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BID & CONTRACT DOCUMENTS
CONSTRUCTION SPECIFICATIONS

CAMELBACK RANCH
LEVEE, MASS GRADING &
MISCELLANEOUS IMPROVEMENTS

Clearing & Grubbing, Grading, Storm Drain, Soil Cement,
Sewer, Water, Utility Trenching and Paving

Property of
Flood Control District of MC Library
Please Return to
2001 W. Durango
Phoenix, AZ 85009

OWNER/DEVELOPER:

Willden - Red River Joint Venture
c/o Willden Investment Opportunities
4520 N. Central Avenue
Suite 500
Phoenix, AZ 85012

May, 1990

ENGINEERING DIVISION
LIBRARY

INVITATION TO BID

You are hereby invited to bid on the construction improvements for CAMELBACK RANCH - LEVEE CONSTRUCTION, MASS GRADING & MISCELLANEOUS IMPROVEMENTS (350+ acres at the Northwest corner of 107th Avenue and Camelback Road in the city of Phoenix). A set of plans and construction documents are attached. Additional sets are available for the cost of printing. A prebid meeting is scheduled for May 22, 1990 at 9:00am at the offices of the Design Engineer, Coe & Van Loo, 4550 N. 12th St., Phoenix. Bids shall include a critical path schedule and will be due June 7, 1990 at 1pm in the offices of the owner, WILLDEN - RED RIVER JOINT VENTURE c/o Burns International, Inc., 4520 N. Central Ave., Suite 500, Phoenix, AZ 85012, attn: Mr. Bob Mitchell. The owner reserves the right to negotiate with any contractor. We expect to award the contract no later than June 11th, to issue a notice to proceed no later than July 2, 1990, and allow a 120 calender day contract completion deadline for a substantial completion date of October 29, 1990.

BIDDER LIST

BENTSON CONTRACTING
FNF CONSTRUCTION
M.M. SUNDT.
PULICE CONSTRUCTION
WHEELER CONSTRUCTION

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WILLDEN - RED RIVER JOINT VENTURE
CAMELBACK RANCH
LEVEE AND MASS GRADING IMPROVEMENTS
(PHASE I)

Proposal to WILLDEN - RED RIVER JOINT VENTURE (WRR), Phoenix, Arizona.

In compliance with the Advertisement for Bids by WRR, undersigned bidder:

Having examined the contract documents, site of work, and being familiar with the conditions to be met, hereby submits the following Proposal for furnishing the material, equipment, labor, and everything necessary for the completion of the work listed and agrees to execute the contract documents and furnish the required bonds and certificates of insurance for the completion of said work, at the locations and for the prices set forth on the inside pages of this form.

Understands that construction of this project shall be in accordance with all applicable Uniform Standard Specifications and Standard Details except as otherwise required by the project Plans and Special Provisions.

Agrees that upon receipt of Notice of Award from WRR he will execute the contract documents.

Work shall be substantially complete by October 15, 1990 and accepted by the pertinent governmental agencies by November 15, 1990. Notice to Proceed will be issued upon presentation of properly executed contract documents by the Contractor.

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

Revised Plan sheets dated 5/21/90

Name of Bidder: _____
Business Address: _____

Phone: _____

WILLDEN - RED RIVER JOINT VENTURE

CAMELBACK RANCH
 LEVEE & MASS GRADING IMPROVEMENTS
 (PHASE I)

SCHEDULE OF WORK ITEMS

A. GRADING CONSTRUCTION QUANTITIES:

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITIES	UNIT	UNIT PRICE DLRS.CTS.	TOTAL AMOUNT DLRS.CTS.
1.	Clearing & Grubbing (300 Acres+)	Lump Sum	L.S.	_____	_____
2.	Earthwork				
	a. Cut	1,060,000	C.Y.	_____	_____
	b. Embankment	312,320	C.Y.	_____	_____
	c. Stock Pile	616,460	C.Y.	_____	_____

B. DRAINAGE CONSTRUCTION QUANTITIES

1.	Soil Cement				
	a. Cement	9,375	Ton	_____	_____
	b. Flyash	1,875	Ton	_____	_____
	c. Lime	1,250	Ton	_____	_____
	d. Placement	46,370	C.Y.	_____	_____
2.	24"RGRCP or CIPP C1.IV	334	L.F.	_____	_____
3.	36"RGRCP or CIPP C1.IV	1,324	L.F.	_____	_____
4.	Manhole	6	Ea.	_____	_____
5.	24" Inlet Structure w/trash rk.	1	Ea.	_____	_____
6.	36" Inlet Structure w/trash rk.	1	Ea.	_____	_____
7.	Pipe Plugs	2	Ea.	_____	_____
8.	24"Thick Loose RipRap D50=12	60	C.Y.	_____	_____
9.	4"Gunite w/4x4 Welded Wire Fabric	1,260	S.Y.	_____	_____
10.	River Run Cobbles	90	C.Y.	_____	_____
11.	Triple 10'x3'RCBC w/wing walls	Lp.sm.	L.S.	_____	_____
12.	Pavement Replacement	61	S.V.	_____	_____

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITIES	UNIT	UNIT PRICE DLRS.CTS.	TOTAL AMOUNT DLRS.CTS.
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C. Sewer Construction Quantities

1.	8" V.C.P.	271	L.F.	_____	_____
2.	8" Plug	10	Ea.	_____	_____

D. Water Construction Quantities

1.	12" A.C.P.	5861	L.F.	_____	_____
2.	12" D.I.P.	80	L.F.	_____	_____
3.	8" A.C.P.	219	L.F.	_____	_____
4.	8" D.I.P.	169	L.F.	_____	_____
5.	12"x12" Tapping Sleeve & Valve Type "A"	1	Ea.	_____	_____
6.	12" Valve w/Type "A" VB&C	10	Ea.	_____	_____
7.	8" Valve w/Type "A" VB&C	11	Ea.	_____	_____
8.	12"x 2" Tap Cap	5	Ea.	_____	_____
9.	8" x 2" Tap Rap	5	Ea.	_____	_____
10.	2" I.P. Corp Stop	10	Ea.	_____	_____
11.	Fire Hydrant Complete	6	Ea.	_____	_____
13.	Pavement Replacement	231	S.Y.	_____	_____

E. Paving Construction Quantities

1.	2"A.C./4"A.B.C./6" A.B.C. or Select	9373	S.Y.	_____	_____
2.	2"A.C./4"A.B.C./9" A.B.C. or Select	172	S.Y.	_____	_____
3.	6" Vertical Curb & Gutter	3151	L.F.	_____	_____
4.	Concrete Valley Gutter & Aprons	1227	S.F.	_____	_____

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITIES	UNIT	UNIT PRICE DLRS.CTS.	TOTAL AMOUNT DLRS.CTS.
5.	Depressed Curb & Gutter	40	L.F.	_____	_____
6.	4' Curb & Gutter Transitions	4	Ea.	_____	_____
7.	Thickened Edge	3370	L.F.	_____	_____
8.	Survey Monument Type A	1	Ea.	_____	_____
9.	Survey Monument Type B	10	Ea.	_____	_____
10.	Barricade COP 1106-B	140	L.F.	_____	_____
11.	Valve Box & Cover Adjustment	16	Ea.	_____	_____
12.	8' Wide Concrete Bike Path	16727	S.F.	_____	_____
13.	Sidewalk Ramp	8	Ea.	_____	_____
14.	Sawcut & Remove Existing A.C. Pavement	24	Ea.	_____	_____
15.	Bollards	7	Ea.	_____	_____

F. Miscellaneous Construction Quantities

1.	6' High, Chain Link Fence	18000	L.F.	_____	_____
	a. w/Barbed Wire Strands	3900	L.F.	_____	_____
	b. without " " "	10160	L.F.	_____	_____
2.	24' Chain Link Gate	5	Ea.	_____	_____
3.	14' Pipe Access Gate	2	Ea.	_____	_____
4.	4" A.B.C.	9100	S.Y.	_____	_____
5.	Utility Trench 24"x60"	3,200	L.F.	_____	_____
6.	Performances & Payment Bonds	Lmp.sm.	L.S.	_____	_____
7.	Mobilization	Lmp.sm.	L.S.	_____	_____

Notes..

