontracted to M/WBE firms?

B. NOTIFYING M/WBE FIRMS OR CONTRACTING OPPORTUNITIES

1. Solicitations by mail/fax must be made to all M/WBE firms identified on the M/WBE Certification Listing that perform the type of work which is proposed for subcontracting. Following this initial solicitation, at least one follow-up telephone call must be made to any of the M/WBE firms who have not responded to the mailing.
2. In the spaces provided below, indicate which firms received written notification of work items to be subcontracted. In the appropriate space, also indicate when the M/WBE firms received subsequent telephone solicitations. Please attach additional sheets so that all firms contacted are listed and attach photo copies of all written/fax solicitations to M/WBEs to this documentation.

M/WBE Firm Contacted	Name	Tel. No.	Date
_____	_____	_____	_____
_____	_____	_____	_____

3. Were the services of the County Minority Business Office used to assist the contractor in the recruitment of M/WBEs or to assist in solving other problems? Yes____ No____
Contact was made by_____ Telephone_____
Written correspondence_____ Date contacted_____
Staff person contacted_____

C. PROVIDING M/WBES WITH ASSISTANCE

1. Explain any efforts undertaken to provide M/WBEs with information regarding project plans, specifications and requirements of the project:

2. Describe any efforts initiated to provide special assistance to M/WBE firms interested in participating in this project:

3. Describe any efforts undertaken to assist M/WBE firms in obtaining bonding, lines of credit, or insurance required by the County for this project:

4. Was solicitation for M/WBEs advertised in local papers, ethnic periodicals, or trade journals? If YES, please list the name of the periodical and dates advertised.

D. SOLICITING QUOTES FROM M/WBE FIRMS

Contractors must solicit quotes in good faith with interested M/WBE firms. Quotes and bids from interested M/WBEs must not be rejected by bidders without sound justification based upon a thorough investigation of the capabilities of the M/WBE firms.

1. Indicate in the space provided below, which M/WBE firms submitted quotes on the project proposal. Also provide a brief explanation of why any of these M/WBE quotes were rejected. If price was a determining factor, provide documentation showing the non-minority quotes. Please attach additional sheets if necessary.

Name of M/WBE Firm

Explanation for rejecting quote

* To be included in contract documents or those procurements which have M/WBE contract goals.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
 MINORITY/WOMEN OWNED BUSINESS ENTERPRISE PROGRAM
ACTUAL MBE/WBE PARTICIPATION AFFIDAVIT
 (NOTE: COMPLETED AFFIDAVIT MUST BE SUBMITTED WITHIN SEVEN CALENDAR DAYS
 FOLLOWING THE BID OPENING).

 Name of Contractor

Project/Contract Number 97-18
 Contract M/WBE Goal: 5%

Total Amount of Contract _____

 Contact Person

 Street No.

 City State Zip

<u>Minority/Women Owned Firm</u>	<u>Principal</u>	<u>Address</u>	<u>Type of Work</u>	<u>Proposed Contract Percentage</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

TOTALS (Dollars/Percentage) _____

The undersigned has entered into a formal agreement with the MBE/WBE subconsultants/subcontractors /suppliers listed above, in the execution of this contract with Maricopa County.

S A M P L E

 Signature

 Title

 Date

STATE OF ARIZONA }
 }ss
 County of Maricopa }

Subscribed and sworn to before me this _____ day of _____ by _____
 Notary Public

My commission Expires: _____

**MARICOPA COUNTY
MINORITY/WOMEN-OWNED BUSINESS ENTERPRISES PROGRAM**

**D/M/WBE PARTICIPATION REPORT
(To be attached with Each Request for Pay)**

Date: _____

General Contractor/Prime Consultant: _____
Contact Person: _____
Address: _____
Telephone Number: _____
Fax Number: _____

Project Description: _____
Contract Number: _____
For Pay Period of (indicate dates): _____

D/M/WBE Subcontractor/Subconsultant Name: _____
Contact Person: _____
Address: _____
Telephone Number: _____

Type of Firm: _____
Type of Work performed for this project: _____

Total D/M/WBE Subcontract Amount: \$ _____

**Amount Paid to this D/M/WBE
Subcontractor this invoice:** \$ _____

Total paid to this Subcontractor to date: \$ _____

Total D/M/WBE Contract Goal this project = ____ %

**Total D/M/WBE Participation
on this contract to date = ____ %**

**cc: Contracts and D/W/MBE Office
2901 West Durango Street
Phoenix, Arizona 85009**

CONTRACT AGREEMENT

THIS AGREEMENT, made and entered into this ____ day of _____, 1997 by and between the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, hereinafter called the OWNER, acting by and through its BOARD OF DIRECTORS, and _____, hereinafter called the CONTRACTOR.

WITNESSETH: That the said CONTRACTOR, for and in the consideration of the sum of \$ _____ to be paid to him by the OWNER, in the manner and at the times hereinafter provided, and of the other covenants and agreements herein contained, hereby agrees for himself, heirs, executors, administrators, successors, and assigns as follows:

ARTICLE I - SCOPE OF WORK: THE CONTRACTOR shall construct, and complete in a workmanlike and substantial manner and to the satisfaction of the Chief Engineer and General Manager, a project for the Flood Control District of Maricopa County, designated as Contract FCD 97-18, and furnish at its own cost and expense all necessary machinery, equipment, tools, apparatus, materials, and labor to complete the work in the most substantial and workmanlike manner according to the Plans and Construction Specifications on file with the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona, and such modifications of the same and other directions that may be made by the Flood Control District of Maricopa County as provided herein.

ARTICLE II - CONTRACT DOCUMENTS: The Construction Specifications, i.e., Invitation to Bid, Plans, Standard Specifications and Details, Supplementary General Conditions, Special Provisions, Addenda, if any, Proposal, Affidavits, Performance Bond, Payment Bond, Certificates of Insurance, and Change Orders, if any, are by this reference made a part of this Contract and shall have the same effect as though all of the same were fully inserted herein.

ARTICLE III - TIME OF COMPLETION: The CONTRACTOR further covenants and agrees at its 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 its 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 in accordance with the requirements of A.R.S. Section 34-221, as amended. The CONTRACTOR agrees to discharge its obligations and make payments to its subcontractors and suppliers in accordance with A.R.S. Section 34-221.

ARTICLE V - TERMINATION: The OWNER hereby gives notice that pursuant to A.R.S. Section 38-511(A) this contract may be cancelled without penalty or further obligation within three years after execution if any person significantly involved in initiation, negotiation, securing, drafting or creating a contract on behalf of the OWNER is, at any time while the contract or any extension of the contract is in effect, an employee or agent of any other party to the contract in any capacity or a consultant to any other party of the contract with respect to the subject matter of the contract. Cancellation under this section shall be effective when written notice from the Chief Engineer and General Manager of the OWNER is received by all of the parties to the contract. In addition, the OWNER may recoup any fee for commission paid or due to any person significantly involved in initiation, negotiation, securing, drafting or creating the contract on behalf of the OWNER from any other party to the contract arising as a result of the contract.

ARTICLE VI - NEGOTIATION CLAUSE: Recovery of damages related to expenses incurred by the CONTRACTOR for a delay for which the OWNER is responsible, which is unreasonable under the circumstances and which was not within the contemplation of the parties to the contract, shall be negotiated between the CONTRACTOR and the OWNER. This provision shall be construed so as to give full effect to any provision in the contract which requires notice of delays, provides for arbitration or other procedure for settlement or provides for liquidated damages.

ARTICLE VII - COMPLIANCE WITH LAWS: The CONTRACTOR is required to comply with all Federal, State and local ordinances and regulation. The CONTRACTOR's signature on this contract certifies compliance with the provisions of the I-9 requirements of the Immigration Reform Control Act of 1986 for all personnel that the CONTRACTOR and any subcontractors employ to complete this project. It is understood that the OWNER shall conduct itself in accordance with the provisions of the Maricopa County Procurement Code.

ARTICLE VIII - MBE/WBE PROGRAM: The Flood Control District of Maricopa County will endeavor to ensure in every way possible that minority and women-owned business enterprises shall have every opportunity to participate in providing professional services, purchased goods, and contractual services to the Flood Control District of Maricopa County without being discriminated against on the grounds of race, religion, sex, age, disability, or national origin. The Maricopa County Minority Business Program implemented January 1, 1992, is incorporated by reference.

ARTICLE IX - ANTI-DISCRIMINATION PROVISION: The contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, or disability and further agrees not to engage in any unlawful employment practices. The CONTRACTOR further agrees to insert the foregoing provision in all subcontracts hereunder.

IN WITNESS WHEREOF: Five (5) identical counterparts of this Contract, each of which shall for all purposes be deemed an original thereof, have been duly executed by the parties hereinabove named, on the date and year first above written.

Party of the First Part

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY,
PARTY OF THE SECOND PART

By: _____
Signature

Title: _____

By: _____
Chairman, Board of Directors

Date: _____

Tax Identification Number

ATTEST:

Clerk of the Board

RECOMMENDED BY:

Chief Engineer and General Manager
Flood Control District of Maricopa County

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.

By: _____
District, General Counsel

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, in the County of Maricopa, State of Arizona (hereinafter called the Obligee), in the amount of _____, 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 _____, 1997 for Contract FCD 97-18 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 CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal promptly pays all monies due to all persons supplying labor or materials to the Principal or the Principal's Subcontractors in the prosecution of the work provided for in the contract, this obligation is void. Otherwise it remains in full force and effect.

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

The prevailing party in a suit on this bond shall recover as a part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this _____ day of _____, 1997.

Principal

By: _____

Agency of Record, State of Arizona

Title: _____

Agency Address

BOND NUMBER: _____

Surety Seal

By: _____

ATTACH SURETY POWER OF ATTORNEY

Title: _____

**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, in the County of Maricopa, State of Arizona, in the amount of _____, 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 _____, 1997, for Contract FCD 97-18, 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 CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal faithfully performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of the contract during the original term of the contract and any extension of the contract, with or without notice to the Surety, and during the life of any guaranty required under the contract, and also performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of all duly authorized modifications of the contract that may hereafter be made, notice of which modifications to the Surety being hereby waived; the above obligation is void. Otherwise it remains in full force and effect.

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

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this _____ day of _____, 1997.

Principal

By: _____

Agency of Record, State of Arizona

Title: _____

Agency Address

BOND NUMBER: _____

Surety Seal

By: _____

ATTACH SURETY POWER OF ATTORNEY

Title: _____

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
CERTIFICATE OF INSURANCE

CONTRACT FCD 97-18

PROJECT TITLE Camelback Ranch Levee South

NAME AND ADDRESS OF INSURANCE AGENCY	<u>INSURANCE COMPANIES AFFORDING COVERAGES</u>	
	Company Letter	A
	Company Letter	B
	Company Letter	C
	Company Letter	D
	Company Letter	E
NAME AND ADDRESS OF INSURED Sverdrup Civil, Inc. 432 North 44th Street, Suite 250 Phoenix, Arizona 85008	Company Letter	F

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time

CO. LTR	TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE (MM/DD/YY)	EXPIRATION DATE (MM/DD/YY)	LIMITS
	COMMERCIAL GENERAL <input checked="" type="checkbox"/> LIABILITY FORM <input checked="" type="checkbox"/> PREMISES OPERATIONS <input checked="" type="checkbox"/> CONTRACTUAL <input checked="" type="checkbox"/> BROAD FORM PROPERTY DAMAGE <input checked="" type="checkbox"/> EXPLOSION & COLLAPSE <input checked="" type="checkbox"/> PRODUCTS/COMPLETED OPERATIONS HAZARD <input checked="" type="checkbox"/> UNDERGROUND HAZARD <input checked="" type="checkbox"/> INDEPENDENT CONTRACTORS <input checked="" type="checkbox"/> PERSONAL INJURY				GENERAL AGGREGATE \$3,000,000 PRODUCTS/COMPLETED OPERATIONS \$1,000,000 BODILY INJURY AND PROPERTY DAMAGE \$3,000,000 PERSONAL INJURY \$1,000,000 EACH OCCURANCE \$1,000,000
	COMPREHENSIVE AUTO <input checked="" type="checkbox"/> LIABILITY & NON-OWNED				EACH OCCURRENCE
	<input type="checkbox"/> EXCESS LIABILITY				NECESSARY IF UNDERLYING NOT ABOVE MINIMUM
	<input checked="" type="checkbox"/> WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY each accident \$1,000,000
	<input checked="" type="checkbox"/> ENGINEERS PROFESSIONAL LIABILITY				EACH CLAIM AND ANNUAL AGGREGATE
	<input checked="" type="checkbox"/> OTHER	In additional to the Flood Control District, add Maricopa County as additional named insured.			

Except for Professional Liability Insurance and Workers' Compensation Insurance, the Flood Control District of Maricopa County is added as an additional insured on those types of policies described herein which are required to be furnished by this contract entered into between the insured and the Flood Control District. To the extent provided in this contract, insured shall hold harmless the Flood Control District of Maricopa County from liability arising out of any services provided or duty performed by insured as required by statute, law, purchase order or otherwise required, with the exception of liability for loss or damage resulting from the sole negligence of Flood Control District, its agents, employees or indemnities. It is agreed that any insurance available to the named insured shall be primary of other sources that may be available. It is further agreed that no policy shall expire, be cancelled, or materially changed to affect the coverage available to the District without thirty (30) days written notice to the District. THIS CERTIFICATE IS NOT VALID UNLESS COUNTERSIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 2801 West Durango Street Phoenix, Arizona 85009	DATE ISSUED _____ _____ AUTHORIZED REPRESENTATIVE
---	---

It is further agreed that:

The Contractor hereby agrees to indemnify and save harmless the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, and MARICOPA COUNTY, or any of their departments, agencies, officers or employees, from and against all loss, expense, damage or claim of any nature whatsoever which is caused by any activity, condition or event arising out of the performance or nonperformance of any of the provisions of this Agreement, with the exception of liability for loss resulting from the sole negligence of the Flood Control District, its agents, employees, or indemnities.

The Flood Control District of Maricopa County, and Maricopa County shall in all instances be indemnified against all liability, losses and damages of any nature for or on account of any injuries to or death of persons or damages to or destruction of property arising out of or in any way connected with the performance or nonperformance of this Agreement, except such injury or damage as shall have been occasioned by the sole negligence of the Flood Control District of Maricopa County, and Maricopa County.

The above cost of damages incurred by the Flood Control District of Maricopa County and Maricopa County or any of their departments, agencies, officers or employees, or others aforesaid shall include in the event of an action, court costs, expenses for litigation and reasonable attorney's fees.