Provision is made for the bidder to include an addition or deduction in his bid (NOT REQUIRED) to reflect any last minute adjustments in prices. The addition or deduction, if made, will be distributed into the appropriate bid items in accordance with the provisions of Section 2-1 of the Contract Special Provisions, Part 1.

It is understood that the foregoing quantities are approximate only and are solely for the purpose of facilitating the comparison of bids, and that the Contractor's compensation will be computed upon the basis of the actual quantities in the completed work, whether they be more or less than those shown.

INFORMATION REQUIRED OF BIDDER

EQUIPMENT/MATERIAL SOURCE INFORMATION

The bidder shall indicate opposite the item of equipment listed below the name of the manufacturer of the equipment or material proposed to be furnished under the Proposal. Awarding of a contract under this bid will not imply approval by the Owner of the manufacturer listed by the bidder. No substitutions will be permitted after opening of bids except for (1) those grounds set forth in the Arizona Revised Statutes relating to the substitution of subcontractors, or (2) equipment or material that does not meet the specifications. This provision is made for and intended solely for the benefit of the Owner. It shall not endure to the benefit of or operate to give any rights to others including, but not limited to, the bidders or those proposing to furnish equipment or material to the bidders or bidders' subcontractors.

Item (as applicable)	Manufacturer
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	

The Contractor bidding shall hereinafter list the subcontractor(s) who will be the subcontractor(s) on the job for each particular trade or subdivision of the work and will state the firm name and principal location of the mill, shop, or office of each. No substitutions will be permitted after opening of bids without express written permission of the Owner. The General Contractor shall function as the Owner's Representative in all dealings with all subcontractors. No bid item is provided for this supervision, and is to be included in the unit prices for all subcontracted work.

This proposal is submitted by _____
a corporation organized under the laws of the State of _____;
a partnership consisting of _____;
or individual trading as _____; of the City of
_____ and is the holder of Arizona State Contractor's License:
Classification _____ No. _____

Respectfully submitted,

Firm

Address

Phone

By (officer & title)

ATTEST:

Officer & Title

Witness if Bidder is an Individual

AGREEMENT AND STANDARD FORMS

WILLDEN - RED RIVER JOINT VENTURE
4520 N. Central Avenue
Suite #500
Phoenix, Arizona 85012
(602) 264-4800

C O N T R A C T

EXHIBIT A

DATE:

CONTRACTOR:

Gentlemen:

Upon execution of the original copy of this Contract and the attached Exhibits, which are fully a part of this Contract, you are hereby authorized to accomplish the work on our project named Camelback Ranch Levee Improvements in the City of Phoenix, County of Maricopa, and State of Arizona.

Contractor to obtain all permits required by local agencies to complete work covered under this Contract. Cost of permits will be reimbursed at face value.

Work will be paid for by field measurement using unit prices. Estimated quantities are for bidding purposes only.

All work must be accepted by the City of Phoenix, Maricopa County Flood Control District and Willden - Red River Joint Venture.

Sincerely,

WILLDEN - RED RIVER JOINT VENTURE

Accepted by: _____ Date: _____
WILLDEN - RED RIVER J. V.

Accepted by: _____ Date: _____
CONTRACTOR

ATTACHMENTS: Exhibits B & C

WRR _____
SUB _____

EXHIBIT B

A G R E E M E N T

For and in consideration of the engagement of the services of the Contractor by Willden - Red River Joint Venture hereinafter referred to as W.R.R. it is mutually agreed and understood as follows:

It is understood and agreed that Contractor will commence work on receipt of notice to proceed and will complete work within 120 calendar days.

W.R.R. requires all work to comply with the critical path schedule developed by Contractor and approved by W.R.R. This critical path schedule, specifications, drawings, and Exhibits A, B, & C hereto, form and are a part of this agreement between the parties. Work performed shall be in accordance with the priority time frame, and order as set by the critical path schedule of events. Contractor also agrees that should Contractor fail to meet the construction schedule as set by the critical path schedule, this contract may be terminated by W.R.R.

I. COMPLIANCE WITH LAWS AND ORDINANCES

- A. Contractor hereby certifies that he is a licensed contractor licensed by the State of Arizona, and that he is licensed by any other applicable governing bodies as a Contractor to perform the herewith described. Prior to signing of this contract, Contractor shall furnish a copy of said license to W.R.R.
- B. Contractor agrees, in performance of this contract, to observe and comply with all laws, ordinances and regulations of all constituted authorities relating to manner of doing work under this contract or to materials supplied therein. All work accomplished shall be in accordance with approved plans and specifications, and in a good and workmanlike manner utilizing trained, experienced labor. Should Contractor utilize union labor, such utilization shall be in accordance with all union rules and regulations, statutes and ordinances pertaining to conditions, hours of work and payment of wages. Work shall be in compliance with all applicable governing agency regulations and ordinances in all respects.
- C. Unless authorized in writing by W.R.R. all work shall be accomplished only during normal working hours based on a five day week.

WRR _____
CONTR _____

- D. Any requirements of the Union(s), OSHA, etc. will be the responsibility of the Contractor and Contractor will hold W.R.R. harmless from any liability arising from any deficiency. Contractor shall correct any deficiency relating to requirements of the Union(s), OSHA, etc., within three (3) days' written notice by W.R.R.
- E. If the Contractor observes that the plans and specifications are at a variance with any law, ordinance, rule or regulation, Contractor shall promptly notify W.R.R. in writing. If Contractor fails to give such notice or performs any work knowing the same to be contrary to such laws, ordinances, rules or regulations, Contractor shall bear all costs arising therefrom, without reimbursement from W.R.R.
- F. Contractor agrees to pay any and all taxes, including specifically, but not by way of limitation, Use Taxes, Gross Receipt Taxes, Excise Taxes, Old Age Benefits, Withholding Taxes and Unemployment Compensation Taxes, under all State, Local and Federal Laws in respect to all materials furnished and employees engaged in the performance of this contract.
- G. Contractor will reimburse W.R.R. for any fees, costs or expenses of a re-inspection required due to the prior rejection of the work and material included therein.

II. DRAWINGS, SPECIFICATIONS AND INSPECTIONS

- A. Contractor agrees that all specifications, plans, drawings, critical path and Exhibits A,B & C hereto, form a part of this agreement and are incorporated herein by reference, and that specifications, plans and drawings complement each other, are sufficient for their intended purpose and that work can be successfully executed in accordance herewith, without any additional or extra work.
- B. Contractor hereby acknowledges that he has received a set of plans and specifications for this job, dated: _____.
- C. Contractor shall inspect the applicable working area prior to the commencement of work to determine if said premises are ready to receive his work.
- D. Should proper, workerlike and accurate performance of any work under this contract depend in any way on proper, workerlike or accurate performance of any work by another Contractor on the project, Contractor agrees to take all means necessary to discover any defects in such Contractor's work, and to report same, in writing to W.R.R. before proceeding with his work, which is so dependent.

WRR _____
SUB _____

- E. All materials used shall be new and installed according to manufacturer's recommended procedures and specifications.

III. ALTERATIONS AND EXTRA WORK

- A. No extra work or changes under this contract will be recognized or paid for unless agreed to in writing before work is done or changes are made. Work completed on a time and material basis shall be signed for by a W.R.R. Representative at the end of each day in which work is completed.
- B. It is understood that all work which may be performed by the Contractor under this contract is included in the contract price unless W.R.R. has signed a written change order directing the Contractor to perform additional work and specifying the consideration to be paid. Extras not so authorized will not be paid. Said extras shall be submitted on separate billings for the total amount due.
- C. Any additions or deletions to this contract are to be accomplished for the unit prices as specified in your proposal dated: _____.
- D. All clauses of this contract shall apply to any changes, omissions, or extra work in like manner and to the same extent as to the work contracted for, and no changes, omissions or extra work shall annul or invalidate this contract.