Firm

Date

Principal

By: _____

Title

Flood Control District
Low Org 6900
Questions/Concerns - New County Telephone System

1. Regarding the request for all counts of phone lines, do we need to account for the computer equipment jacks?
2. Does the analog phone have a speaker capability?
3. How much does the digital phone cost? We purchased our existing digital, are we going to get a credit? What are we to do with the Ericsson phones?
4. Are there any guidelines for assignment of digital phones?
5. Do we get to keep our U.S. West lines or not? If not, why not?
6. Will loss of power cause loss of phone service either at the switch or at each individual phone?
7. Please clarify the statement, "analog to analog, digital to digital"?
8. At one point, Telecom ran out of Ericsson display phones and we were forced to replace digital for old Honeywell phones that are analog in our upstairs conference rooms. Can we have digital assigned since this was the original setup?
9. In our counts, are we to include our backup phones we have in storage? Also, we have phones reserved for our Infrastructure Emergency Operations setup, can we include these in our counts?
10. In reference to question 9, these phones are piggybacked with existing phones in the building, will the new system have this capability?
11. What colors are available? Can we have a picture of the model(s) sent to us?

**SUPPLEMENTARY
GENERAL
CONDITIONS**

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CONTRACT FCD 97-18

CAMELBACK RANCH LEVEE SOUTH

SUPPLEMENTARY GENERAL CONDITIONS

SPECIFICATIONS:

Except as otherwise amended by these Supplementary General Conditions and the Construction Special Provisions, construction of this project shall be in accordance with all applicable Maricopa Association of Governments (MAG) Uniform Standard Specifications and Uniform Standard Details, latest revision, together with the Maricopa County Department of Transportation (MCDOT) Supplement to the Uniform Standard Details.

PRECEDENCE OF CONTRACT DOCUMENTS:

This Contract and its designated documents, whether taken separately or together, are to be interpreted according to full intent, meaning, and spirit, and shall be deemed to mutually explain each other and to be descriptive of any materials to be furnished and the work to be performed under this Contract. In cases of any difference or discrepancy between the Contract documents, the order of precedence shall be a) Addendum to the Invitation for Bid, b) the Contract form, c) Supplementary General Conditions, d) Construction Special Provisions, e) Project Plans, f) MCDOT Supplements to the Uniform Standard Details, and g) MAG Uniform Standard Specifications and Uniform Standard Details.

Subsection 101.2 - Definitions and Terms:

1. Change the definition of the phrase "Board of Supervisors" to being the Board of Directors acting under the authority of the laws of the State of Arizona and in their capacity of the Board of Directors of the Flood Control District of Maricopa County.
2. Change the definition of the phrase "Budget Project" to being a project financed by funds set aside in the annual budget or otherwise approved by the Flood Control District of Maricopa County Board of Directors.
3. Add to the definition of the phrase "Contract Documents" the phrase "Supplementary General Conditions."
4. Change the definition of the term "Engineer" to being the person appointed by the Flood Control District of Maricopa County Board of Directors to the office of Chief Engineer and General Manager of the Flood Control District of Maricopa County acting directly or through its authorized representative, the Chief of the Flood Control District of Maricopa County Construction and Maintenance Division.
5. Change the definition for the phrase "Notice of Award" to a letter from the Flood Control District of Maricopa County advising Contractor that it is the successful bidder and the Flood Control District of Maricopa County has accepted its proposal.
6. Change the definition of the term "Owner" to the Flood Control District of Maricopa County, acting through its legally constituted officials, officers, or employees.

7. Add the definition for Maricopa County Minority Business Office (MBO); the office responsible for administering the Maricopa County Minority and Women Owned Business Enterprise Program.
8. Add the definition for the Maricopa County Minority and Women-Owned Business Enterprise Program as being the Program adopted by the Board of Supervisors effective January 1, 1992.

Subsection 102.5 - Preparation of Bid: Add the following:

Bids, including the Bidding Schedule, must be legibly written in ink or typed, with all prices given in numerals. In case of a conflict between the unit bid price and the extension, the unit bid price shall govern.

It shall be the responsibility of prospective bidders to determine, prior to submission of a bid, if any addenda have been issued by the Flood Control District. This may be accomplished by calling 602-506-1501. Any addendum issued, if not already bound into the Special Provisions, **shall be attached and included as part of the Specifications** and any quantities on the Bidding Schedule requiring change shall be adjusted to the new figure by pen and ink. **Bids which do not have appropriate addenda attached, show appropriate changes to the Bidding Schedule, and acknowledge receipt of addenda in the Proposal may be invalid.**

The bidder's Arizona State Contractor's License number and the classification under which it proposes to perform the work shall be shown on the proposal. An "A" **General Engineering License** is required for this contract. The two lowest bidders may be required to provide certification of prior satisfactory completion for similar construction and to furnish a copy of their license and the renewal certificate.

Subsection 102.6 - Subcontractors' List: Add the following:

A list of subcontractors and suppliers (including any M/WBE participation) intended to be used on the project shall be submitted with the bid, on the form provided in the Proposal. Although this list will not be considered as final commitment on the part of the successful proposer, any subcontractor changes from those listed must have Owner's written approval prior to work performed on site by a subcontractor.

Subsection 102.7 - Irregular Proposals: Add the following:

- (F) If the Maricopa County Minority and Women-Owned Business Enterprises Assurances Affidavit is not completed and submitted.
- (G) If any addenda are not acknowledged and attached.
- (H) If Owner's bond forms are not used.
- (I) If the entire specifications document is not returned
- (J) If the statement from bidder's insurance carrier as required by Subsection 103.6 is not included.

Subsection 103.6 - Contractor's Insurance: Add the following:

A statement from bidder's insurance carrier shall be included in the proposal certifying that it will furnish the specified kind and amounts of insurance to the bidder if it is awarded the contract; and that it will execute the form of Certificate of Insurance included in the documents. As required by law, the statement will be from an insurance carrier or carriers authorized to do business in the State of Arizona, or countersigned by an agent of the carrier authorized to do business in the State of Arizona. Concurrently with the execution of the contract, Contractor shall furnish a Certificate of Insurance, using the included Certificate, that names the additional insureds as set out in the Certificate. The Certificate shall also name the additional insureds as Certificate Holders. The types of insurance and the limits of liability shall be as indicated on the included form.

Subsection 103.6.1(D) - Contractor's Insurance: Add the following:

Include additional insureds as indicated on the included Certificate of Insurance.

Subsection 103.6.2 - Indemnification of the Contracting Agency Against Liability: Add the following:

Additionally, Contractor shall execute the Indemnification of the Contract Documents.

SECTION 104 - Scope of Work: Add the following:

The project is located at Camelback Road and the Agua Fria River. The proposed work includes excavation of 34,400 cubic yards of earth and construction of 3,400 linear feet of soil cement levee.

Subsection 104.1 - Work to be Done: Add the following:

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

Subsection 104.2.3 - Changes:

The Owner may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this contract in any one or more of the following:

- A) Drawings, designs, or specifications;
- B) Method or manner of performance of the work;
- C) Owner-furnished facilities, equipment, materials, services, or site;
- D) Directing acceleration in the performance of the work.

Any other written or oral order from the Owner that causes a change shall be treated as a change order under this section provided that the Contractor gives the Owner written notification within two work days after receipt of such direction stating:

- A) The date, nature, and circumstances of the conduct regarded as a change;
- B) The particular elements of the contract performance for which the Contractor is seeking an equitable adjustment under this section, including any price or schedule adjustments;
- C) The Contractor's estimate of the time by which the Owner must respond to the Contractor's notice to minimize cost, delay, or disruption of performance.

The Contractor shall diligently continue performance of this contract to the maximum extent possible in accordance with its provisions. Except as provided in this section, no order, statement, or conduct of the Owner shall be treated as a change or entitle the Contractor to an equitable adjustment. If any change under this section causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this contract, the Owner shall make an equitable adjustment and modify the contract in writing.

The equitable adjustment shall not include increased costs or time extensions for delay resulting from the Contractor's failure to provide notice or to diligently continue performance. No proposal for the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

Subsection 104.2.4 - Cost Estimates or Price Proposals:

The Contractor and any lower-tier subcontractors shall submit itemized cost estimates or price proposals for any owner-directed change order or Contractor-initiated claim.

Cost estimates or pricing proposals shall be itemized to include direct labor by man-hours, individual craft, hourly wage rate and verifiable labor burden. Other direct costs shall include rental and operator rates for rented or owned equipment, material trucking expenses and other costs clearly identified and directly allocable to contract performance. Material costs shall be itemized by item description, quantity(s) for each item, unit price per item, including applicable sales tax markup, and extended total price per item. The Contractor shall provide copies of material supplier quote sheets, invoices or purchase orders, as appropriate.

Lump sum cost estimates or price proposals shall be rejected and returned to the Contractor for itemization as described above. Failure of the Contractor to submit properly itemized cost estimates or price proposals shall not constitute an excusable delay and result in a change order being unilaterally priced as the Owner's fair estimated price.

Subsection 104.2.6 - Value Engineering:

A) **General.** The Contractor is encouraged to voluntarily develop, prepare, and submit value engineering change proposals (VECPs). The Contractor shall share in any instant contract savings realized from accepted VECPs, in accordance with paragraph (f) below. The Owner reserves the right to make alterations to the contract, in accordance with procedures elsewhere within this contract. Such alterations will not be eligible for inclusion in any VECP.

B) **Definitions.**

Contractor's development and implementation costs means those costs the Contractor incurs on a VECP in developing, testing, preparing, and submitting the VECP as well as those costs incurred by the Contractor to make the changes required by the Owner's acceptance of the VECP.

Owner costs means those owner costs that result directly from developing, evaluating, reviewing, and implementing the VECP, such as any net increases in the cost of testing, operations, maintenance, and logistical support. The term does not include the normal administrative costs of processing the VECP.

Instant contract savings means the estimated reduction in Contract cost of performance resulting from acceptance of the VECP, minus the allowable Contractor's development and implementation costs, minus subcontractors' development and implementation costs (see paragraph (g) below).

Value engineering change proposal (VECP) means a proposal that (1) requires a change to the contract; (2) results in reducing the contract price or estimated cost without impairing essential functions or characteristics; and (3) does not involve a change in deliverable end item quantities, schedule, or a change to the contract type.

C) **VECP Preparation.** As a minimum, the Contractor shall include in each VECP the information described in subparagraphs (1) through (7) below. If the proposed change affects contractually required schedule and cost reporting, it shall be revised to incorporate proposed VECP modifications. The VECP shall include the following:

- (1) A description of the difference between the existing contract requirement and that proposed, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, and the effects of the change on the end item's performance. All design changes must be submitted on 24"x 36" standard drawing sheets along with supporting calculations. Each drawing sheet and at least the content sheet of the calculations shall be sealed by an Engineer registered in the State of Arizona.

- (2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revision.
- (3) A separate, detailed cost estimate for the affected portions of the existing contract requirements and the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amount attributable to subcontracts under paragraph (g) below.
- (4) A description and estimate of costs the Owner may incur implementing the VECP, such as test and evaluation and operating and support costs. This is an estimate based only on the Contractor's understanding of additional efforts to be expended by the Owner, should the VECP be accepted. The final cost will be determined by the Owner.
- (5) A prediction of any effects the proposed change would have on collateral costs to the agency, i.e., costs of operation or maintenance.
- (6) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.
- (7) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved and previous Owner actions, if known.

D) **Submission.** The Contractor shall submit VECPs to the Owner's Engineer.

E) **Owner Action.**

- (1) The Owner shall notify the Contractor of the status of the VECP within 15 calendar days after receipt from the Contractor. If additional time is required, the Owner shall notify the Contractor within the 15-day period and provide the reason for the delay and the expected date of the decision. The Owner will process VECPs expeditiously; however, it shall not be liable for any delay in acting upon a VECP.
- (2) If the VECP is not accepted, the Owner shall notify the Contractor in writing, explaining the reasons for rejection.
- (3) The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Owner.
- (4) Any VECP may be accepted, in whole or in part, by the Owner's award of a change order to this contract, citing this subsection. The Owner may accept the VECP, even though an agreement on price reduction has not been reached, by issuing the Contractor a notice to proceed with the change. Until a notice to proceed is issued or a change order incorporates a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The Owner's decision to accept or reject all or any part of any VECP shall be final and not subject to disputes or otherwise subject to litigation.

F) **Cost Sharing.**

- (1) **Rates.** The Owner's share of savings is determined by subtracting the Owner's costs from instant contract savings and multiplying the result by 50 percent. The Contractor's share shall be the remaining 50 percent.
- (2) **Payment.** Payment of any share due the Contractor for use of a VECP on this contract shall be authorized by a change order to this contract to accept the VECP, reduce the contract price or estimated cost by the amount of instant contract savings, and provide the Contractor's share of savings by adding the amount calculated to the contract price.

G) **Subcontracts.** The Contractor may include an appropriate value engineering clause in any subcontract. In computing any adjustment in this contract's price under paragraph (f) above, the Contractor's allowable development and implementation costs shall include any subcontractor's allowable development and implementation costs clearly resulting from a VECP accepted by the Owner under this contract, but shall exclude any value engineering incentive payments; provided that these payments shall not reduce the Owner's share of the savings resulting from the VECP.

105.1 - Authority of Engineer: Add the following:

Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to subsections 105.3.1 and 106.4. Engineer will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. Engineer will record time required by Engineer and Engineer's Consultants in evaluating substitutes proposed or submitted by Contractor pursuant to subparagraphs 105.3.1 and 106.4(B) and in making changes in the Contract Documents (or in the provisions of any other direct contract with Owner for work on the project) occasioned thereby. Whether or not Engineer accepts a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer and Engineer's Consultants for evaluating each such proposed substitute item.

105.3 - Conformity with Plans and Specifications: Add the following:

105.3.1 - Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence or procedure of construction is shown or indicated and expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by Engineer will be similar to that provided in subparagraph 106.4(B).

Subsection 105.5 - Cooperation of Contractor: Add the following:

Partnering

The Owner intends to encourage the foundation of a partnering relationship with the Contractor and its subcontractors. This partnering relationship will be structured to draw on the strength of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance, intended to achieve completion within budget, on schedule, and in accordance with plans and specifications.

This partnering relationship will be bilateral in makeup. Any cost associated with effectuating partnering will be covered by the Bid Item. The partnering workshop shall be scheduled after award of the contract, and prior to the Notice to Proceed, and shall be facilitated by a third party competent in the fundamentals of partnering, and mutually acceptable to Contractor and Owner. The Contractor shall be responsible for scheduling, coordinating, and hiring the third party facilitator, and planning all of the partnering meetings in consultation with the Engineer. The Owner will be responsible to notify and coordinate attendance at the partnering meetings by other agencies. To achieve the desired partnering relationships, the Contractor will need to encourage attendance by its major subcontractors on the project. Follow-up workshops will be held periodically throughout the duration of the contract as agreed to by the Contractor and Owner.

An integral aspect of partnering is the resolution of disputes in a timely, professional, and non-adversarial manner. Alternative dispute resolution (ADR) methodologies will be encouraged in place of the more formal dispute resolution procedures. ADR will assist in promoting and maintaining an amicable working relationship to preserve the partnering relationship. ADR in this context is intended to be a voluntary, non-binding procedure available for use by the parties to this contract to resolve any dispute that may arise during performance.

Payment for Partnering will be made on the basis of invoices, and will be for a total amount not to exceed the amount shown in the bid schedule for the item.

Subsection 105.6 - Cooperation with Utilities: Add the following:

An attempt has been made to determine the location of all underground utilities, drainage pipes, and structures; however, it shall be the Contractor's responsibility to cooperate with the pertinent utility companies so that any obstructing utility installation(s) may be adjusted. Should Contractor's operations result in damage to any utility the location of which has been brought to its attention, he shall assume full responsibility for such damage. Contractor shall contact Arizona Blue Stake (telephone number 263-1100) a minimum of two (2) working days before beginning any underground work. In addition, Blue Stake notification(s) shall be maintained on a current basis. The Contractor is to protect in place any utilities which are not designated as "to be relocated by others."

The following phone numbers should put the Contractor in contact with the proper personnel:

Flood Control District of Maricopa County
Fred Fuller (602) 506-1501 ext. 4728

Electrical Service

The entire project lies within SRP electrical service area. OSHA and ASWC require a minimum ten foot clearance from overhead lines.

Subsection 105.8 - Construction Stakes, Lines, and Grades: Add the following:

Engineer will furnish the project survey control line together with a Bench Mark which the construction contractor will use to set line and grade for all construction. All other surveying required for the project shall be the contractor's responsibility. Engineer will not set any construction stakes.

Subsection 106.1 - Source of Materials and Quality: Add the following:

Select Material, Aggregate Base, Mineral Aggregate, concrete, steel products and pipe shall be obtained from commercial sources. Contractor shall pay all royalties, or any other charges or expenses, incurred in connection with the securing and hauling of the material. Contractor will be required to furnish Engineer with a list of its proposed commercial sources prior to use, and shall present certificates stating that the material produced from any commercial sources is in accordance with the Uniform Standard Specifications and these Supplementary General Conditions.

Subsection 106.4 - Trade Names and Substitutions: Replace with the following:

Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quantity required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment of other Suppliers may be accepted by Engineer under the following circumstances:

- A) "Or-Equal": If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.
- B) Substitute Items: If in Engineer's sole discretion an item does not qualify as an "or-equal" item under subparagraph 106.4 (A), it will be considered a proposed substitute item. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed

is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by Engineer will include the following and may be supplemented in the Special Provisions and as Engineer may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall first make written application to Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice contractor's achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for work on the project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish additional data about the proposed substitute.

- C) Contractor's Expense: All data to be provided by Contractor in support of any proposed "or-equal" or substitute item will be at Contractor's expense.

Subsection 106.5 - Contractor's Marshaling Yards: Add the following:

The contractor shall obtain approval of the Engineer when using vacant property to park and service equipment and storm materials for use. The contractor will obtain prior written approval of the property owner for such use and submit a copy of the approval to the Engineer prior to use of the property.

Subsection 107.1 - Laws to be Observed: Add the following Paragraph (G):

- (G) 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). Contractor shall also comply with all applicable provisions of the Americans With Disabilities Act (Public Law 101-336. 42 U.S.C. 12101-12213) and all applicable federal regulations under the ACT, including CFR Parts 35 and 36.

Subsection 107.2 - Permits: Replace with the following:

Contractor shall obtain all permits and licenses, pay all charges, fees, taxes, and provide all notices necessary and incidental to the due and lawful prosecution of the work.

Subsection 107.2.1 - NPDES Permit Requirements: Add the following:

- A) This project is subject to the National Pollutant Discharge Elimination System (NPDES) Storm water requirements for construction sites under the Environmental Protection Agency (EPA) General Permit for Arizona. Under provisions of that permit, the contractor shall be designated as permittee, and shall take all necessary measures to assure compliance with the NPDES General Permit for Arizona as well as all other applicable Federal, State and local laws, ordinances, statutes, rules and regulations pertaining to storm water discharge. As the permittee, the contractor is responsible for preparing, in a manner acceptable to the EPA, all documents required by this regulation, including but not necessarily limited to:

1. Storm water Pollution Prevention Plan (SWPPP) for the project, including certification of compliance form. Contractor shall be required to develop, implement, update and revise the SWPPP, as necessary,

in order to assure compliance with the EPA permit requirements. The SWPPP shall be retained on the project site at all times during construction.

2. Notice of Intent (NOI) to assure compliance with the NPDES General Permit for Arizona, including certification of signatures.
 3. Notice of Termination (NOT) of coverage under NPDES General Permit for Arizona.
- B) Preliminary copies of the NOI and the SWPPP shall be submitted to Owner during the preconstruction meeting and shall be subject to review by Owner prior to implementation.
- C) Contractor shall submit the completed and duly signed NOI forms not less than forty-eight (48) hours prior to the initial start of construction on the project to the following agencies:

EPA Storm water Notice of Intent
P.O. Box 1215
Newington, VA 22122

A copy of the completed NOI form shall be submitted to the following:

Storm water Coordinator
Arizona Department of Environmental Quality
P.O. Box 600
Phoenix, AZ 85001-0600

Maricopa County, Current Planning
Planning and Development Division
301 West Jefferson, Third Floor
Phoenix, Arizona 85003
(602) 506-3301

Failure by the contractor (or subcontractors of any tier) to submit NOI's within the mandated time frame shall result in delay of the construction start date, and no claim for extension of time will be granted for such delay. A copy of the completed NOI shall be posted at the construction site.

- D) Inspections of all storm water pollution control devices on the project shall be performed by Contractor on a monthly basis and following each rainfall of 0.50 inches or more in a 24-hour period at the project site as required under provisions of the NPDES General Permit for Arizona. Contractor shall prepare reports on such inspections and retain the reports for a period of three years following the completion of the project. Inspection reports shall be submitted monthly to Owner along with progress payment requests. Additionally, contractor shall maintain all storm water pollution control devices on the project in proper working order, which shall include cleaning and/or repair during the duration of the project.
- E) Contractor warrants that its employees and subcontractors of any tier and their employees shall at all times comply with all applicable laws, ordinances, statutes, rules and regulations set forth by all federal, state and local governments and the Environmental Protection Agency in connection with NPDES Permitting requirements and laws and regulations pertaining to air, groundwater and surface water quality.

Fines and penalties imposed by the EPA against Owner or the contractor, for contractor's failure to comply with any of the requirements of NPDES General Permit of Arizona, shall be borne by the contractor.

- F) Upon project completion, acceptance and demobilization, contractor shall submit its completed, duly executed NOT form to the EPA, with a copy to the Arizona Department of Environmental Quality (and the

appropriate municipality), at the address listed in Section (B) above, thereby terminating all NPDES permit coverage for the project. Contractor shall then surrender to Owner copies of the SWPPP, inspection information and all other documents prepared and maintained by the contractor in compliance of the NPDES General Permit. Contractor shall retain the originals of such documents for a period of three (3) years following the completion of the project.

- G) The Lump Sum price for the SWPPP shall include all material, labor, and all other costs relating to the preparation, installation and maintenance of the SWPPP during project construction, including assuring proper operation of the pollution control devices installed, and all maintenance, cleaning, and disposal costs associated with clean-up and repair following storm events, runoff or releases on the project. The Lump Sum price for the SWPPP shall be inclusive of all costs, and no additional claims shall be made by Contractor under any other specification provision of these documents, including Change Conditions. Payment for this bid item shall be upon final completion and acceptance of the project, as per Section 109.1.
- H) Copies of all required forms and guidance for preparing the SWPPP are available in the "Drainage Design Manual for Maricopa County, Volume III Erosion Control". The manual is available at the Flood Control District, 2801 West Durango Street, Phoenix, Arizona 85009.

Payment for NPDES/SWPPP permit requirements shall be made on the basis of lump sum for all work described in Subsection 107.2.1.

Subsection 107.5 - Health and Sanitation Provisions: Add the following:

The entire construction site shall be considered a "Hard Hat Area" and all personnel in the area will be required to wear a hard hat.

Subsection 107.5.2 - Compliance with the Arizona Communication Standard: Add the following:

Owner will provide Contractor with Material Safety Data Sheets (MSDS) for any products known to exist on the site that are deemed health hazards. Contractor will provide a copy of Owner-provided MSDS to all subcontractors.

Contractor will provide Owner and all subcontractors with MSDS for any products that have or are deemed health hazards that will be brought onto the site or created on the site by either Contractor or by any subcontractors.

Contractor will provide Owner with a statement certifying that all personnel (Contractor and subcontractor) employed by Contractor or by a subcontractor on the job site have received the required Hazard Communication Standard training.

Subsection 107.6.3 - Public Information and Notification: Add the following:

The Contractor shall provide a community relations program which shall be designed to run the full length of calendar days in the contract for this project. The program will include but not be limited to the following:

1. Distribution of preconstruction information letter to all residences, businesses, schools, etc. within an area bounded by Bethany Home Road, Indian School Road, 107th Avenue, and El Mirage Road.
2. Printing and distribution of public notices and/or newsletter.

The Contractor will use these or other means to inform the local citizens of necessary operations which create high noise levels, street closures, limited access, detour locations, haul routes and material delivery routes, hours of construction and disruption of bus, trash, school bus and other delivery/pick-up routes.

The Contractor will be required to furnish a private line telephone to be used solely for receiving incoming calls from local citizens with questions or complaints concerning construction operations or procedures. The Contractor shall publish this phone number and maintain a 24-hour answering service. The answering service shall be operated by Contractor personnel during all hours that work is being performed on the job site. The Contractor shall maintain a log of incoming calls, responses, and action taken which shall be submitted to the Engineer weekly and/or upon request.

At a date agreed upon between the Engineer and Contractor and prior to the start of work, the Contractor shall notify by letter all affected businesses and residents of construction plans and schedules within the geographic area identified above. In addition, schools and emergency services which serve the geographic area will also be notified even though they may be located outside the geographic area described above. The letter shall contain, as a minimum, the following information:

1. Name of Contractor
2. 24-hour telephone complaint number
3. Brief description of the project
4. Name of Contractor Project Superintendent
5. Name of Engineer
6. Name of Area Supervisor
7. Construction schedule including anticipated work hours
8. Traffic regulations including lane restrictions

The plan and work which is eligible for reimbursement shall include the following: Meetings with impacted businesses, schools, emergency services and residents, scheduling, preparation and distribution of newsletter at least bi-weekly, and maintaining a 24-hour hotline for complaints.

The Contractor shall submit a final report/evaluation of the Public Information and Notification process performed for this project. This report shall be submitted before the Contractor receives final payment.

Payment will be based on invoices, and will be for a total amount not to exceed the amount shown in the bid schedule for the item "PUBLIC INFORMATION AND NOTIFICATION ALLOWANCE," for the work performed in notifying and coordinating with the local population impacted by this project. To cover the cost of administration and supervision, the Contractor may add an amount equal to not more than five percent (5%) of the accumulated total invoiced billing for actual public information services provided by a subcontractor. This cost for administration and supervision will be considered included in the "PUBLIC INFORMATION AND NOTIFICATION ALLOWANCE."

Subsection 107.6.4 - Project Signs:

Contractor shall provide and install two project information signs, one at each end of the project before beginning construction to inform the public of the forthcoming project, construction dates, and suggested alternate routes. Project signs shall include the names of all agencies participating in the project. Signs shall be constructed in accordance with the "Project Sign Information" drawing to be provided to the Contractor at the pre-construction meeting. The signs shall be installed at the location(s) approved by the Engineer. Contractor shall maintain the signs as necessary and update the information as requested by the Engineer. Payment shall be made according to the allowance in the Bidding Schedule in installments of 50% upon installation, and the remaining 50% upon final payment for the work.

Subsection 107.10 - Contractor's Responsibility for Work: Add the following:

Contractor is advised that the work will be subject to flows of water in varying amounts. District assumes no responsibility for notifying Contractor of any anticipated flows, nor for any damages incurred by Contractor to its equipment or to any of the contractor's work as a result of any flows of water.

Subsection 108.1 - Notice to Proceed: Delete Paragraph (A) and replace with the following:

- (A) Contractor shall commence work within seven (7) calendar days after the date of the Notice to Proceed and complete all work within two hundred ten (210) calendar days beginning the day following the effective date specified in the Notice to Proceed. This includes the time necessary to fabricate the pipe. No time extension will be granted for pipe fabrication and delivery.

Subsection 108.2 - Subletting of Contract: Add the following:

For this project, Contractor shall perform, with its own organization, work amounting to 50 percent or more of the total contract cost.

Subsection 108.4 - Contractor's Construction Schedule: Delete in its entirety and replace with the following:

Contractor shall submit a proposed work schedule to the Engineer for review before starting work, using the Primavera or other program that is acceptable to the Engineer. Weekly updates shall be submitted to the District's Construction Coordinator at the weekly coordination meeting.

Subsection 108.4.1 - Contractor's Billing Schedule: Add the following:

Contractor shall furnish the Engineer an Estimated Billing Schedule which shall include the estimated amount of each billing for the total project at the preconstruction conference, and thereafter at monthly intervals as agreed to between Contractor and Engineer.

Subsection 108.5 - Limitation of Operations: Add the following:

Should Contractor elect to perform any work after regular working hours, on weekends, or legal holidays, "with or without written approval of Engineer", any charges incurred by Owner for inspection of the work, surveys or tests of materials will be deducted from monies due or to become due to Contractor.

Subsection 108.9 - Failure to Complete on Time: Add the following:

The actual cost per calendar day incurred by Owner for Consultant Administrative and Inspection Services on this project will be added to the daily charges as indicated by TABLE 108, LIQUIDATED DAMAGES, and will be deducted from monies due or to become due to Contractor for each and every calendar day that work shall remain incomplete after the time specified for the completion of the work in the proposal, or as adjusted by Engineer. Nothing contained in this provision shall prohibit Owner from deducting from monies due or to become due to Contractor for any other costs incurred by Owner directly attributable to the delay in completing this contract.