IV. ATTORNEY'S FEES AND INDEMNIFICATION

- A. Contractor agrees to pay and reimburse W.R.R. for any and all attorney's fees and court costs, which may be paid or incurred by W.R.R. growing out of or caused by this contract, whether in defense of any suits or garnishment proceedings against Contractor and any and all of his workers, Contractors, materials suppliers or sureties in concourse, or otherwise.
- B. Contractor agrees to indemnify and hold W.R.R. harmless from any and all loss or damage which W.R.R. may sustain on account of any claim, demand or suit made or brought against W.R.R. by or on behalf of an employee of Contractor, or by or on behalf of any person injured by Contractor, his agents, servants or employees.

V. APPROVAL OF SUBCONTRACTOR AND ASSIGNMENT

- A. Contractor shall, as part of his proposal notify W.R.R. in writing of names of his Subcontractors and material suppliers, and shall not employ any that W.R.R. may, within ten working days of being notified of said material suppliers and subcontractors, object to as incompetent or unfit.

WRR _____
SUB _____

- B. Contractor agrees not to assign or transfer this contract or any part thereof, including proceeds, without written consent of W.R.R.
- C. Contractor agrees that W.R.R. may assign or transfer this contract or any part thereof at any time without written consent of the Contractor.

VI. DEFAULT OF CONTRACTOR, COMPLETION BY W.R.R. AND DAMAGES

- A. Contractor shall be excused of any delay in completion of the work covered by this contract caused by Acts of God. If, however, Contractor should at any time refuse or neglect to provide a sufficient supply of properly skilled workers or of materials of proper quality and quantity for reasons other than Acts of God, or fail in any respect to execute work with promptness and diligence, or fail in performance of any of the agreements on his part herein contained, or should any workers performing work covered by this contract engage in a strike or other work stoppage or cease work due to picketing or such activity, W.R.R. shall be at liberty after two (2) days' written notice to Contractor (a telegram shall serve as written notice) to provide any such labor or materials, and to deduct costs thereof from any money due or thereafter to become due to Contractor under this contract; and to deduct all interest costs due to delay; and W.R.R. shall also be at liberty to terminate employment of Contractor for said work and to enter on premises to take possession of all material and appliances of every kind thereon, and adjacent thereto, and to employ any other person to finish work, and to provide materials therefor; and in case of such discontinuance of employment by Contractor, he shall not be entitled to receive any further payment under this contract until said work shall be wholly finished, at which time, if unpaid balance of amount to be paid under this contract shall exceed such unpaid balance, Contractor shall pay the difference to W.R.R.
- B. W.R.R. shall not be liable for any damages that may occur from delays or other causes on part of other Contractors on the project.

VII. PAYMENTS AND LIEN RELEASES

- A. Payments will be made according to schedule and Billing Instructions, Exhibit C, attached.
- B. W.R.R. reserves the right to issue joint checks to Contractor and their material supplier(s) and subcontractor(s).

WRR _____
SUB _____

- C. Contractor's releases, Material Supplier's releases, Union Lien releases (if applicable) and signed labor releases shall accompany each billing in duplicate. No payments shall be made unless said releases are submitted along with each billing; all materials and Subcontractor releases must be notarized.
- D. Prior to commencing work, Contractor shall furnish W.R.R. with a letter from the Union or Unions involved, if any, on this project, stating that all fringe benefits have been paid in full to date. If Contractor is not affiliated with any Union, Contractor shall supply W.R.R. with a written statement certifying the same.
- E. If at any time during progress of work hereunder, and before final payment of contract price, there should be evidence of any lien or claim for which W.R.R. and premises may become liable, W.R.R. shall have the right to retain out of any money then due, or thereafter to become due, to Contractor under this contract, an amount sufficient for complete indemnification against such lien or claim including possible interest, attorney's fees and costs. If, after completion of the contract and final payment of the contract price, any such lien or claim shall appear, Contractor shall completely indemnify W.R.R. against any loss or damage which may be suffered by reason thereof, including, but not limited to, attorney's fees and court costs.
- F. The acceptance by the Contractor of the final payment under this agreement (the words "Final Payment" referring to and being intended to designate the final money due to Contractor herein, less any sum or sums retained by W.R.R. as provided herein) shall be and shall operate as a complete and unconditional release to W.R.R. of any and all existing or future claims, demands or causes by action by the Contractor against W.R.R.

VIII. INSURANCE

- A. Contractor agrees to procure, at his own expense, before entering on performance on this contract, worker's compensation insurance in a reliable insurance company, satisfactory to W.R.R. covering full liability for compensation of any of its employees for bodily injuries accidentally sustained, whether resulting in death or otherwise, under Worker's Compensation Act of the State of Arizona, and to maintain such compensation insurance in full force and effect at all times while this contract shall remain in force and is not fully performed on his part. Contractor agrees to submit a certificate of said worker's compensation policy, from the insurance agent, to W.R.R. prior to commencement of work.

WRR _____
SUB _____

- B. Contractor agrees to procure, at his own expense, before entering on performance of this contract, a satisfactory indemnity accident policy protecting W.R.R. in case of accident to workers employed on the project on account of acts committed, or omissions by Contractor, his agents or employees, to defend such suits and reimburse W.R.R. for any expense or costs that W.R.R. may be put to, including court costs and attorney's fees. Said liability policy shall be for a minimum coverages as required in the special provisions. Contractor agrees to submit a certificate of said liability policy, from the insurance agent, to W.R.R. prior to commencement of work.

IX. MATERIAL AND EQUIPMENT

- A. W.R.R. shall not be responsible for Contractor's material or equipment at Owner's job location and undertaking by W.R.R. of security measures shall not create any liability on W.R.R. with regard to any loss of material or equipment by Contractor.
- B. Notwithstanding any provisions of this contract, title to and responsibility for all materials employed in Contractor's installation shall remain in Contractor until applicable inspections by the governing bodies are made and final progress payment is made by W.R.R.

X. SAFETY RULES AND REGULATIONS

- A. Contractor shall be responsible to W.R.R. for the compliance with all safety rules and regulations, including specifically, but not by way of limitation, the Occupational Safety and Health Act, the Construction Orders, and any amendments thereof, during the conduct of Contractor's performance on and in connection with the project.
- B. Contractor shall indemnify W.R.R. for any and all expenses incurred by W.R.R. for fines, penalties and corrective measures that result from acts of commission or omission by Contractor, his agents, employees, and assigns, in failure to comply with such safety rules and regulations.

XI. DISCRIMINATION

- A. The undersigned understands and agrees that there shall be no discrimination against any employee who is employed in carrying out work in these operations, or against any applicant for such employment because of race, religion, sex, color or national origin, including, but not limited to, employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rate of pay or other forms of compensations; and selection for training including apprenticeship.

WRR _____
SUB _____

XII. MISCELLANEOUS

- A. Contractor shall at all times provide responsible, onsite supervision of his operations, which person shall be acceptable to W.R.R.
- B. Contractor hereby acknowledges that W.R.R. is not a signatory to any collective bargaining agreements with unions. Contractor acknowledges that W.R.R. may use Contractors on the project which are both signatory and non-signatory to collective bargaining agreements with unions. Contractor acknowledges that W.R.R. may take various steps and impose certain requirements upon Contractor to minimize the effects of any labor dispute which may occur at or near the job site. Contractor warrants and agrees to abide by the directions and requirements of W.R.R. to minimize any such labor disputes, including but not limited to the exclusive use by Contractor of a particular entrance to the job site and the establishment of a work schedule of the Contractor at particular times of the day and/or during particular days of the week. In agreeing to complete its work in accordance with the progress schedules, Contractor has taken into consideration and made allowances for delays which may occur because of labor disputes involving employees of subcontractors, contractors or suppliers. Contractor hereby waives any rights of action it may have against W.R.R. resulting from such delays.
- C. All work shall be guaranteed for a period of one year from the date of Notice of Completion. Contractor shall, upon request of W.R.R. promptly investigate and correct any defects and/or perform any service required to correct said defects, during the aforementioned one (1) year period. Neither the final payment nor certificate nor any provision hereof shall relieve Contractor of responsibility for faulty materials or workmanship and unless otherwise specified, Contractor shall promptly remedy any defects due thereto and pay for any damage to other work resulting therefrom which shall appear within a period of one (1) year from the date of Notice of Completion. W.R.R. shall give written notice of observed defects with reasonable promptness.
- D. This Contractor for themselves, their successors, executors, administrators and assigns hereby agrees to the full performance of the covenants of this agreement.
- E. This Contract and the terms hereof, the critical path schedule, drawings, specifications, plans, and Exhibits A, B & C, made a part hereof, represent the entire agreement, warranties and representations between the parties hereto and shall take precedence over any and all previous agreements and proposals both written and oral between the parties hereto and shall not be altered or changed except by agreement in writing.