Subsection 109.2 - Scope of Payment: Add the following:

In addition to the contained provisions, the work under this section shall consist of preparatory work and operations, including but not limited to, the movement of personnel, equipment, 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 operations that must be performed and costs incurred prior to beginning work on the various items on the project site.

Subsection 109.7 - Payment for Bond Issue and Budget Projects: Add the following.

- (A) To third paragraph, add: Payment or release of retained funds shall be made to the contractor within thirty (30) days following final payment to the contractor (reference "B" following), and contractor furnishing to Engineer satisfactory receipts for all labor and material billed and waivers of liens from any and all persons and subcontractors holding claims against the work. Additionally, Contractor shall furnish a

completed Certificate of Performance to Engineer evidencing it has satisfactorily discharged all its duties in connection with the work to be performed under this Contract. The form of Certificate of Performance shall be provided to Contractor by the Engineer.

- (B) Delete second and third paragraphs and replace with: The final payment will be made to Contractor by Owner within thirty (30) days following receipt of the as-built plans and Engineer's final estimate and receipt by Owner of Consent of Contractor's Surety to said final payment. If payment will be longer than thirty (30) days as aforesaid, Owner will provide Contractor specific written findings for reasons justifying the delay in payment.
- (C) The Contractor's representative and the Engineer shall make a determination of the monthly pay quantities on the last Wednesday of each month. The monthly pay estimate shall then be signed by the Contractor and submitted to the Engineer on the first day of the next month.



**SPECIAL
PROVISIONS**

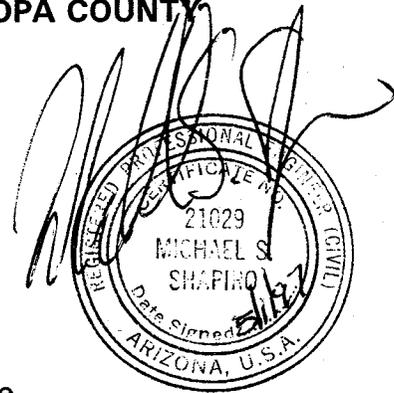
**CONSTRUCTION
SPECIAL PROVISIONS
FOR
CAMELBACK RANCH LEVEE - SOUTH
INDIAN SCHOOL ROAD TO CAMELBACK ROAD**

FCD CONTRACT NO. 97-18

May 1, 1997

Prepared for:
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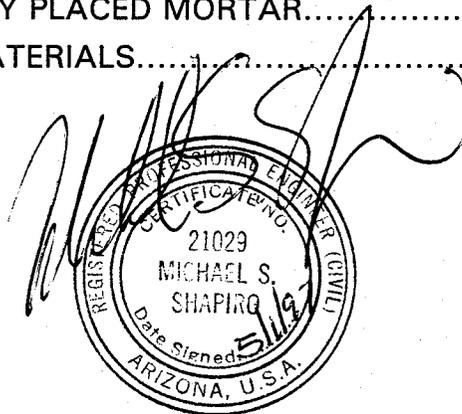


**CONSTRUCTION
SPECIAL PROVISIONS
FOR
CAMELBACK RANCH LEVEE - SOUTH
INDIAN SCHOOL ROAD TO CAMELBACK ROAD**

FCD CONTRACT NO. 97-18

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SECTION 201 - CLEARING AND GRUBBING

201.1 - Description: is revised to add:

Stripping of organic soil, grass, dead crops and other objectionable material shall be removed from the area required for the levee embankment, foundation and toe excavation limits. The objectionable material removed in the clearing and grubbing of the site shall be removed by the Contractor from the project site and disposed of in a legal landfill.

201.5 - Payment, Clearing and Grubbing: is modified to add:

Clearing and Grubbing including the removal of trees is considered incidental work, and will not be a separate pay item. The cost of this work is to be included in the cost of other items.

SECTION 202 - MOBILIZATION is modified to add:

202.1 - Description:

The work under this section shall consist of preparatory work and operations, including but not limited to, the movement of personnel, equipment, 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 various items on the project site.

Field Office:

This work shall consist of providing and maintaining a furnished Field Office for the exclusive use of an occupancy by the Engineer and the Engineer's staff.

The office shall be a building or mobile trailer 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 for the area used by the Contractor by a wall or door with an adequate locking device and has at least two doors to the outside.

The Contractor shall obtain approval from the property owner upon site selection of the field office.

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

The field office shall be an approved and weatherproof building or mobile trailer providing a minimum of 300 square feet of clear floor space, not including the toilet area. The structure shall have a minimum ceiling height of seven (7) feet and shall be provided with weatherproof doors equipped with adequate locking devices. Windows shall also be provided with adequate locking devices. The Contractor shall also provide the following:

- a. Lighting - Electric light, non-glare type luminaries to provide a minimum illumination level at desk height level.
- b. Heating & Cooling - Adequate electrically powered equipment to maintain an ambient air temperature of 72 degrees F plus or minus 8 degrees.
- c. Telephone, answering, and paper FAX machine - A telephone with an outside line for the exclusive use of the Engineer. The Contractor will pay for the cost of the line and local calling charges. Long distance charges made on this line will be paid for by the District.
- d. Toilet - A commode and wash sink in a separately enclosed room within the building or mobile trailer, properly ventilated and complying with applicable sanitary codes. Contractor shall provide water service.
- e. Maintenance - The Contractor shall maintain all facilities and furnished equipment in good working condition.
- f. Fire Extinguisher - Two non-toxic, dry chemical, fire extinguishers meeting Underwriters Laboratories, Inc. approval for Class A, Class B, and Class C fires with a minimum rating of 2A:2B: 10C.
- g. Electricity - Contractor shall provide electric power and pay for all electric services.
- h. Furnishings - Two office desks with drawers, two office chairs (padded, swivel type) one drafting table (adjustable height 3 feet by 6 feet), one conference table, eight folding chairs, one draftsman's stool, and a four drawer legal file cabinet.

The office shall be fully equipped and made available for the Engineer's use and occupancy prior to the start of any contract work and not later than 10 days after the notice to proceed. The Engineer will notify the Contractor, in writing, of the acceptability of the Field Office provided. The Contractor shall maintain the field office in operating condition until seven (7) days after acceptance of the contract work.

All facilities shall be maintained in good operating 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.

202.3 - Basis of Payment:

Payment shall be made on the basis of the lump sum price bid and shall be full compensation for supplying and furnishing all materials, facilities, and services and performing all work involved as specified herein. The lump sum price bid shall not exceed three (3%) percent of the total project bid amount exclusive of mobilization. No additional payment will be made for occupancy and services during periods of contract extension of time due to engineering changes.

SECTION 206 - STRUCTURE EXCAVATION AND BACKFILL

In addition to the requirements of the MAG Standard Specifications:

206.1 - Description: is modified to add:

Structure excavation shall also include the required foundation excavation for the levee as shown in the project plans.

Toe excavation is the excavation required from the existing ground to the bottom of the soil cement levee embankment protection as shown in the project plans.

206.2 - Foundation Material Treatment is modified to add:

Prior to placing soil cement or embankment the surface of the levee foundation and toe foundation subgrade shall be proof-rolled so that at least 90% of the ASTM D698 laboratory maximum dry density is obtained. If soft or yielding material is encountered in the subgrade for the levee foundation the Engineer may require additional foundation excavation of the soft or yielding material.

When the foundation material below the toe down is unsuitable, as determined by the Engineer, the Contractor shall overexcavate the bottom of the foundation as directed and replace the overexcavation with compacted backfill, compacted to 95% of maximum density unless otherwise stated on the plans.

206.5 - Payment replace in total with the following:

The Contractor shall cross-section the existing ground after clearing and grubbing and prior to any excavations. Cross-sections shall be taken perpendicular to the construction control line and sufficient number of points to describe the existing

ground surface. Cross-sections shall be taken at a minimum of 100 foot stations, angle points in the alignment and at the begin and end of curves.

The Contractor shall cross-section the finished toe and foundation excavation at the same locations as the existing ground cross-sections were taken.

The Contractor shall plot the existing ground, excavation limits and the finished soil cement levee section at a scale of 1" = 5' both horizontal and vertical on standard 24" x 36" cross-section sheets. The Contractor shall compute the foundation excavation by the average end area method.

The foundation excavation area shall be bounded by the back of the soil cement, the existing ground and the foundation excavation subgrade limits. The Contractor shall provide copies of cross-section notes, plotted cross -sections and copies of the average end area volume calculations.

Quantities of foundation excavation as computed from cross-section areas shall be paid for by the cubic yard, at the contract unit price for Item 206 of the Bid Schedule.

The quantity of toe excavations will not be measured or paid for separately. The cost of said work is to be included in the cost bid for Embankment.

SECTION 210 - BORROW EXCAVATION replace in total with the following:

210.1 - Description:

A borrow site for material to construct the levee has been shown on the project plans. The material excavated from the borrow area shall be incorporated into the project. Excess material excavated from the borrow area or material excavated from the project and not incorporated into the project shall be stockpiled as directed by the Engineer. The Contractor shall not remove any material excavated from the borrow area or project site from the project site. Prior to project close out, the Contractor shall leave the borrow site excavation area clean and uniform, with side slopes and bottom grade acceptable to the Engineer.

210.2 - Measurement and Payment:

No separate measurement or payment will be made for material excavated from the borrow area. The costs for excavation from the borrow area shall be included in the price bid for Soil-Cement Bank Protection.

SECTION 211 - FILL CONSTRUCTION

In addition to the requirements of the MAG Standard Specifications:

211.1 - Description is modified to add:

The work under this section shall consist of placing and compacting material in fill areas designated as "Embankment" and "Toe Excavation".

211.1.1 - Embankment

This item of work shall consist of the construction of earthen embankments and foundation excavation backfill as shown on the project plans; including furnishing the fill materials, watering, grading, shaping, and compaction. Embankment shall be constructed to a smooth and uniform surface and in close conformity to the lines, grades, dimensions, and cross-sections shown on the Plans or established by the Engineer. Embankment shall be compacted to ninety-five percent (95%) of maximum density at optimum moisture content. The embankment shall meet the following gradation:

EMBANKMENT

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
2"	100
No. 4	30 - 70
No. 16	20 - 55
No. 50	5 - 35
No. 200	0 - 12

Maximum Plasticity Index = 7

Embankment for the levee foundation and embankment shall be placed in 12-inch depth before compaction. Compaction criteria includes compacting to within 95% of the maximum dry density and within $\pm 2\%$ of the optimum moisture content as determined by ASTM D698. All layers should be placed horizontally and slopes trimmed after placement. Recompaction of subsoil material at the bottom of the excavation using the above criteria shall conform to MAG Section 601.4.

211.1.2 - Toe Excavation

This work shall consist of the backfill of the soil cement levee toe excavations as shown on the project plans; including furnishing the fill material, watering, grading and shaping. Toe excavation backfill shall be constructed to a smooth and uniform surface and in close uniformity the project plans. Toe excavation backfill will not be subject to normal compaction testing requirements unless otherwise noted on the plans; the normal action of placement and vehicle travel being considered sufficient to ensure adequate compaction.

The toe excavation backfill shall meet the following gradation requirements:

Toe Excavation backfill from 0 to 2 feet below final grade, shall meet the following requirements:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
2"	100
No. 4	30 - 75
No. 50	5 - 40
No. 200	0 - 20

Maximum Plasticity Index = 7

Toe Excavation backfill 2 feet or more below final grade, shall meet the following requirements:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
12"	100
No. 4	30 - 75
No. 50	5 - 40
No. 200	0 - 20

Maximum Plasticity Index = 7

211.2 - Placing is modified to add:

Placement of fill and benching shall be in accordance with the MAG Standard Specifications.

211.2.1 - Embankment Placement

"Embankment" construction shall not be started until clearing and grubbing and foundation excavations for the embankment area is completed in accordance with the requirements of MAG Standard Specifications Section 201, and these special provisions.

"Embankment" shall be constructed to a total width at least two (2) feet wider than that indicated on the plans, of which one (1) foot of additional width shall occur on each side of the embankment. Once constructed, the face on which soil cement is to be placed shall be trimmed back to the finished lines, grades, and dimensions shown on the plans in order to insure proper compaction and stability of the embankment. Material trimmed from the embankment slopes shall be used as fill and/or backfill at other locations on the project. No additional payment shall be made for material placed beyond the finished lines and grades of the levees or for trimming, removing, and hauling said material, rather, these costs are considered incidental to the construction of the levee.

211.3 - Compacting is modified to add:

Wheel rolling with construction hauling equipment exclusively, will not 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. Vibratory compaction methods or equipment shall not be used when and/or where their use contributes to sloughing or caving of soils which the soil-cement is to be placed against.

211.3.1 - Embankment Compaction

'Embankment' material shall be placed in uniform horizontal layers not exceeding twelve (12) 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 will not be considered an acceptable method of compaction. Vibratory compaction methods or equipment shall not be used when and/or where their use contributes to sloughing or caving of soils which the soil-cement is to be placed against. 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 embankment section, and to correct any deficiencies resulting from improper or insufficient compaction of such materials throughout the Contract period.

The top ten (10) inches of ground on which embankment is to be constructed shall be proof-rolled to a density of not less than ninety percent (90%) of the maximum density. All material placed in embankment areas upon which embankment is to be constructed shall be compacted to a density of not less than ninety percent (90%) of the maximum density.

Each layer of earth material for embankment construction shall be compacted to a density of not less than ninety-five percent (95%) of the maximum density and within $\pm 2\%$ of optimum moisture content as determined by ASTM D698.

211.4 - Tests:

Replace Subsection 211.4 of the MAG Standard Specifications with the following:

Optimum moisture and maximum density shall be determined in accordance with ASTM D-698 or AASHTO T-99. Field density tests shall be performed in accordance with ASTM D-1556, "Sand Cone Method" or AASHTO T-238, "Nuclear Method". Moisture contents shall be measured and reported to the nearest 0.1%.

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

1. Lift thickness shall not exceed the maximum allowed as herein stated. Thinner lifts than the maximum allowed may be necessary to obtain required result on some materials.
2. The compaction effort shall be uniformly applied.
3. Significant rutting, under the action of the compactor, on the final passes on a layer shall not occur.
4. Proper compaction on a layer shall be obtained as required by 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 requested 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 to 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 overlying material.

211.5 - Measurement is modified to add:

Approximate quantities of "Embankment" are indicated on the Bid Schedule item 211. "Toe Excavation" is a non-pay item and measurement is not indicated.

The quantities of "Embankment" between the lines and limits shown on the plans 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 embankment shall exclude the total volume of bank protection. No deductions will be made for the volumes occupied by pipes or culverts. The Contractor shall plot the embankment lines on the cross-sections taken for the Foundation Excavation and compute the average end area volume of "Embankment" for the levee construction.