WRR _____
SUB _____

F. Contractor shall be responsible for the protection of new and existing facilities from damage by any construction work performed by himself or by his subcontractors and suppliers. Any costs incurred for repairing damaged facilities or defective facilities installed by the Contractor or his subcontractors shall be billed to the Contractor and shall be due and payable within Twenty (20) days of billing.

CONTRACTOR

WILLDEN - RED RIVER JOINT VENTURE

CONTRACTOR:

BUSINESS ADDRESS:

BY:

TITLE:

BUSINESS ADDRESS:

JOB FOREMAN:

BUSINESS PHONE:

HOME PHONE: _____

ACCEPTED:

MERA BANK

EXHIBIT C

B I L L I N G I N S T R U C T I O N S

The following items must be on file in our office PRIOR TO EXECUTION OF CONTRACT:

1. A letter from all Unions to whom benefits will be owed on your payroll, (or certified statement of payroll) stating that your benefits payments are current, if applicable. If Contractor is not affiliated with any Union, Contractor shall supply W.R.R. with a written statement certifying same.
2. Proof of Public Liability Insurance: Limits per Special Provisions
3. Proof of Worker's Compensation Insurance.
4. A list of material suppliers and/or subcontractors to be used on the project.
5. Furnish a copy of your Arizona State Contractor's License.

The items listed below should be submitted in duplicate with each billing so that we may draw construction loan funds for disbursement to your account:

1. Invoices should be submitted to the attention of Bob Mitchell, Willden Red-River Joint-Venture, 4520 North Central Avenue, Suite 500, Phoenix, Arizona 85012, Attention: Camelback Ranch.
2. Monthly union statements showing paid benefits, if applicable.
3. Contractors lien releases. Standard labor releases will be acceptable. Please note that subcontractor releases MUST BE NOTARIZED. Contractor to provide lien releases (notarized) from subcontractors and material suppliers prior to payment by Willden - Red River Joint Venture.

WRR _____
SUB _____

PAYMENT SCHEDULE:

Progress payments to be paid monthly based on percentage completed and unit cost, provided billing instructions have been followed and bills have been presented in complete form to the general office of Willden - Red River J.V. Invoices must be submitted prior to or on the 20th of the month and will be paid by the 10th of the following month. Progress payments will be less 10% retention to be paid within thirty (30) days of final acceptance of project by W.R.R. W.R.R. reserves the right to issue joint checks to the Contractor's subcontractors and suppliers.

Should you have any questions, please contact Bob Mitchell, agent for W.R.R. at 264-4800.

Initials: _____
CONTRACTOR

Initials: _____
W.R.R.

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 WILLDEN - RED RIVER JOINT VENTURE (hereinafter called the Obligee) in the amount of _____ Dollars (\$ _____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors, and assign, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____, 19____, to construct CAMELBACK RANCH - LEVEE & MASS GRADING IMPROVEMENTS (Phase I) 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 said Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, and conditions and agreements of said contract during the original term of said contract and any extension thereof, with or without notice of the Surety, and during the life of any guarantee required under the contract that may hereafter be made, notice of which modifications to the Surety being waived; then the above obligation shall be void, otherwise to remain in full force and effect.

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

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

Witness our hands this _____ day of _____, 19____.

PRINCIPAL SEAL

By: _____

AGENCY OF RECORD

SURETY

By: _____

AGENCY OF RECORD

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 WILLDEN - RED RIVER JOINT VENTURE (hereinafter called the Obligee) in the amount of _____ Dollars (\$ _____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors, and assign, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____, 19____, to construct CAMELBACK RANCH - LEVEE & MASS GRADING IMPROVEMENTS (Phase I) 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 said Principal shall promptly pay all moneys due to all persons supplying labor or materials to him or his subcontractors in the prosecution of the work provided for in said contract, then this obligation shall be void, otherwise to remain in full force and effect;

PROVIDED, HOWEVER, that this bond having been required of the said Principal in order to comply with the provisions of Title 34, Chapter 2, Article 2 of the Arizona Revised Statutes, and all rights and remedies on this bond shall inure solely to such persons and shall be determined in accordance with the provisions conditions and limitations of said Title, Chapter, and Article, to the extent as if it were copied at length herein.

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

Witness our hands this _____ day of _____ 19____.

PRINCIPAL SEAL

By: _____

AGENCY OF RECORD

SURETY

By: _____

AGENCY OF RECORD

CERTIFICATE OF INSURANCE

Description of Contract: CAMELBACK RANCH
LEVEE & MASS GRADING IMPROVEMENTS (Phase I)

Type of Insurance: Workmen's Compensation Insurance
Employer's Liability Insurance

THIS IS TO CERTIFY that the following numbered policies have been issued by the below-stated company in conformance with the limits and requirements as set forth in Subsection 103.6 of the General Provisions.

The Company will give at least 30 days' written notice by certified mail to the Owner and Engineer/Architect prior to any material change or cancellation of said policy.

POLICY NUMBER EXPIRATION DATE LIMITS OF LIABILITY

Workmens Compensation:

Statutory Limits Under the Laws of
the State of Arizona

Employer's Liability:

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

By _____
(Company Representative)

State of _____)
County of _____) ss.

On this _____ day of _____, 19____, before me personally came _____ to me known, who being duly sworn, did depose and say: that _____ is an authorized representative of the _____ and acknowledged to me that _____ executed the within instrument on behalf of said insurance company.

In witness whereof, I have signed and affixed my official seal on the date in this certificate first above written.

NOTARY PUBLIC

Insurance Company Agent for Service
of Process in Arizona:

Name

Agency

Street Number

Street Number

City and State

City and State

Telephone Number

Telephone Number

This certificate or verification of insurance is not an insurance policy and does not amend, extend, or alter the coverage afforded by policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of such policies.

NOTICE:

No substitution or revision to the above certificate will be accepted. If the insurance called for is provided by more than one company, a separate certificate in the exact above form shall be provided for each company.

INSURANCE ENDORSEMENT

Description of Contract: CAMELBACK RANCH
LEVEE & MASS GRADING IMPROVEMENTS (Phase I)

Type of Insurance: Workmen's Compensation Insurance
Employer's Liability Insurance

This endorsement forms a part of Policy No. _____.

ENDORSEMENT

It is agreed with respect to such insurance as is afforded by the policy, the Company waives any right of subrogation it may acquire against the Owner, the Consultant, the Owner's Representative, and their consultants, and each of their directors, officers, agents, and employees by reason of any payment made on account of injury, including death resulting therefrom, sustained by any employee of the insured, arising out of the performance of the above referenced contract.

This endorsement does not increase the Company's total limits of liability.

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

By
(Company Representative)

(SEE NOTICE ON PAGE 2 OF 2)

STATE OF _____)
County of _____) ss.

On this _____ day of _____, 19____, before me personally came _____ to me know, who being duly sworn, did depose and say: that _____ is an authorized representative of the _____ and acknowledged to me that _____ executed the within instrument on behalf of said insurance company.

In witness whereof, I have signed and affixed my official seal on the date in this certificate first above written.

NOTARY PUBLIC

NOTICE:

No substitution or revision to the above endorsement form will be accepted. If the insurance called for is provided by more than one policy, a separate endorsement in the exact form shall be provided for each policy.

CERTIFICATE OF INSURANCE

Description of Contract: CAMELBACK RANCH
 LEVEE & MASS GRADING IMPROVEMENTS (Phase I)

Type of Insurance: Liability Insurance

THIS IS TO CERTIFY that the following policies have been issued by the below-stated company in conformance with the requirements of Subsections 103.6.1 and 103.6.3 of the General Provisions and are in force at this time:

POLICY NUMBER	EXPIRATION DATE	LIMITS OF LIABILITY (IN THOUSANDS (000))	
		Each Occurance	Aggregate
A. GENERAL LIABILITY			
	Bodily Injury	\$	\$
	Property Damage	\$	\$
	Personal Injury	XXXXXXXXXXXXXXXXXX	\$
or _____			
	Bodily Injury, Personal Injury, and Property Damage Combined	\$	\$
B. EXCESS GENERAL LIABILITY			
		\$	\$
C. AUTOMOBILE LIABILITY			
	Bodily Injury (each person)	\$	\$
	Bodily Injury (Each Accident)	\$	\$
	Property Damage	\$	\$
or			
	Bodily Injury and Property Damage Combined	\$	\$
D. EXCESS AUTOMOBILE LIABILITY			
		\$	\$

The following types of coverage are included in said policies (indicate by "X" in space).

A. GENERAL LIABILITY..

Comprehensive

Form.....YES___ NO___

Premises-Operations.....YES___ NO___

Explosion and Collapse Hazard.....YES___ NO___

Underground Hazard.....YES___ NO___

Products/Completed Operations Hazard.....YES___ NO___

Contractual Insurance.....YES___ NO___

Broad Form Property Damage
Including Completed Operations.....YES___ NO___

Independent Contractors.....YES___ NO___

Personal Injury.....YES___ NO___

B. EXCESS GENERAL LIABILITY

Umbrella Form.....YES___ NO___

Other Than Umbrella Form.....YES___ NO___

If other than Umbrella Form, please explain below..

C. AUTOMOBILE LIABILITY

Comprehensive Form Including Loading and Unloading...YES___ NO___

Owned.....YES___ NO___

Hired.....YES___ NO___

Non-Owned.....YES___ NO___

D. EXCESS AUTOMOBILE LIABILITY

Umbrella Form.....YES NO
Other than Umbrella Form.....YES NO

If other than Umbrella Form, please explain below:

This certificate or verification of insurance is not an insurance policy and does not amend, extend, or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement term, or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of such policies.

The Company will give at least 30 days' written notice by certified mail to the Owner and the Consultant prior to any material change or cancellation of said policies.

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

By:
(Company Representative)

(SEE NOTICE ON PAGE 4 OF 4)

STATE OF _____)
County of _____) ss.

On this _____ day of _____, 19____, before me personally came _____ to me known who being duly sworn, did depose and say: that _____ is an authorized representative of the _____ and acknowledged to me that _____ executed the within instrument on behalf of said insurance company.

In witness whereof, I have signed and affixed my official seal on the date in this certificate first above written.

Notary Public

My Commission Expires

Insurance Company Agent for Service
of Process in Arizona:

Name

Agency

Street Number

Street Number

City and State

City and State

Telephone Number

Telephone Number

NOTICE:

No substitution or revision to the above certificate form will be accepted. If the insurance called for is provided by more than one insurance company, a separate certificate in the exact above form shall be provided for each insurance company.

Insurers must be authorized to do business and have an agent for service of process in Arizona and have an "A" policyholder's rating and a financial rating of at least Class XI in accordance with the most current Best's Rating.

INSURANCE ENDORSEMENT

Description of Contract: CAMELBACK RANCH
LEVEE & MASS GRADING IMPROVEMENTS (Phase I)

Type of Insurance: Liability Insurance

This endorsement forms a part of Policy No. _____.

ENDORSEMENT

WILLDEN - RED RIVER JOINT VENTURE, Coe & Van Loo, Engineer/aid, and their consultants, and each of their directors, officers, agents, and employees are included as additional insureds under said policies but only while acting in their capacity as such and only as respects operations of the named insured, his contractors, any subcontractor, any supplier, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable in the performance of the above referenced contract. This insurance shall not apply if the loss or damage is ultimately determined to be the result of the sole and exclusive negligence (including any connected with the preparation or approval of maps, drawings, opinions, reports, surveys, designs, or specifications) of that additional insured. The insurance afforded to these additional insureds is primary insurance. If the additional insureds have other insurance which might be applicable to any loss, the amount of this insurance shall not be reduced or prorated by the existence of such other insurance.

The Contractual Liability Insurance afforded is sufficiently broad to insure all of the matters set forth in the article entitled "Indemnity" in the General Provisions of the above referenced contract except those matters set forth in the third paragraph thereof:

This endorsement does not increase the Company's total limits of liability.

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

By:
(Company Representative)

(SEE NOTICE ON PAGE 2 of 2)

STATE OF _____)
County of _____) ss.

On this _____ day of _____, 19____, before me personally came _____ to me known who being duly sworn, did depose and say: that _____ is an authorized representative of the _____ and acknowledged to me that _____ executed the within instrument on behalf of said insurance company.

In witness whereof, I have signed and affixed my official seal on the date in this certificate first above written.

Notary Public

My Commission Expires

NOTICE:

No substitution or revision to the above endorsement form will be accepted. If the insurance called for is provided by more than one policy, a separate endorsement in the exact above form shall be provided for each policy.

Insurers must be authorized to do business and have an agent for service of process in Arizona and have an "A" policyholder's rating and a financial rating of at least Class XI in accordance with the most current Best's Rating.

WILLDEN - RED RIVER JOINT VENTURE (WRRJV)

CONTRACTOR'S AFFIDAVIT
REGARDING

SETTLEMENT OF CLAIMS

Part 100, Section 109, General Conditions

Phoenix, Arizona
Date

Project: Camelback Ranch - Levee & Mass Grading Improvements (Phase I)

To WRRJV

This is to certify that all lawful claims for materials, rental of equipment and labor used in connection with the construction of the above project, whether by subcontractor or claimant in person, have been duly discharged.

The undersigned, for the consideration of \$ _____, as set out in the final pay estimate, as full and complete payment under the terms of the contract, hereby waives and relinquishes any and all further claims or right of lien under, in connection with, or as a result of the above described projects. The undersigned further agrees to indemnify and save harmless WRRJV against any and all liens, claims of liens, suits, actions, damages, charges and expenses whatsoever which said WRRJV may suffer arising out of the failure of the undersigned to pay off all labor, performance and materials furnished for the performance of said installation.

Signed and dated at _____, this day of _____
19__.

Contractor

By

STATE OF ARIZONA)
) ss.
County of Maricopa)

The foregoing instrument was subscribed and sworn to before met this _____
day of _____, 19__.

Notary Public

My Commission Expires

PROVISIONS OF THE CONTRACT

GENERAL PROVISIONS

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WILLDEN - RED RIVER JOINT VENTURE (WRRJV)

CAMELBACK RANCH
LEVEE & MASS GRADING IMPROVEMENTS
(PHASE I)

GENERAL PROVISIONS

SECTION 100

GENERAL

The General Provisions of these specifications shall be in accordance with the latest revised Maricopa Association of Governments Uniform Standard Specifications for Public Works Construction (MAG) General Conditions except as modified herein.

SECTION 101

ABBREVIATIONS AND DEFINITIONS

101.2 DEFINITIONS AND TERMS

Add the following definitions and terms to MAG Section 101.2:

CONTRACTING AGENCY/OWNER: WRRJV, 4520 N. Central, Suite 500, Phoenix, AZ 85012

CONSULTANT: Coe & Van Loo. The term "Consultant" means the Consultant or his authorized representative.

OWNER'S REPRESENTATIVE/ENGINEER: The person or firm authorized by the Owner to represent it during the performance of the work of the Contractor. The "Owner's Representative" means the Owner's Representative or his assistants. The "Engineer" means the Owner's Construction Administration Engineer, Inspector or Assistants.

SECTION 102

BIDDING REQUIREMENTS AND CONDITIONS

102.4 EXAMINATION OF PLANS, SPECIAL PROVISIONS AND SITE OF WORK

Insert the following paragraph after the second paragraph of MAG Sec. 102.4:

If any person or entity contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the plans, specifications, or other contract documents, or finds discrepancies in, or omissions from the plans and specifications or other contract documents, he may submit to the Owner a written request for an interpretation or correction thereof. The person submitting the request will be responsible

for its prompt delivery. An interpretation or correction of the contract documents will be made only by Addendum duly issued by the Owner. A copy of such addendum will be mailed or delivered to each person or entity that has received a set of such documents. The Owner and the Consultant will not be responsible for any other explanation or interpretation of the documents.