The 1.8:1 to 1:1 slopes of the earth cuts and embankment slopes for the levee may slough if surcharges of equipment or embankment are placed on the ground surface above and adjacent to the slope prior to soil-cement placement against the slope and all such slopes may be slough or fail from excess moisture, rain, insufficient moisture, seismic events, or other similar causes. Such sloughed slopes shall be reconstructed to the 1.8:1 to 1:1 earth slope line shown on the plans before placing the soil-cement against them, or the sloughed material shall be removed and replaced with additional soil-cement. The costs of reconstructing the 1.8:1 to 1:1 slopes, or placement of additional soil-cement (inclusive of cement) between sloughed slope faces and the 1.8:1 to 1:1 earth slope lines, as shown on the plans, shall be considered as included in the Contract price paid for Embankment constructed to the lines and grade shown on the plans, and therefore no separate payment will be made.

211.6 - Payment is modified to add:

No measurement or direct payment will be made for construction of "Toe Excavation" or grading of site drainage collection swales. The cost of "Toe Excavation" backfill is to be included in the cost bid for soil cement.

Payment for "Embankment" will be made for the number of cubic yards in place, as measured above, on the basis of unit prices stipulated in the Bid Schedule for Item 211, and shall include preparation of ground surfaces.

SECTION 220 - RIPRAP CONSTRUCTION

Replace Section 220 of the MAG Standard Specifications with the following:

220.1 - Description:

The 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 items of work included in this specification are:

- (A) **Salvaged Riprap:** Salvaged riprap consists of river run cobbles obtained through on-site screening and grading operations and from the removal of existing base riprap from existing bank protection.
- (B) **Imported Riprap:** At the Contractor's option, riprap meeting the specifications for salvaged riprap.

220.2 - Materials:

Rock used for riprap shall be from that salvaged from the existing bank protection or shall meet the following requirements.

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.

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 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 on the basis of test results furnished by the Contractor. 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. The Contractor shall provide the Engineer with test reports from an independent testing laboratory to establish that the sampled rock has a minimum specific gravity (Bulk SSD) of 2.50 per ASTM C127. Rock shall contain no swelling type clay.

220.3 - Preparation of Ground Surfaces:

Areas on which riprap is to be constructed shall be cleared, grubbed, excavated, or backfilled in accordance with the MAG 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 area shall be compacted as specified in Section 211 - Fill Construction for "Embankment".

Placement of riprap and/or filter fabric through water will not be permitted unless otherwise approved, in writing, by the Engineer.

220.4 - Plain Riprap:

Salvaged riprap shall be stone that has been obtained from on-site screening and grading operations meeting the gradation requirements in the table below.

All points on individual grading curves shall be between the boundary limits as defined by smooth curves drawn through specified grading limits plotted on a mechanical analysis diagram. The individual grading curves shall not exhibit abrupt changes in slope denoting skip grading or scalping of certain sizes. Specified grading of all material shall be met both at the source and as delivered to the project.

It is anticipated that salvaged riprap may be obtained from on-site screening and grading operations. Stone may be furnished from other sources at the option of the Contractor, subject to the conditions stated herein. Material to be used for riprap,

whether salvaged onsite or obtained elsewhere, shall conform to the gradation below:

(D₅₀ = 14")

RIPRAP GRADATION	
Diameter	Percent Passing
24"	100
18"	90-100
14"	30-50
9"	5-15

220.4.1 - Filter Fabric

A base upon which loose riprap is to be placed is to be constructed of a filter fabric. The filter fabric material shall conform to the following specifications:

Min. permeability: 1.6×10^{-3} ft./sec.
Max. AOS: 0.6mm
Type: Mirafti 140n,
TYPAR 3401,
TRIVERA Spunbound 1112
or Approved Equal
Overlap: 18-inch minimum at
Fabric Edge

Filter fabric overlaps shall be pinned using steel securing pins, 3/16 inch diameter, 18 inches long, pointed at one end and fitted with a 1.5 inch diameter metal washer at the other end. Pins shall be placed along the overlap at approximately three feet on center.

220.4.2 - Placement

Rock for riprap shall be placed on the prepared slope or base in a manner which will produce a reasonably well-graded mass of rock with a 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 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. Riprap thickness shall be as shown on plan.

The larger rocks shall be well distributed and the entire mass of rock shall conform to the gradation specified in Subsection 220.4 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 District.

220.6 - Measurement:

The quantities of riprap construction shall be measured by the cubic yards of riprap, in place, within the limits of dimensions shown on the plans. Quantities of salvaged riprap in excess of design requirements may be disposed of within the project limits, placed in the toe excavation backfill or placed adjacent to the existing riprap south of Camelback Road. No measurement shall be made for quantities in excess of design requirements.

220.7 - Payment:

Payment for loose riprap will be made for the number of cubic yards of riprap in place, as measured above, on the basis of unit prices stipulated in the Bid Schedule for Item 220 and shall include preparation of ground surfaces and trenching. No separate payment shall be made for Filter Fabric. Cost is incidental to the cost of loose riprap.

SECTION 221 - SOIL-CEMENT BANK PROTECTION is hereby added:

221.1 - Description:

The work shall consist of furnishing all labor, equipment and materials and constructing soil-cement bank protection as required by the Plans, including toe trench excavation, backfill, and dewatering for the construction of all soil-cement falling below the proposed channel bed profile.

The Contractor shall submit a plan showing his intended method of constructing the soil-cement. The plan shall be sufficient in detail to clearly describe the planned execution of the work. Such plan shall include, but not necessarily be limited to, mixing plant, transport equipment, spreading equipment, and compacting equipment, indicating number and capacities of each type of equipment.

The Contractor shall have full responsibility for administration of a Quality Control Plan for soil-cement which shall meet the same quality control requirements as Section 105 of the MAG Standard Specifications.

The plan shall also show the access planned for performing the work.

221.2 - Materials:

221.2.1 - Portland Cement

Portland Cement shall comply with the latest specifications as approved by the Engineer, for Portland Cement (ASTM C150, Type II [low alkali]), and shall conform to the requirements of Subsection 725.2 of the MAG Standard Specifications.

221.2.2 - Water

Water shall be clear and free from injurious amounts 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 SO₄. Water shall be sampled and tested in accordance with the requirements of AASHTO T26.

221.2.3 - Aggregate

Soil aggregate for use in soil-cement may be produced by the Contractor by processing, screening, crushing and/or blending soils obtained from the required excavations, and/or may be furnished by the Contractor from Contractor - furnished borrow. Soil aggregate for soil-cement shall contain no deleterious material. Before mixing as soil-cement the soils shall be stockpiled and sampled, and shall be approved by the Engineer, in accordance with the requirements of Section 221.9 of these Special Provisions. 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.

The maximum allowable plasticity index for soil-cement aggregate shall be five (5). Soil aggregate for soil-cement shall conform to the following gradation requirements when tested in accordance with ASTM C-136 and C-117:

Sieve #	Percent Passing, By Dry Weight
2"	100%
No. 4	50% to 80%

Plasticity index shall be between 0 and 5 when tested in accordance with the requirements of AASHTO T-90.

Soil aggregate for soil-cement shall not contain clay/silt lumps larger than one-half (1/2) inch.

Blending of soil aggregate by combining soils from separate soil stockpiles shall be performed by utilization of separate storage feed bins at the plant, to the satisfaction of the Engineer.

221.2.4 - Fly Ash

Fly ash shall not be allowed as cementitious material.

221.3 - 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 meeting the requirements for soil pulverization, cement and water application, mixing, transporting, placing, compacting, finishing, and curing as provided in these Specifications.

221.4 - Construction Requirements:

221.4.1 - Required Contractor Submittals

Approval by the Engineer shall not relieve the Contractor of the responsibility for achieving the desired result of constructing sound soil-cement, free from defects, according to the specifications and plans, or as directed by the Engineer.

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

1. The approximate length of soil-cement bank protection 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 to be used to keep surfaces continually moist until subsequent layers of soil-cement are placed.

5. The method to be used to cure permanently exposed soil-cement surfaces.
6. The proposed source(s) of soil to be used in soil-cement.
7. The proposed size and number of soil aggregate stockpiles.
8. The mix design to be used in conformance with the requirements specified herein.

221.4.2 - 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 95% of the maximum density. Optimum moisture and maximum density shall be determined in accordance with ASTM D-698 or AASHTO T-99. Field density tests shall be performed in accordance with ASTM D-1556 "Sand Cone Method" or AASHTO T-238 "Nuclear Method". Moisture contents shall be measured and reported to the nearest 0.1%.

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

Excavation and backfill of toes, and any dewatering necessary to construct soil-cement bank protection below the channel bed profile elevations shown on the plans shall be considered incidental to the construction of the soil-cement and included in the cost of Item 221, Soil-Cement Bank Protection.

221.4.3 - Mixing

Soil-cement shall be mixed in an approved central-type plant having a stationary twin shaft pugmill mixer of the continuous-mixing type or an approved batch-type pugmill. The mixing plant shall be designed, coordinated, and operated to produce a soil-cement mixture of the proportions specified within the required tolerances. The plant shall be equipped with positive means for controlling and maintaining a constant time of mixing. Twin shaft pugmills shall also be equipped with a positive means for maintaining a constant speed of rotation of the shafts. The plant shall be equipped with screening, feeding, and weighing and metering measuring devices that will add the soil, cementitious material(s) and water into the

mixer in the specified quantities. The blades of twin shaft continuous pugmill mixers shall be adjustable for angular position on the shaft and reversible to retard the flow of the mix.

When the quantity of water is controlled by metering, provisions shall be made by the Contractor whereby the quantity of water delivered through the meter can be readily converted to weight. A water storage tank may be required to prevent the adverse effects created by surge drawdown.

The soil aggregate feed rate shall be controlled by a variable speed belt or a remotely operated gate, calibrated to accurately deliver any specified quantity of material. The feed rate shall be readily adjustable from the control panel to compensate for changes in the moisture content of the soil or to change soil aggregate proportions when blending is required and separate bins are utilized. The combined aggregate belt feeding the mixer shall be equipped with an approved belt scale. The belt scale shall operate automatic controls which will govern the proportions of cementitious material and water as ratios of the total soil aggregate, with provisions for ready changing of the proportions.

When a continuous mixing plant with a fixed soil aggregate feed rate system is used, the belt shall travel at a constant speed. The feed system shall continuously deliver aggregate to the mixer at a constant feed rate, calculated on a dry weight basis, at any locked gate setting. The feed system shall be mechanically interlocked with all other feed devices. The soil aggregate feed monitoring system shall provide and record the rate of and total quantity of soil aggregate fed into the mixture.

The plant shall be equipped with a hydraulically or mechanically operated discharge holding bin having a minimum capacity of twenty (20) tons.

Mixing shall be sufficient to secure a homogeneous, intimate, uniform mixture of the soil, and water within the specified tolerances. Soil and cementitious material shall be mixed sufficiently to prevent cementitious balls from forming when water is added.

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 45° F (7° C), unless the air temperature is at least 40° F (5° C) and rising.

At the completion of moist mixing, any lumps consisting of silt, clay and/or cementitious material shall be so pulverized that, exclusive of gravel-sized

and larger stones, 100% shall pass a one (1) inch sieve, and at least 80% by dry weight shall pass a No. 4 sieve.

In the production of soil-cement, the percent of cementitious material shall not vary by more than +0.3 percent of the contents specified by the Engineer.

Silos and feeders shall be equipped and operated so as to provide uniform rates of feed and prevent caking. Provisions shall be made to allow for ready, safe sampling of the cementitious material(s).

The weighing and metering systems shall include digital readouts which continuously display, and shall provide an hourly printed record of, the following information:

1. The total discharged quantity per hour of each weighed or metered material.
2. The cumulative total discharged quantity of each weighed or metered material.
3. The moisture content of the combined soil aggregate currently entering the mixer.
4. The cumulative total discharged weight of soil aggregate moisture.

Copies of the hourly printed records of discharged quantities and soil aggregate moisture information shall be given to the Engineer by the Contractor at the end of each day of soil-cement mixing.

Measuring devices shall be calibrated, at the Contractor's expense, and the calibration shall be approved by the Engineer.

Each measuring device shall be calibrated throughout its range to within an accuracy between plus/minus two (2.0) percent and shall be inspected and calibrated as often as the Engineer deems necessary to assure their accuracy. Calibration shall be performed by a certified lab.

The Contractor shall notify the Engineer at least 48 hours in advance of the initial plant calibration. Prior to, or at the time of, this notification the Contractor shall provide a Plant Operating Manual to the Engineer.

221.4.4 - Required Moisture

At the time of compaction, the moisture content of the soil-cement shall not be more than 2.0 percent below optimum and shall not be above optimum when the mean air temperature during construction hours does not exceed 90° F. The relationship between the soil-cement's moisture content and its optimum moisture content will be determined in accordance with ASTM D-558 or AASHTO T-134. When the mean air temperature does exceed 90° 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.

221.4.5 - Sampling Facilities

Free and safe access to the plant must be provided to the Engineer at all times for inspection of the plants operation.

The Contractor shall provide suitable facilities and shall take representative samples of materials as they enter the mixer, are discharged from the mixer, and are discharged from the gob hopper. The frequency of the Engineers sampling of the combined said aggregate feed shall be at the discretion of the Engineer, but will not be less than once a day or once for each 500 cubic yards of soil-cement produced. These samples shall be used for Contractor quality control and quality assurance testing. All necessary platforms, tools, equipment and trained personnel for obtaining samples shall be furnished by the Contractor.

221.4.6 - Handling

The soil-cement mixture 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° F or when there is a breeze or wind which promotes rapid drying of the soil-cement mixture.) Compaction shall start as soon as possible after spreading.

The Contractor shall take all necessary precautions to prevent damage to completed soil-cement by the equipment and to prevent 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 placed soil-cement mixture must be removed prior to continuation of the soil-cement construction.

221.4.7 - Placing

The mixture shall be placed on the moistened subgrade, embankment, or previously completed soil-cement with spreading equipment that will produce layers of nine (9) feet in width with a thickness as is necessary for compaction to the required dimensions of the completed soil-cement layers. The nine (9) feet dimension is to allow for full compaction of the design width of eight (8) feet with one (1) foot of excess that will not be trimmed. The compacted layers of soil-cement shall not exceed eight (8) inches in thickness nor be less than four (4) inches in thickness. The maximum depth of compacted soil cement that shall be placed per day shall be four (4) feet.

Each successive layer shall be placed as soon as practicable after the compaction of the preceding layer has been verified by the Engineer.