SECTION 103

AWARD AND EXECUTION OF CONTRACT

103.6 CONTRACTOR'S INSURANCE

Replace all of MAG Section 103.6 with the following:

103.6.1 GENERAL

The Contractor shall not commence or continue to perform any work unless he, at his own expense, has in full force and effect all required insurance. The Contractor shall not permit any subcontractor to perform work on this project unless the Workmen's Compensation Insurance requirements have been complied with by such subcontractor.

The types of insurance the Contractor shall obtain and maintain are Workmen's Compensation Insurance and Liability Insurance, all as set forth herein.

Workmen's Compensation Insurance and Liability Insurance shall be maintained in effect for the full guarantee period.

Insurers must be authorized to do business and have an agent for service of process in Arizona and have an "A" policyholder's rating and a financial rating of at least Class XI in accordance with the most current Best's Rating.

As evidence of specified insurance coverage, the Contractor shall provide certificates of insurance and endorsements on the forms provided as a part of the contract documents. No alteration or substitution of said forms will be allowed.

103.6.2 WORKMEN'S COMPENSATION INSURANCE

Upon execution of the Agreement, the Contractor shall provide a letter of certification from the Industrial Commission of Arizona that the Contractor is insured by the State Compensation Fund or by an authorized self-insurer or a Certificate of Insurance issued by an insurance company authorized by the Insurance Department of Arizona to write Workmen's Compensation and Occupational Disease Insurance in the State of Arizona.

103.6.3 LIABILITY INSURANCE

Upon execution of the Agreement the Contractor shall provide a Certificate(s) of Insurance showing that he has Liability Insurance coverage in limits not less than the amounts set forth in the Special Provisions. At the same time, the Contractor shall provide the insurance endorsement(s) on the forms provided as a part of the contract documents.

Included in such insurance shall be contractual coverage sufficiently broad to insure the matter set forth in the article entitle "INDEMNITY" in the General Provisions except those matters set forth in the fourth paragraph thereof.

Included in such insurance shall be a "Cross Liability" or Severability of Interest clause.

The Liability Insurance coverage shall include each of the following types of insurance..

A. General Liability

- (1) Comprehensive Form
- (2) Premises-Operations
- (3) Underground Hazard
- (4) Products/Completed Operation Hazard
- (5) Contractual Insurance
- (6) Broad Form Property Damage Including Completed Operations
- (7) Independent Contractors
- (8) Personal Injury

B. Automotive Liability

- (1) Comprehensive Form Including Loading and Unloading
- (2) Owned
- (3) Hired
- (4) Non-owned

The Liability Insurance shall include as additional insureds: the Owner, the Consultant, the Owner's Representative, and their consultants, and each of their directors, officers, agents, and employees. The insurance afforded to these additional insureds shall be primary insurance. If the additional insureds have other insurance which might be applicable to any loss, the amount of the insurance provided under this Article on LIABILITY INSURANCE shall not be reduced or prorated by the existence of such other insurance.

103.6.4 CONTRACTOR'S LIABILITY NOT LIMITED BY INSURANCE

Nothing contained in these insurance requirements is to be construed as limiting the liability of the Contractor or the Contractor's sureties.

103.6.5 INDEMNITY

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, the Consultant, the Owner's Representative, any

jurisdiction or agency issuing permits for any work included in the project, and their consultants, and each of their directors, officers, agents, and employees from and against all claims, damages, losses, expenses, and other costs including costs of defense and attorneys' fees, arising out of or resulting from or in connection with the performance of the work both on and off the jobsite, provided that any of the foregoing (1) is attributable to personal injury, bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom, and (2) is caused in whole or in part by any act or omission of the Contractor, any subcontractor, and supplier, anyone directly or indirectly employed by any of them or anyone for whose acts or omissions any of them may be liable, regardless of whether or not it is caused in part by any negligent act or omission whether characterized as active, passive, or otherwise of a party indemnified hereunder.

In any and all claims against the indemnified parties by any employee of the Contractor, any subcontractor, any supplier, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under the first and fourth paragraphs in this article on INDEMNITY shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor, or any subcontractor, or any supplier or other person under workmen's compensation acts, disability benefit acts, or other employee acts.

The obligations of the Contractor under the first and fourth paragraphs in this article on INDEMNITY shall not extend to the liability of the Consultant, the Owner's Representative and their consultants and each of their directors, officers, employee insufficient. If the Contractor believes that a defect or insufficiency exists in design materials or specified method and fails to promptly notify the Owner's Representative in writing of this belief, the Contractor waives any right to assert that defect or insufficiency in design, materials, or specified method at any later date in any legal or equitable proceeding against the Owner, or in any subsequent arbitration or settlement conference between the Owner and the and each of their directors officers, employees and agents from and against all losses, expenses, damages (including damages to the work itself), attorneys' fees, and other costs, including costs of defense, which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the work and all of the Contractor's obligations under the contract. Such costs, expenses, and damages shall include all cost, including attorney's fees, incurred by the indemnified parties in any lawsuit to which they are a party.

SECTION 105

CONTROL OF WORK

105.4 COORDINATION OF PLANS AND SPECIFICATIONS

Replace all of MAG Section 105.4 with the following paragraphs:

It is the duty of the Contractor to promptly notify the Owner's Representative in writing of any design, materials, or specified method that the Contractor believes may prove defective or insufficient. If the Contractor believes that a defect or insufficiency exists in design, materials, or specified method and fails to promptly notify the Owner's Representative in writing of this belief, the Contractor waives any right to assert that defect or insufficiency in design, materials, or specified method at any later date in any legal or equitable proceeding against the Owner, or in any subsequent arbitration or settlement conference between the Owner and the Contractor. The Owner's Representative on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor after he comes to the belief that a defect or insufficiency exists in design, materials, or specified method which is directly or indirectly affected by such alleged defect or insufficiency in design, materials, or specified method will be at his own risk and he shall bear all cost arising therefrom.

If the Contractor, either before commencing work or in the course of the work, finds any discrepancy between the specifications and the plans or between either of them and the physical conditions at the site of the work or finds any error or omission in any of the plans or in any survey, he shall promptly notify the Owner's Representative of such discrepancy, error, or omission. If the Contractor observes that any plans or specifications are at variance with any applicable law, ordinance, regulation, order, or decree, he shall promptly notify the Owner's Representative in writing of such conflict. The Owner's Representative, on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor after his discovery of such error, discrepancy, or conflict which is directly or indirectly affected by such error, discrepancy, or conflict will be at his own risk and he shall bear all cost arising therefrom.

SECTION 107

LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

107.5 SAFETY HEALTH AND SANITATION PROVISIONS

Add the following paragraph after the second paragraph of MAG Section 107.5:

The right of the Consultant or the Owner's Representative to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the construction site.

107.9 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

Revise first paragraph to read: The Contractor shall be responsible for the preservation of all public and private property and shall protect with extreme care from disturbance or damage all land monuments, property marks, all vegetation adjacent to the work, so as not to disturb the natural environment adjacent to the proposed improvements. All replanting, replacing, watering of vegetation, which in the opinion of the Engineer, has been disturbed by anyone shall be provided by the Contractor at no expense to the Owner and to the satisfaction of the Owner and the City of Phoenix. All penalties assessed upon the Contractor for disturbance of the natural environment shall be paid by the Contractor and at no expense to the Owner.

Fourth paragraph: change last two words from Contracting Agency to "City of Phoenix, Arizona."

107.11 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES

Add the following two paragraphs to MAG Section 107.11:

The Consultant has endeavored to determine the existence of utilities at the site of the work from the records of the owners of known utilities in the vicinity of the work. The positions of these utilities as derived from such records are shown on the plans. The service connections to these utilities are not shown on the plans. Not with standing anything above, Contractor shall strictly comply with all of the requirements set forth in A.R.S. 40-360.21-29 relating to underground facilities.

The Contractor shall make his own investigations, including exploratory excavations, to determine the locations and type of existing service laterals or appurtenances when their presence can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site of the work. If the Contractor discovers utility facilities not identified in the plans or specifications, he shall immediately notify in writing the Owner's Representative and the owner of the utility facility.