The Contractor shall schedule placement of all soil-cement above channel bottom such that the placement of soil-cement protection at each location will be completed from channel bottom to plan top of soil-cement within five (5) calendar days, unless otherwise approved by the Engineer, or unless prevented by inclement weather.

All soil-cement 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, except that the Contractor will not be required to keep such surfaces continuously 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 45° F (7° C), unless the air temperature is at least 40° F (5° C) and rising.

221.4.8 - Compaction

Soil-cement shall be uniformly compacted to an average of 98% and no less than 95% of maximum density as determined by field density tests. Optimum moisture and maximum density shall be determined in accordance with ASTM D-558 or AASHTO T-134. Field density tests shall be performed in accordance with ASTM D-1556 "Sand Cone Method" or AASHTO T-238

"Nuclear Method". Moisture contents shall be measured and reported to the nearest 0.1%.

Wheel rolling with hauling, grading, spreading, or watering equipment, exclusively, shall not be an acceptable method of compaction. Vibratory compaction methods or equipment shall not be used when their use contributes to sloughing or caving of the soils which the soil-cement is to be placed against.

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 221.4.4 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 scored to a depth of at least one (1) inch with a spike-tooth instrument, or by other means approved by the Engineer, prior to placement of the next lift. The spacing of scores shall not exceed eighteen (18) inches, measures across the direction of soil-cement placement. The surface, after said scoring, 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.

221.4.9 - Finishing

After compaction, the top surface of the soil-cement shall be shaped to the required lines and grades, and cross-sections and rolled to a reasonably smooth surface.

Surface compaction and finishing of each layer shall be done in such a manner as to produce a dense surface free of compaction planes or loose material in no more than two (2) hours from the time compaction is started or three (3) hours from the time water is added to the mixture.

221.4.10 - Curing

Temporarily exposed surfaces shall be kept moist as set forth in Subsection 221.4.7.

Permanently exposed surfaces of the soil-cement shall be kept moist during the seven (7) day cure period. Whenever atmospheric temperatures are expected to drop below 30° F, 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.

221.4.11 - 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 in the last-placed lift by cutting back into the complete lift to form a full-depth vertical face.

221.4.12 - 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 the full depth of the layer.

221.5 - Inspection and Testing:

The Engineer, with the assistance and cooperation of the Contractor, will make such inspections and tests as he deems necessary to verify the conformance of the work to the Contract Documents. These inspections and tests will 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 will 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 test methods 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 and at least once for every 500 cubic yards of soil-cement. Test locations shall be chosen by the Engineer. If the lift being tested does not meet the specified density requirements, it must be reworked as directed by the Engineer until it passes or be removed by the Contractor 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 and moisture content 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, if the Engineer suspects 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.

221.6 - Mix Design Methodology:

The design requirements for the soil-cement bank protection shall be such that it has a minimum compressive strength of 750 psi at 7 days plus two (2) percent additional cementitious material to compensate for variations in mixing method, material and placement. The Contractor shall determine the mix proportions of the aggregate, cement and water, and shall furnish soil-cement conforming to the requirements specified herein. The job-mix design with the supporting test results shall be submitted to the Engineer for approval, prior to incorporating any of the material into the work.

Included in the job-mix design data shall be the brand of cement and source of aggregate. A new mix design shall be submitted for approval any time the Contractor requests a change in material, or proportioning of the materials, from that given in the approved mix designs.

221.7 - Mix Design for This Project:

For bidding purposes only, the estimated mix design for this project shall include eleven percent (11%) base cementitious material for the soil-cement banks.

The percent of cementitious material to be used in the mix shall be calculated to be the weight of cementitious material divided by the total weight of the dry soil-cement materials. The actual mix designs used on this project shall be determined by laboratory tests on each soil aggregate stockpile after construction of stockpiles has been completed.

The cement content may be increased at any time by the Engineer if, in the Engineer's opinion, increased cement content is needed to assure design strength. An increase in cement content may be justified by inconsistencies in production methods, various test results, and test results which drop below acceptable standard deviation.

221.8 - Stockpiling of Aggregate:

Soil aggregate stockpiles 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 conical stockpiles built up under processing plant conveyors or any other existing stockpiles. Stockpiles shall not be placed in the Agua Fria River channel. The stockpiles 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. The stockpile height shall be limited to a maximum of eight (8) feet.

Stockpiled material shall be thoroughly mixed throughout its depth, width, and length before utilization. The material shall be homogeneous and uniform in color, gradation, and moisture throughout.

Sampling of stockpiles will be done by the Engineer. After the stockpiles have been sampled and approved, material shall not be added to them. Each stockpile shall be completed and approved at least fourteen (14) days prior to start of soil-cement production from the stockpile.

221.9 - Sampling and Use of Stockpiles:

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, 2801 West Durango Street, Phoenix, AZ 85009.

Stockpiles for use in soil-cement production shall be constructed to the following maximum size:

1. 20,000 cubic yards, or
2. The total quantity of material required to complete all soil-cement when the quantity of material required for blending into the soil aggregate is less than 20,000 cubic yards.

The height of the stockpiles shall be limited to a maximum of eight (8) feet.

Upon completion of each 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 each 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 required by the Engineer, at a minimum of four (4) different sampling locations around the perimeter of the stockpile. The Contractor shall excavate one (1) additional sampling location for each 5,000 cubic yards in the stockpile in excess of 20,000 cubic yards. 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 sample piles by channeling it with a hand shovel at 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.

221.10 - Field Quality Control:

The Contractor shall establish and maintain an effective quality control program for soil-cement which will be his means of ensuring compliance with Contract requirements and of maintaining records of his control. The program shall include, but not limited to the following: aggregate manufacture and gradations, moisture, batching requirements and mix proportions at the mixing plant, insuring adequate materials are on hand, and all other tests inspections required by the Specification.

All quality control tests shall be performed in strict accordance with the applicable standards as specified hereinafter. The quality control program for soil-cement shall be established by the Contractor and be proposed to the Engineer for review and approval. The Contractor shall supply all equipment and provide qualified personnel for testing and fulfillment of his quality control program. No soil-cement placement or aggregate production will be allowed until the Contractor has received approval of an acceptable quality control program. The Contractor's program shall be similar in nature to the quality control program established in the following paragraphs. If at any time, in the opinion of the Engineer, the Contractor's proposed system is inadequate or fails to ensure compliance with the Specification, the Contractor will be required to adopt a new system which, at a minimum, conforms strictly to the requirements stated in the following paragraphs.

(A) Aggregate Gradations:

1. Testing:

At least once during each shift that soil-cement is placed and that aggregates are produced, aggregates shall be checked for the characteristics specified in Section 221.2.3. A recheck sample is required for any test out of specifications. The location from which samples are taken may be selected by the Contractor providing that they give an accurate indication of gradations of materials as they enter the mixer. However, provisions must be made for accurate sampling of aggregates on the feed belts.

2. Action Required:

Whenever a test result is outside of the specification limits, the Engineer shall be immediately notified and a recheck sample taken. If the recheck sample is outside of the specification limits, the Engineer shall be immediately notified again, the process shall be considered out of control, and positive steps shall be taken by the Contractor to rectify the situation. The Engineer will advise the Contractor if production and placement of soil-cement shall be stopped at that time. The Contractor will be responsible for all costs incurred as a result of stopping any soil-cementing operations due to out of specification materials.

(B) Aggregate Moisture Determination:

1. Testing:

At least once during each day of placement for each aggregate size used, moisture content determinations shall be made in accordance with ASTM C566 (ASTM C70 where appropriate for fine aggregate if it is stockpiled separately). The location from which the sample is selected may be determined by the Contractor, providing that it is typical of materials entering the soil-cement.

2. Action Required:

The Engineer may test for verification any field determinations of moisture contents made by the Contractor. This verification will use the oven drying procedure. If there is a discrepancy

between the Contractor's test results and the verification tests, immediate steps shall be taken to identify the source of the problem and correct it so that accurate field determinations are obtained. When moisture content determinations indicate a change in water entering the soil-cement with the aggregates, the placement foreman shall be contacted to see if a corresponding adjustment in water added at the soil-cement mixer is necessary to obtain maximum compaction at the placement site.

(C) Soil-Cement Plant Control:

When the mixing plant is operating, the measurement of all constituent materials including cement, each size of aggregate, water and admixtures, shall be continuously controlled. The aggregate weights and amount of added water to compensate for free moisture in the aggregates shall be adjusted as necessary. A daily report shall be prepared indicating the type and source of cement used during that day; the amount, type and source of admixtures used; aggregate size groups used; required mix proportions per cubic yard for each mix design used; the amount of water as free moisture in each size of aggregate; and the aggregate and water weights per cubic yard for each mix design of soil-cement made during plant operation.

(D) Scales for Weigh Batching:

1. Tests and Checking:

The accuracy of scales shall be checked by test weights prior to the start-up of soil-cementing operations. Such tests shall also be made whenever there are variations in properties of the soil-cement that could result from batching errors. The accuracy of each batching device when weight batching procedures are used shall be routinely checked during a weighing operation by noting and recording the required weight and the weight actually batched. Rechecks shall be made at least every four shifts of operation thereafter and whenever there are variations in the properties or control of soil-cement that could result from batching errors.

2. Action Required:

Whenever either the weighing accuracy or batching accuracy is found not to comply with specification requirements, the plant

shall not be operated until necessary adjustments or repairs have been made.

(E) Volumetric Feed Calibrations:

1. Tests and Checking:

The accuracy of volumetric feeds shall be checked by collecting all material delivered during a unit of time to the mixer and also by washout tests of material exiting from the mixer. Suitable methods and equipment shall be provided for obtaining and handling samples at the mixing plant. The weight of material corresponding to a standard time interval, and the resulting proportions of materials per cubic yard, shall be determined. The accuracy of volumetric feeds shall be determined at least three times during check out of the mixing plant prior to production operations and soil-cement placement. Rechecks shall be made at least every four shifts of operation thereafter and whenever there are variations in the properties of control of soil-cement that could result from volumetric feed errors. The sample shall be of sufficient size to give accurate determinations and calibration may require weights in excess of 500 pounds per item checked.

2. Action Required:

Whenever the volumetric feed is found not to comply with Specification requirements, the plant shall not be operated until necessary adjustments or repairs have been made.

(F) Testing Soil-Cement Mixes:

1. General:

Fresh soil-cement shall be sampled and tested for compliance with the Specification and for additional information required by the Engineer. Samples and tests will primarily be made at the placing location at the time of placement, but may also be required at the mixing plant. The Contractor shall provide a method of readily obtaining representative soil-cement samples from the plant and any gob hopper locations.

2. Mixer Performance:

A complete mixer performance test of three different batches of soil-cement or runs through a volumetric plant shall be made on each stationary mixer in accordance with the Army Corps of Engineers CRD-D 55 prior to the start of soil-cement placing. Additional tests may be made at any time to support a Contractor's request for reduction of mixing time. Whenever mixer adjustments are necessary because of failure of a mixer to comply, the mixer shall be retested after adjustment. The abbreviated test may be used for this purpose. Abbreviated tests shall be run routinely on each mixer at least once every five days.

3. Temperature:

a. Testing:

At least one test of temperature shall be made at the mixing plant and at the placement on a randomly selected batch of each mix design of soil-cement used per shift of placement. Additional tests shall be made when rapid set time or workability loss is reported by the placing foreman or Engineer's inspector, or when cold weather problems occur. The temperature of air and soil-cement shall be reported during the period of cure and cold weather protection when those restrictions are applicable.

b. Action Required:

Whenever the mix temperature falls below 50° F or is above 90° F, the Contractor shall notify the Engineer immediately. All other temperatures shall be included as standard data in the quality control reports.

4. Moisture Content:

a. Tests and Checking:

At least once during each four hours of production placement at the mixing plant, and once every two hours at the placement site (immediately after compaction), the moisture content shall be determined on the soil-cement mix using a nuclear gauge in accordance with AASHTO T-239. The gauge shall be calibrated against oven-dry samples of each mix design used. If, after three days of production placement, consistent moisture control

is achieved, the rate of testing may be decreased to one test per eight hours at the plant and one test per four hours at the placement. In any case, at least three tests shall be made in different areas of each layer of soil-cement placed. The placing foreman shall continuously monitor the apparent effectiveness of compaction equipment from a visual standpoint, and shall notify the mixing plant whenever the mix becomes too dry or too wet.

b. Action Required:

Whenever moisture content tests indicate a change from what has been established as the optimum batching and placing moisture for maximum density and efficiency of compaction equipment, a corresponding adjustment shall be made in the mix water added at the mixing plant and the adjustment shall be noted. Whenever the placing foreman observes a condition of moisture which begins to consistently allow the vibratory rollers to sink excessively in the mix, cause excessive paste to develop at the surface, or leave an open appearing unconsolidated surface, an adjustment shall be made in the mix water added at the plant and the adjustment shall be noted.

5. Cement Content:

The Contractor shall obtain samples of the soil-cement mix at the mixing plant and/or placement area for determination of cement content using a chemical chloride titration or similar procedure. The test equipment shall also allow moisture content determinations to be made. The equipment shall be provided by the Contractor and all testing shall be by the Contractor.

6. Soil-Cement Compressive Strength Tests:

The Contractor shall cast, transport and cure specimens for compressive strength tests and test the specimen for compressive strength at time intervals as directed by the Engineer, but not less than one set of three cylinders per 500 cubic yards of soil-cement placed. The soil-cement samples shall be prepared and tested in accordance with the requirements of Arizona Test Method 241a.

7. Density:

a. Testing and Checking:

At least once every two hours during placement, but not less than once every 500 cubic yards of soil-cement, the density and moisture content of soil-cement after compaction shall be determined with a nuclear density gauge in accordance with AASHTO Designation T-238, previously calibrated against sand cone densities. The Contractor shall maintain a nuclear gauge in good working condition on the placement area at all times. The Engineer shall have access to the gauge at all times and shall be allowed to use it for quality assurance check tests. Each lift of soil-cement shall be tested by the nuclear gauge in at least six separate locations for density. The direct transmission mode shall be used and readings shall be taken in each quadrant of a circle obtained by rotating the gauge 90° each after each reading around the transmission probe. The probe shall be inserted into pre-driven holes of diameter recommended by the manufacturer to a depth of at least 10 inches for each reading. Density shall be as specified in Subsection 221.4.8 of this Special Provision. The vibratory roller operators shall continually monitor their "on board" compaction meters as an indicator or any areas which have not been fully compacted.

b. Action Required:

Whenever a roller operator finds that his compaction meter indicates insufficient compaction, he shall continue rolling until the required compaction meter readout is achieved. If this requires more than an estimated six passes, the Engineer shall be notified by the placing foreman, and the Contractor shall determine the actual density with a nuclear gauge. Whenever the nuclear gauge indicates compaction of less than specified in Subsection 221.4.8 of this Special Provision, a retest shall be made. If the retest indicates incomplete compaction, the Engineer shall be notified, additional rolling shall be immediately provided and a determination shall be made as to whether the lower density resulted from insufficient passes of the roller or a change in the

mix properties. If the mix properties have changed, adjustments such as increasing or decreasing the moisture content shall be made at the mixing plant. If the problem persists, the Engineer may require the Contractor to adjust the proportions of aggregates, and/or cement. If the lower density is the result of incomplete rolling, the operator shall be notified and the Engineer may require removal of the incompletely compacted material at no cost. If the same operator repeatedly rolls less than the required number of passes, and/or if his compaction meter repeatedly indicates underrolling due to deliberate action or inattentiveness, he shall be replaced with a different operator.

(G) Compaction Equipment:

1. Tests and Checking:

Before any compactor is used in soil-cement construction, it shall be checked for current dimensions, weight and vibratory capacity. At least once per four shifts of use, a spot recheck of frequency shall be made. At least once per each shift of placement for the first five days of operation by any new operator, his performance shall be spot checked for the correct number of passes, correct spread, coverage of the area being rolled, and good rolling practice. Thereafter, spot checks shall be made on each operator at least every four shifts.

2. Action Required:

Compaction equipment not meeting the physical dimensions and weights required shall be removed from the site. Any roller having improper frequency shall be corrected before being used for soil-cement compaction. Roller operators running at speeds in excess of Specification requirements shall be immediately notified and shall correct any noted improper practices or be replaced by another operator.

(H) Dumping and Spreading:

1. Tests and Checking:

The placing foreman or other designated representative shall continually observe and monitor dumping and spreading operations to insure that they are done in a manner that

minimizes segregation and spreading after dumping. Each lift of soil-cement shall be routinely checked in its spread uncompacted condition for evenness and correct thickness that will result in a smooth, even, compacted layer having thickness as required.

2. Action Required:

Whenever thickness checks on uncompacted soil-cement indicate an excess or shortage of material, the lift shall be immediately bladed off or supplemented to establish the correct thickness before compaction. Whenever a compacted layer thickness or elevation exceeds the specified thickness by two inches, the Engineer shall be immediately notified and he will determine whatever corrective action is necessary.

(I) Preparation for Soil-Cement Placement:

Foundations and construction joints shall be inspected in sufficient time prior to each soil-cement placement by the Contractor in order to certify that the area is ready to receive soil-cement. The results of inspections shall be reported in writing as a part of the quality control reports. The placing foreman shall supervise all placing operations and shall be responsible for measuring and recording concrete temperatures, ambient temperature, weather conditions, time of placement, yardage placed and method of placement. The placing foreman shall not permit placing to begin until he has verified that an adequate number of vibratory rollers and spreading equipment of the right size, in working order, and with competent operators are available.

(J) Construction Joints:

Vertical construction joints are to be provided at the end of each day's work or when work is halted for two hours or more. The joints shall be trimmed to a straight line and vertical to the full depth of the lift. Before resuming placement of new soil-cement, loose material shall be removed from the joint.

(K) Curing, Protection and Joint Surfaces:

1. Moist Curing:

At least once each shift around the clock, seven days per week, an inspection shall be made of all areas subject to moist curing

and joint protection. The surface moisture condition shall be noted and recorded. If an isolated area has been allowed to dry, that area shall be considered as improperly cured. The Contractor shall immediately wet the surface and take positive steps to insure that the problem does not reoccur.

2. Protection:

At least once each shift, around the clock, seven days per week, an inspection shall be made of all areas subject to cold weather protection or protection against damage. Deficiencies shall be noted. During removal of cold weather protection, measurement of soil-cement and ambient temperature shall be made at least every three hours.

(L) 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.

(M) Backfill:

Backfill shall not be placed against the soil-cement until it has achieved its full design strength. Special care shall be taken when placing backfill against soil-cement.

(N) Reports:

Mixing plant control reports and all results (both passing and failing) of tests conducted at the site shall be reported daily and shall be delivered to the Engineer within two days after the end of each weekly reporting period. These requirements do not relieve the Contractor of the obligation to report certain failures immediately as required in the preceding paragraphs. Such reports of failures and the action taken shall be confirmed in writing in the routine reports. The Engineer has the right to examine all Contractor quality control records.

221.11 - Acceptance Sampling and Testing

Rejection of soil-cement will occur due to improper temperatures, and/or density for the soil-cement mixture delivered to the site, placed and compacted. The Engineer at his discretion may allow failed soil-cement mixture already in place to remain in place subject to acceptance by compressive strength or may require its removal.

Rejection of soil-cement will also occur due to insufficient compressive strength. Soil-cement compressive strength requirements consist of the specified strength which the soil-cement shall attain at 7 days.

A. Sampling and Testing of Soil-Cement:

1. General:

Fresh soil-cement shall be sampled and tested for compliance with the Specification. Samples and tests will be made at the placing location at the time of placement. The Contractor shall provide a method of readily obtaining representative soil-cement samples from the placement locations.

2. Temperature:

At least one test of temperature shall be made at the placement location on a randomly selected batch of each mix design of concrete used per shift of placement. Additional tests shall be made when rapid set time or workability loss is reported or when cold weather problems occur.

3. Moisture Content:

At least once during each four hours at the placement site (immediately after compaction), the moisture content shall be determined on the soil-cement mix using a nuclear gauge in the direct transmission mode. The probe shall be driven to a depth of at least 10 inches for each reading. The gauge shall be calibrated against oven-dry samples of each mix design used. If, after three days of production placement, consistent moisture control is achieved, the rate of testing may be decreased to one test per eight hours at the placement.

In any case, at least three tests shall be made in different areas of each layer of soil-cement placed.

4. Density:

At least once every two hours during placement, but not less than once every 500 cubic yards of soil-cement, the density and moisture content of soil-cement after compaction shall be determined with a nuclear density gauge in accordance with AASHTO Designation T-238, previously calibrated against sand

cone densities. Each lift of soil-cement shall be tested by the nuclear gauge in at least six separate locations for density. The direct transmission mode shall be used and readings shall be taken in each quadrant of a circle obtained by rotating the gauge 90° each after each reading around the transmission probe. The probe shall be inserted into pre-driven holes of diameter recommended by the manufacturer to a depth of at least 10 inches for each reading.

5. Soil-Cement Compressive Strength:

The Engineer shall cast, transport, and cure specimens for compressive strength tests and test the specimen for compressive strength at time intervals as directed by the Engineer, but not less than one set of three cylinders per 500 cubic yards of soil-cement placed. The cylinders shall be prepared and tested in accordance with the requirements of Arizona Test Method 241a.

(B) Acceptance of Soil-Cement:

Acceptance and penalties for placed soil-cement which meets the above mixture requirements or is allowed to remain in place shall be determined by the results of the 7 day compressive strength. Soil-Cement represented by compressive strength tests which do not meet the minimum compressive strength specified may be allowed to remain in place at the discretion of the Engineer. No payment will be made for such soil-cement.

221.12 - Control Strips:

A soil-cement control strip shall be constructed at the beginning of work on the soil-cement. The control strip construction shall be used to demonstrate equipment and procedures necessary to attain the required densities for the specified course.

Each control strip, if constructed to acceptable density and surface tolerances, shall remain in place and become an integral part of the completed levee protection. Unacceptable control strips (i.e., those that fail to meet the specified requirements for density or compressive strength) shall be replaced at the Contractor's expense. A control strip shall have an area of not less than 500 square yards and the compacted thickness specified for the construction of the course which it represents.

Compaction equipment shall be capable of obtaining the specified compaction requirements without detrimentally affecting the compacted material. The equipment shall be modern, efficient compacting units meeting the requirements of this section.

Rollers shall be the self-propelled drum drive vibratory type which will be capable of transmitting dynamic impact to the surface to be compacted through a steel drum by means of revolving weights, eccentric shafts, or other equivalent methods. The compactor shall have a gross weight of not less than 21,000 pounds and shall produce a dynamic force of at least 400 pounds per lineal inch of drum width at the operating frequency which is used during construction. The roller shall have a vibrating frequency of at least 1,800 CPM (cycles per minute). The roller shall have a smooth drum or drums with a drum diameter between 4 and 5.5 feet and a width of between 5.5 and 8 feet. The engine driving the eccentric mass shall have a rating of not less than 125 horsepower. Heavier compacting equipment may be required to achieve the soil-cement density requirements.

The equipment used in the construction of the control strip shall be of the same type and weight to be used on the remainder of the course represented by the control strip.

The materials used in the construction of the control strip shall conform to the specification requirements. They shall be furnished from the same source and shall be of the same type used in the remainder of the course represented by the control strip. The underlying surface upon which a control strip is to be constructed shall have the prior approval of the Engineer.

221.13 - Soil-Cement Strength Requirements:

Soil-cement shall have the following minimum required compressive strength at seven (7) days of not less than 750 psi when tested in accordance with the requirements of Arizona test Method 241a.

A minimum of three (3) cylinders shall be taken for testing purposes per 500 cubic yards of material placed, but not less than three (3) cylinders per day shall be made.

Test results which indicate strength below 750 psi shall be the basis of rejection of the defective soil cement. Defective material shall be removed and replaced at the Contractors expense.

221.14 - Measurement:

This work shall be measured 1) in cubic yards of complete-in-place soil-cement between the limits shown by the specified lines, grades, and cross-sections shown

on the Plans. The Contractor shall compute the volume of soil cement placed by the average end area method from the cross-sections taken for the Foundation Excavation and Fill Embankment and placing the neat line soil cement limits on the cross-sections and 2) in tons of cement incorporated into the soil-cement, as determined by tests.

221.15 - Payment:

This work shall be paid for at the Contract unit price per cubic yard for soil-cement as set forth in the Bid Schedule under Item 221-1. Such payment shall constitute full reimbursement for performing all work and for furnishing all equipment, labor, and materials necessary to complete the soil-cement bank protection, bank transition, dewatering, trench excavation and toe excavation fill, watering, mixing, placing, compacting, curing, inspection, and testing assistance and all other incidental operations.

Cement furnished will be paid for at the Contract unit price per ton under Item 221-2 of the Bid Schedule. Any waste of cement and/or soil cement by the Contractor during the handling, mixing, placing, etc., operations shall not be paid for. Unbalancing of unit price bid or any material bid below market cost shall be the basis for rejection of the bid.

SECTION 225 - WATERING

In addition to the requirements of the MAG Standard Specifications.

225.1 - Description:

Replace Section 225.1 of the MAG Standard Specifications with the following:

The work under this section shall consist of furnishing and applying all water required for the control of dust, for the safety and convenience of the traveling public, and for the reduction of the dust nuisance to adjacent property.

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 moistened to prevent pollution of air, water and adjacent property.

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.

225.5 - Payment:

There is no pay item for watering.

SECTION 310 - AGGREGATE BASE COURSE

Replace Section 310 of the MAG Standard Specifications with the following:

310.1 - Description:

Aggregate Base Course, also referred to as ABC, shall be placed in a 4-inch layer for the maintenance roads and turn around areas, where shown on the design plans.

310.2 - Materials:

Materials for use as ABC shall be in accordance with Section 702 - Base Materials of the MAG Standard Specifications.

310.3 - Placement:

The ABC may be placed and compacted in a single layer. After distributing, the base material shall first be watered and then immediately bladed to a uniform layer that will net, after rolling, the required thickness. If the materials deposited are not uniformly blended together, the blading operation shall be continued to such extent as may be necessary to eliminate segregation. The quantity of water applied shall be that amount which will assure proper compaction resulting in a relative density of not less than 100 percent as determined under Section 301 of the MAG Standard Specifications. Care shall be exercised in connection with watering operations to avoid wetting the subgrade or any lower base course to detrimental extent.

Upon completion, the base surface shall be true, even and uniform conforming to the grade and cross-section shown on the design plans.

ABC may vary not more than ½ inch above or below required grade and cross-section.

310.4 - Measurement:

Quantities of ABC shown on the design plans are measured by the square yards, based upon the actual dimensions shown. No allowance is made for spalling or waste beyond those limits.

310.5 - Payment:

Payment shall be by the square yard in place, to the dimensions shown on the design plans for Item 310 of the Bid Schedule. Such payment shall be compensation in full for materials, transportation, miscellaneous earthwork, labor, equipment, placement, watering, and roller compaction.

SECTION 350 - REMOVAL OF EXISTING IMPROVEMENTS

In addition to the requirements of the MAG Standard Specifications:

350.1 - Description:

This work shall consist of removal of existing fence, buildings, asphalt road paving, concrete pads, irrigation structures, canal and ditch lining, culverts, manholes, headwalls, sand piles, gravel piles, rock piles, and other miscellaneous items from within the limits of the work. Holes, cavities and trenches resulting from the removal of structures shall be backfilled in accordance with Section 206 and 211.

350.2 - Construction Method:

All materials, unless designated on the plans or by the Engineer as to be salvaged, reused, or relocated shall become the property of the Contractor and shall be immediately removed from the job site.

350.3 - Miscellaneous Removal and Other Work:

In addition to subsection 350.3 of the MAG Standard Specifications, the work shall include but not be limited to:

- Removal of existing fence
- Removal of spillway
- Remove and salvage existing riprap

350.4 - Payment:

Payment for removal of all existing improvements will be made the Contract lump sum price for Item 350 of the Bid Schedule. This lump sum price shall be full compensation for the item complete, as described herein or on the plans.

SECTION 401 - TRAFFIC CONTROL

In addition to the requirements of the MAG Standard Specifications:

401.1 - Description:

Traffic control may be necessary during construction of the maintenance vehicle access at Camelback Road and when construction equipment crosses existing surface streets.

401.2 - Traffic Control Devices:

The number and kind of barricades, signs, delineators, barriers, and all other traffic control devices and the approval of the Contractor's method of application of all traffic control measures, shall not relieve the Contractor of the responsibility of protecting the work, the workers, and the traveling public.

401.4 - Traffic Control Measures:

At the time of the pre-construction conference, the Contractor shall submit for review and approval a traffic control plan. The plan shall show all measures, including types of signs, barricades, and sand berms with their placement and spacing. All advance warning signs shall be mounted on steel channels driven into the ground. Locations of all signs shall be coordinated with the Maricopa County Highway Department, Traffic Engineering Division before placement (contact Mr. Greg Holverson, Senior Inspector - 506-8744).