SECTION 108

108.2 SUBLETTING OF CONTRACT

Add the following:

The General Contractor is ultimately responsible for the supervision of Subcontractor construction activities. The General Contractor is to provide continuous construction supervision of Subcontractors on behalf of the Owner. The General Contractor shall coordinate and schedule the work of the Subcontractors, and handle all coordination with Subcontractors on the Owner's behalf.

108.5 CONSTRUCTION OFFICE

Add the following:

The Contractor will be allowed to have a construction office trailer onsite, pending approval of appearance by Owner. The Contractor will be responsible for extension of utilities to serve said office.

SECTION 109

PAYMENT

MAG Section 109.7 is deleted and replaced by the following:

(A) Partial Payments: No later than the 10th day of each calendar month the Contracting Agency will make a partial payment to the Contractor on the basis of an estimate prepared by the Owners Representative for work completed through the 20th day of the preceding calendar month. The Contractor shall submit an invoice for the work completed on the 25th day of the preceding month.

The Owner will retain 10 percent of all estimates as a guarantee for complete performance of the contract in accordance with ARS Section 34-221.

(B) Final Payment: When the project has been accepted as provided in Section 105, and within 30 calendar days after final inspection of the work completed under the contract, the Owners Representative will render to the Owner and the Contractor, a final estimate which will show the amount of work performed and accepted under the contract. All prior estimates and partial payments will be subject to correction in the final estimate for payment.

Within forty-five (45) calendar days after final acceptance, the Owner will pay the Contractor all amounts due him under the contract, except that before final payment will be made, the Contractor shall satisfy the Owner by affidavit that all bills for labor and materials incorporated in the work have been paid. The Contractor's Affidavit form may be obtained from the Owner.

Furthermore, final payment will not be made until such time as the construction area has been returned to its original grade and any damage outside the construction limits has been repaired, or the estimated cost of repair deducted from final payment.

The acceptance of the project and the making of the final payment shall not constitute a waiver by the Contracting Agency/Owner of any claims arising from faulty or detective work appearing after the completion or from failure of the Contractor to comply with the requirements of the contract documents.

SPECIAL PROVISIONS
PART I - SPECIAL CONDITIONS

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WILLDEN - RED RIVER JOINT VENTURE (WRRJV)

CAMELBACK RANCH
LEVEE & MASS GRADING IMPROVEMENTS
(PHASE I)

SPECIAL PROVISIONS

PART I - SPECIAL CONDITIONS

SECTION 1

DEFINITIONS

Whenever the following terms occur in the contract documents the meaning shall be interpreted as follows:

OWNER - WRRJV
4520 N. Central, Suite 500
Phoenix, AZ 85012

CONSULTANT - Coe & Van Loo
4550 N. 12th Street
Phoenix, AZ 85014-4291

SECTION 2

PROPOSAL REQUIREMENTS AND CONDITIONS

2-1 PROPOSALS

The Bid Form contains a line item which provides for additions or deductions to the subtotal amount to obtain the TOTAL SUM OF BID.

The Contractor submitting the lowest bid shall file a distribution of the additional or deduction item into the unit prices of the appropriate items within 24 hours after the bid opening. The unit prices which includes the distribution of the additive or deductive amount will be used for payment purposes under the provisions of the Contract.

All proposals shall be delivered in sealed envelopes bearing on the outside, the name of the bidder, his address and the name of the project for which the bid is submitted. Each bid shall be filed at the office of the Owner on or before the date and time specified in the "Advertisement for Bids."

2-2 PRE-BID CONFERENCE

A pre-bid conference will be held at 9:00 am on May 22, 1990, at Coe & Van Loo Loo, 4550 N. 12th St., Phoenix, AZ.

2-3 INVESTIGATION AND REPORTS

The following reports which have been prepared for the Owner are available for review at the office of the Consultant.

Preliminary Soil Investigation by Construction Inspection & Testing Co.

Geotechnical Investigation Report by Sergent, Hauskins & Beckwith

These reports are made available for informational purposes only, and to enable bidders to have ready access to the same information as is available to the Owner. It is expressly understood that neither the Owner, the Consultant, the Engineer nor their representatives will be responsible for the accuracy of any soil data derived from the exploratory soil borings, nor for any deduction, interpretation or conclusion drawn from such informational data.

2-4 INTERPRETRATION OF CONTRACT DOCUMENTS

Questions concerning the true meaning of any part of the plans, specifications, other contract documents shall be directed to the Owners Representative, (Bob Mitchell) at the Owner's office or at (602) 264-4800 in accordance with Section 102.4 of the Contract General Provisions.

SECTION 3

CONTRACTOR'S INSURANCE

3-1 LIABILITY INSURANCE

Bodily injury coverage shall not be for less than \$2,000,00 for one person and not less than \$2,000,000 for one occurrence.

Property damage coverage shall be for not less than \$2,000,000.

Bodily injury, personal injury and property damage in a combined single limit of not less than \$5,000,000.

SECTION 4

SHOP DRAWINGS

The Contractor shall submit to the Owner's Representative for review, detailed shop drawings (6 copies) as specified in the Construction Details and in the General Provisions. The initial submittal shall be completed and shall be made within 30 calendar days after the date of award of the contract.

SECTION 5

COORDINATING WITH OTHERS

The Contractor shall be responsible for coordinating his operations with all contractor(s) and parties who will be working in the area surrounding the project. Included shall be the following:

1. Salt River Project: Construction of electrical feeders and water irrigation water delivery system.
2. Local Cable Television: Installation of cables.
3. Mountain Bell: Construction of telephone lines.
4. Landscape Contractor: Landscaping of City park site.

SECTION 6

WATER FOR CONSTRUCTION AND TESTING

6-1 CONSTRUCTION WATER

The Contractor shall make his own arrangements for all labor and equipment to collect, load, transport, and apply water as necessary for compaction of materials, concrete construction operations, dust control, and other construction use in accordance with Section 225 of the MAG Specifications.

The cost of construction water shall be included in the appropriate bid item to which it is appurtenant and shall include full compensation for furnishing all labor, materials, tools, and equipment and doing all work necessary to collect, load, transport, and apply water as described in these specifications, and no separate or additional payment will be made therefor.

SECTION 7

CONSTRUCTION SURVEY CONTROL

The Owner will provide construction survey controls at no charge to the Contractor. Staking requests shall comply with Section 105 of the Uniform Standard Specifications (two working days notice).

The Contractor shall be responsible for transfer of offset line and grade to the construction of the work and for the accuracy of such transfer. Cost of such transfer will be included in the bid for the work and no extra compensation will be made to the Contractor.

No other staking will be provided.

The Contractor shall establish such other points as may be required to satisfactorily accomplish the construction as planned.

The Contractor shall be responsible for the preservation of stakes and reference points. Restaking of disturbed or destroyed stakes will be performed by the Owner.

If it is required to reset more than 10 percent of the original control stakes, the cost for replacing the excess stakes shall be charged to the Contractor and deducted from payment for the work. The rate for restaking is \$80.00 per hour.

SECTION 8

UTILITIES

The Contractor shall notify each utility owner at least 48 hours in advance of beginning construction work in the vicinity of the respective existing utilities.

Where the pipeline is to cross a utility or is to run parallel with a utility or its appurtenances which will lie closer than 20 feet to the planned pipeline trench wall, the Contractor shall, prior to commencing pipeline trench work within 500 feet thereof:

1. Request the Blue Stake Center (263-1100) to field locate the underground utilities at least two (2) working days in advance of construction.
2. Record on the Plans the true location of the utility or appurtenance.
3. Ensure that provisions have been made for the immediate repair of the utility, should damage occur during any of the Contractor's operations.

Property owners affected by water connections shall be notified 24 hours prior to construction. Service disruption shall be no longer than 2 hours.

In several locations it may be necessary to relocate or move APS or SRP buried duct and/or buried cable. Should this be the case, the Owner will pay these charges directly to the utility.

SECTION 9

COUNTY HEALTH DEPARTMENT PERMIT

The Contractor is advised that an Excavation and Dirt Moving Permit is required by the Maricopa County Health Department. It shall be the Contractor's responsibility to obtain this permit, pay all required fees, and comply with the permit requirements.