The Contractor shall provide and maintain all necessary signs, barricades, and centerline vertical panels for five working days beyond any construction which prevents traffic from using the roadway, or acceptance of the project by the District, whichever is greater.

401.6 - Measurement:

In addition to providing temporary traffic control, work shall consist of providing, erecting, paint striping, and maintaining before final acceptance all traffic control devices.

401.7 - Payment:

The traffic control both temporary and permanent will be paid for at the lump sum price for the type and size specified on the design plans and under Item 401 in the Bid Schedule.

This shall be considered full compensation for performing all work and for furnishing all labor, equipment, and materials required to erect, install, maintain, and remove traffic control devices.

SECTION 421 - SMOOTH WIRE FENCE is hereby added:

421.1 - Description:

The work under this section shall consist of furnishing all materials and constructing wire fence at the location and in accordance with the details shown on the plans. Fences shall be of the types and sizes shown on the plans and shall be constructed in accordance with the requirements of these specifications.

421.2 - Materials:

Fencing wire shall be 12-1/2 gauge steel wire and shall be either zinc coated or aluminum coated. Zinc coated steel wire shall conform to the requirements of ASTM A 121 Class 1 coating. Aluminum coated steel wire shall conform to the requirement of ASTM A 585, Type 1, Class 1 coating.

Posts, rails, braces and caps for gates shall conform to Section 772.2, Type A.

Line posts shall conform to the requirements of ASTM A 702. Lengths of posts shall be as shown on the plans. Packaging of posts will not be required. The type of post furnished, tee, channel or U or Y type shall be the same on any one project.

End, corner and pull posts and braces shall conform to the requirements of ASTM A 702, for uprights and braces.

Posts and braces shall be painted green.

Portland cement concrete shall conform to the requirements of Section 725.

421.3 - Construction:

The Contractor shall clear the fence lines of all earth, trees, brush and other obstructions which interfere with the proper construction of fences, unless the Engineer orders certain trees to remain in place. Disposal of removed material shall be in accordance with the requirements of Section 201.

Fence shall be constructed along and up to twelve inches (12") within the project right of way as shown on the plans.

Fence posts shall be spaced at the intervals and set to depths shown on the plans.

In the determining the post spacing measurements shall be made parallel to the ground slope, and all posts shall be placed in a vertical position, except in unusual locations where the Engineer may direct that the posts be set perpendicular to the ground surface.

Line posts may be driven into undisturbed earth provided driving does not injure the posts. All voids around the post shall be backfilled and the material thoroughly tamped.

End, corner, pull, latch and gate posts and braces shall be set in concrete footings and crowned at the top to shed water.

Any high points which interfere with the placing of fence wire shall be excavated to provide the clearance shown on the plans.

After post assemblies have been placed, the wire shall be pulled taut to the satisfaction of the Engineer and each longitudinal wire shall be cut and securely fasten to the brace post with devices suited for the purpose. Wire shall not be carried past a post assembly, but shall be cut and fastened to the post independently of the adjacent spans. A maximum of two splices on wire will be permitted between post assemblies, but not on the same wire. No splice shall be placed closer than 100 feet to any post assembly

After the tensioning of the wire between the post assemblies, all longitudinal wires shall be attached to each intervening line post at the height and spacing as shown on the plans. The distance from the bottom wire to the ground may vary at any one point from that shown on the plans four inches plus or minus. Where abrupt changes occur in the fence line grade, intermediate line posts may be required to maintain proper distances between the bottom wire and the ground.

Spacing of the twisted vertical wire stays shall be as shown on the plans for each type of fence. The vertical wire stays shall be woven into every horizontal wire.

At all grade depressions where stresses tend to pull the posts from the ground, the affected fence posts shall be anchored in concrete. The volume of concrete required to anchor the posts shall be not less than one cubic foot.

421.4 - Measurement:

Wire fence shall be measured on the fence line along the top of the completed fence from center of end posts.

421.5 - Payment:

Payment shall be made at the contract price bid per linear foot for:
ITEM 421 SMOOTH WIRE FENCE, and shall be fully compensated for furnishing and installing the wire fence as specified, including removal of obstructions and all incidental costs not specifically covered in other items.

SECTION 430 - LANDSCAPING AND PLANTING

Amend Section 430 of the Standard Specifications with the following:

430.2 - General:

Delete Paragraphs 3, 4 and 5.

430.3 - Lawn Areas:

Replace in total with the following:

430.3 - Vegetative Areas:

430.3.1 - Seeded Area

The seeded area shall consist of the vegetative slope stabilization area, the 3:1 backslope of the levee as shown on the project plans.

Seeding Window: All seeded areas shall be seeded from October 1 through December 31. Only if delays are due to events outside the control of the Contractor, seeding shall be conducted from February 15 through March 31.

For the vegetative slope stabilization area, the seed fertilizer and mulch shall be mixed in the required amount of water to provide a homogeneous slurry and then uniformly applied under pressure at the following rates per acre:

- Seed - as specified in seed mix
- Wood Fiber Mulch - 500 pounds/acre
- Fertilizer - 160804 Commercial Fertilizer - 200 pounds/acre

The seed shall not remain in the hydroseeder for longer than one (1) hour.

Straw Mulch: Straw shall be applied over the seed, fertilizer and mulch. The rate of application shall be 1.75 tons per acre. The straw shall be applied by commercial mulch blowing equipment.

Wood Fiber Mulch: Following the hydroseeding operation, Psyllium mucilloid organic tackifier, and wood fiber mulch shall be mixed in the required amount of water to produce a homogeneous slurry and the hydromulch is placed under pressure at the following rates per acre (dry weight):

Wood Fiber Mulch - 1500 lbs.
Psyllium tackifier - 130 lbs.

430.9 - Plant Establishment Period:

Replace in total with the following:

This work shall consist of furnishing all materials and labor necessary to establish and/or replace plants and to assure maximum possible survival and vigorous growth to all plant material installed.

Periodic inspections shall be performed by the Engineer to determine if plant establishment is taking place.

The plant establishment period shall be for a period of one hundred twenty (120) calendar days for the vegetative slope stabilization area, but is subject to extension by the Engineer if the landscape areas are improperly maintained, or other corrective work becomes necessary.

An acceptable native seed area at completion of the establishment period is defined as having no areas greater than six (6) inches by six (6) inches containing no plants of the specified seed mix.

430.10 - Measurement and Payment:

Vegetative slope stabilization area will be paid for at the contract unit price per acre for Items 430 as listed in the Bid Schedule. The price shall be full compensation for the work, including furnishing all labor, water, materials, tools, equipment and incidentals to install and maintain the material as shown on the plans or as directed by the District Ecologist, from start of construction through the maintenance period.

Ten percent (10%) of the final payment amount for items 430 will be withheld during the Plant Establishment Period. Fifty percent (50%) of the withheld amount to be released at the end of the first sixty (60) days of the Plant Establishment Period and the remaining fifty percent (50%) of the withheld amount to be released at the end of the Plant Establishment Period. Release of any of the retainage amounts is subject to the Engineer's recommendation and approval.

SECTION 520 - STEEL AND ALUMINUM HANDRAILS

In addition to the requirements of the MAG Standard Specifications:

520.1 - Description:

Safety Railings and Fence Gate shall be made of galvanized Schedule 40 steel pipe conforming to ASTM A 53, galvanized in accordance with Section 771 of the MAG Standard Specifications.

Pipe Post for Safety Rails shall be of galvanized Schedule 40 steel pipe of nominal 2½-inch diameter (2-7/8-inch od) conforming to ASTM A 53; with a nominal weight of 4.64 lb/ft. Construction shall be continuous along the top of the soil-cement embankment.

Pipe rail for safety rails shall be of galvanized Schedule 40 steel pipe of nominal 1-1/2-inch diameter conforming to ASTM A53. Construction shall be continuous along the top of the soil cement embankment. Rails shall be provided in 32-foot length or manufacturer's largest lengths (minimum of 24-foot lengths). Contractor shall provide end caps on all pipe ends. Endcaps to be clamped to pipe and secured with hex head bolt.

Fence Gate Frame shall be of galvanized Schedule 40 steel pipe of nominal 1-7/8-inch diameter conforming to ASTM A 53; with a nominal weight of 2.28 lbs/ft. Gate post shall be of galvanized Schedule 80 steel pipe of nominal 3-inch size conforming to ASTM A 53.

520.2 - Fabrication:

Jointing for Safety Railings shall be by one of the following:

1. Flush-type rail fittings, welded and ground smooth with railing splice locks secured with 3/8-inch hexagonal-recessed-head setscrews.
2. Mitered and welded joints made by fitting post to top rail and intermediate rail to post, mitering corners groove welding joints and grinding smooth. Railing splices shall be butted and reinforced by tight-fitting exterior sleeve not less than 6 inches long.

Joints for Fence Gate shall be mitered, grooved and welds ground smooth. Tension lines shall be 7 gauge (0.177 inch diameter) coil spring steel with a minimum tensile strength of 75,000 pounds per square inch, and shall be zinc-coated or aluminum coated.

Surfaces of galvanized metals that are abraded or cut during construction and surfaces which are welded shall be covered with Grade 50B solder conforming to the requirements of ASTM B32.

520.3 - Erection:

Installation shall be by grouting pipe post or gate post into preformed or drilled holes in the soil cement embankment by placement in a concrete footing to the dimensions shown on the design plans. Concrete mixture for grouting pipe post into soil cement embankment shall be Class C per Section 725 of the Standard Specifications.

520.4 - Measurement:

Measurement of safety rails will be by the number of linear feet measured horizontally along its entire length as designated on the plans. Measurement of fence gates will be by each as designated on the plans.

520.5 - Payment:

Payment for safety railings and fence gates will be made at linear feet of safety railing under Item 520-1 and at the Contract unit price bid per gate under Item 520-2 in the Bid Schedule, respectively. Such payments shall be compensation in full, inclusive of all fabrication, gate posts, end posts, intermediate posts, cross bars, hinges, braces, joints, locking chain, galvanizing, and field touch-up.

SECTION 525 - PNEUMATICALLY PLACED MORTAR

525.1 - Description replace in total with the following:

The fine and coarse aggregate for the wet process shall use gradation no. 2.

525.12 - Measurement replace in total with the following:

Measurement of pneumatically placed mortar will be by the square yard.

525.13 - Payment replace in total with the following:

Payment for pneumatically placed mortar will be made at the unit price per square yard completed and accepted. The payment shall be full compensation for furnishing all labor, tools and equipment and accomplishing all work in conformity with the plans and specifications.

SECTION 795 - LANDSCAPE MATERIAL is hereby modified as follows:

795.2 - Topsoil

Delete in total.

795.3 - Soil Fertilizing Materials:

In addition to the requirements of the MAG Standard Specifications:

795.3.1 - Fertilizer is added:

Where fertilizer is furnished from bulk storage, the Contractor shall furnish a supplier's certification of analysis and weight. Fertilizer shall be a hard prill type fertilizer, which is uniform in composition, pelleted, dry, and free flowing. Guaranteed usable analysis of fertilizer shall be as follows:

Ammoniacal nitrogen (N)	16.0%
Available phosphoric acid (P2O3)	8.0%
Water soluble potash (K2O)	4.0%
Sulphur	16.0%
Iron (Fe) (chemical)	1.5%
Manganese (MN) (chelated)	0.1%
Zinc (Zn) (chelated)	0.1%

When slow release nitrogen forms are used in the fertilizer mixture, they shall be derived from sulfur coated urea, urea formaldehyde, plastic or polymer coated prills or isobuylenediurea.

795.4 - Organic Soil Conditioners replace in total with the following:

795.4 - Mulch:

Straw mulch materials shall consist of wheat, barley, oat, or rye straw. The mulch material shall be air dry, reasonably light in color, and shall not be musty, caked or otherwise of low quality. The use of mulch that contains noxious weeds will not be permitted. The Contractor shall provide a method satisfactory to the Engineer for determining weight of mulch furnished.

Wood Fiber Mulch: The mulch material shall consist of virgin wood fibers manufactured expressly from whole wood chips. The chips shall be processed in such a manner as to contain no growth or germination inhibiting factors. Fiber shall not be produced from recycled material such as sawdust, paper, cardboard or

residue from pulp and paper plants. The wood cellulose fibers of the mulch must maintain uniform suspension in water under agitation. The wood fiber mulch shall blend with grass seed, fertilizer and other additives to form a homogeneous slurry. The wood fiber mulch shall conform to the following specifications:

Percent Moisture Content	10.0%
Percent Organic Matter	99.0%
Percent Ash Content	0.8%
pH	4.8 to 5.5
Water Holding Capacity (minimum)	1 gram of water/100 grams fiber

Psyllium Mucilloid Organic Tackifier: The material shall be a totally organic substance supplied in dry, powdered form, at least 70 percent of which is 92 percent pure mucilloid, derived from *Plantago ovata-insularis* husk. The material shall be water-soluble, non-toxic, hydrophilic and shall not inhibit germination.

795.6 - Seeds is modified to add:

For vegetative slope stabilization:

Seed shall be labeled in accordance with Arizona State laws and the U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act in effect on the date of invitations for bids. Bag tag figures will be evidence of purity and germination. No seed will be accepted with a date of test of more than nine (9) months prior to the date of delivery to the site.

Seed shall be certified to be the latest season's crop and shall be delivered in original sealed packages bearing the producer's guaranteed analysis for percentages of mixtures and pure live seed. Seed shall be labeled in conformance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act and applicable state seed laws. Seed that has become wet, moldy, or otherwise damaged will not be acceptable.

The vegetative slope stabilization area seed mixture shall be proportioned by weight as follows:

Common Name	Scientific Name	PLS/Acre
Creosote Bush	<i>Larrea Duvaricata</i>	6.0
Desert Lupine	<i>Lupinus sparsiflorus</i>	2.0
Desert Cassia	<i>Cassia covesii</i>	3.0
Globe Mallow	<i>Sphaeralcea ambigua</i>	1.5
Indian Wheat	<i>Plantago insularis</i>	1.0
Purple Three-Awn	<i>Aristida purpurea</i>	1.0
Triangle-leaf Bursage	<i>Ambrosia deltoidea</i>	3.0
Total		17.5

795.6.1 - Ordering Seed is hereby added:

If specified seed is not available, the Contractor shall submit recommended substitutes in writing ten (10) days prior to bid opening to the District Ecologist for prior approval.

The Contractor shall submit a list of seed suppliers that he has contacted and the source from which he is ordering seed.

The District Ecologist shall respond in writing prior to bid opening to accept or reject the recommended seed substitute.

795.7 - Plants, Trees, and Shrubs:

Delete in total.

795.8 - Miscellaneous Material:

Delete in total