SECTION 10

TRAFFIC REGULATIONS

It shall be the responsibility of the Contractor to comply with the City of Phoenix traffic barricade regulations during construction of the project. Payment for traffic control shall be considered as included in the various bid items.

SECTION 11

RELOCATION OF EXISTING FACILITIES AND SERVICES

If relocation or adjustment of existing facilities is noted on the plans, this is intended to include the relocation or adjustment of items appurtenant to the noted piece of work, just as if they were specifically called out. If these appurtenant items are lost or broken during construction, they shall be replaced by the Contractor with items of equal or better quality.

SECTION 12

CONTRACTOR'S AFFIDAVIT

The Contractor shall submit a signed copy of the Contractor's affidavit (as included in these specifications) prior to final payment.

SECTION 13

NECESSARY WORK PERFORMED BY OWNER

During the construction of this project, if the Contractor fails to comply with a request of the Inspector or is unable to comply with said request, and it is necessary for Owner to do work that is normally the Contractor's responsibility, the Owner shall be justified in billing the Contractor. Each incident requiring work by Owner shall be covered by separate billing.

The amount of each billing shall be either \$250.00 or the actual accumulated charges for employees' time, materials, and equipment, whichever is greater. Employees' time will be billed at each individual's hourly rate plus the applicable Owner overhead rate. Any materials used will be billed at cost. Equipment rates will be based on the most recent schedule of equipment rental rates for Force Account Work, as published by the Arizona Department of Transportation.

SECTION 14

EQUIPMENT RENTAL RATES FOR ACTUAL COST WORK

Compensation for equipment used on actual cost work of MAG U.S.S. Section 109.5.1 shall be paid in accordance with the August 16, 1982, Arizona Department of Transportation, Highways Division, "Requirements for the Utilization of the Schedule of Equipment Rental Rates for Equipment Used on Force Account Work," except for the following:

1. Sheet 1: Only the "Rental Rate Blue book for Construction Equipment" be used. All other equipment not covered by this publication will need to be agreed upon by the engineer prior to its use.
2. Sheet 2, last paragraph: The additional fifteen (15) percent will be deleted for equipment used between 40 to 176 hours.

3. Sheet 3, first paragraph: Equipment brought in exclusively for the force account work shall be paid the same as equipment already on the project, unless otherwise approved by the owner.
4. Sheet 3, last paragraph: The Blue Book area percentage adjustment will apply in determining the rental rates.
5. Sheet 4, last paragraph: Standby time will not be paid unless otherwise approved by the owner. Contractor must notify the owner and obtain owner approval prior to the start of any standby time.
6. Sheets 5 and 6, sections 3-c, 3-d, and 3-e: The mark up for overhead and profit will follow MAG U.S.S. Section 109.5.4.

SECTION 15

CONTINGENT ITEMS

Contingent items are those which may vary in quantity from that listed in the Bid Documents due to unknown field conditions. Every effort has been made to list the probable quantity. There will be no adjustment to the bid unit price or modification to the contract for any change in final quantity from the bid schedule quantity. Payment for the actual quantity measured will be made at the unit price bid.

SECTION 16

SITE SECURITY

The Contractor is responsible for site security and shall take the necessary actions to protect his equipment, construction materials and the natural vegetation areas. The Contractor will close the construction areas after working hours to prevent public from entering and damaging the site.

It is recommended that the Contractor install a temporary chain link fence (or other means) around work areas and construction yard to prevent damage to the site. This item is a non pay item and shall be considered in the various bid items.

SECTION 17

TAXES

The Contractor is responsible for paying all Federal, State and Local taxes which may be levied for the items contained in these documents.

WILLDEN - RED RIVER JOINT VENTURE

CAMELBACK RANCH

LEVEE, MASS GRADING & MISCELLANEOUS IMPROVEMENTS

PHASE I

Special Provisions
II Construction Details

Description of the Work:

Camelback Ranch Phase I Improvements consist of clearing and grubbing, mass grading, levee and bank protection, storm drainage, sewer, water, paving, utility trenching and other miscellaneous construction items as shown on the plans. An effort has been made to enumerate and estimate all items of construction in the bid proposal. All other items required to complete the construction of the improvements should be considered incidental and included in the unit pricing of the bid proposal line items. All items should be performed in accordance with the requirements of the permitting authority, i.e., levee (Flood Control District of Maricopa County), paving, water, sewer, etc. (City of Phoenix) unless otherwise noted.

SECTION A GRADING CONSTRUCTION

Item 1: Clearing and Grubbing

The site is currently farmland and river bottom. This item includes all work required prior to earth moving operations including but not limited to clearing and grubbing concrete and gunite channel removal, disposal and backfill.

Remove all surface vegetation, debris, any surface fill and all existing above and subsurface facilities. Remove to firm native soils and if fill is required, replace with approved fill material under control. Widen any depressions as necessary to accommodate compaction equipment.

Item 2: Earthwork

The various line items are intended to include all work and materials necessary to complete the mass grading of the site. Unit prices should include all incidental items such as construction water, dust control, etc.

2A - Cut: This quantity includes channel excavation, overexcavation for levee and bank protection construction, retention basin (both permanent and temporary) excavation, and excavation required to mass grade those other areas shown on the mass grading plan.

2B - Embankment: This quantity is for compacted fill in place and includes levee construction (except soil cement), bank construction around the temporary basin, backfill of the bank protection toedown and embankment required to mass grade those other areas in Phase I shown on the mass grading plans.

SCARIFYING AREA TO BE FILLED:

The exposed soils should be scarified to a minimum depth of 6 inches and until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

COMPACTING AREA TO BE FILLED:

After the foundation for the fill has been cleared and scarified, it shall be disced or bladed until it is free of large clods, brought to the proper moisture content and compacted to the specified density as determined in accordance with ASTM D-698.

FILL MATERIAL:

All fill material shall be free of vegetable matter, deleterious or foreign material and rocks and lumps having a diameter of more than 6 inches. Native soils may be used as fill material provided that they are compacted as specified. If imported fill material is required, it should be approved low expansive potential soils.

DEPTH AND MIXING OF FILL LAYERS:

Fill material shall be placed in layers, which when compacted shall not exceed 6 inches. Each layer shall be placed evenly and thoroughly mixed during spreading to ensure uniformity of moisture throughout.

MOISTURE CONTENT:

Onsite soils shall be compacted to the specified density at or near optimum moisture content (plus or minus 2 percent) for non-expansive soils and between optimum plus 3 percent for possible native expansive soils as determined in accordance with ASTM D-698.

AMOUNT OF COMPACTION:

After each layer has been placed, mixed and spread evenly, it shall be compacted to the following densities.

<u>MATERIAL</u>	<u>RECOMMENDED COMPACTION</u>
Native/Import Low Swell Potential Soils:	95% Minimum
Native High Swell Potential Soils:	90 - 95%

COMPACTION OF EACH LAYER:

Compaction Equipment shall be of such design that it will be able to compact the fill to the specified density. Compaction of each layer shall be continuous over its entire area and the compaction equipment shall make sufficient trips to ensure that density has been obtained.

DENSITY TESTS:

A field density test should be taken for each twelve inches of compacted fill or at the discretion of the inspecting engineer.

SUPERVISION:

Supervision by the soils engineer should be continuous during the grading operations so that he can certify that all cut and fill areas were graded in accordance with the specifications. Construction Inspection & Testing(861-2002) should be notified prior to earthwork operations so that supervision can be provided.

SEASONAL LIMITS:

When work is interrupted by heavy rains, fill operations shall not be resumed until the soil engineer indicates that the moisture content and density of the previously placed fill are as specified.

2C - Stockpile: This quantity includes that volume of excess excavation north of Camelback Road to be placed per the mass grading plan and that volume excavated from the temporary basin (not used in bank construction around the temporary basin) to be stockpiled immediately south of the temporary retention basin. No offsite hauling will be required or allowed.

SECTION B - DRAINAGE CONSTRUCTION:

Item 1: Soil Cement Bank Protection

A: Description

The work shall consist of the construction of soil-cement bank protection channel lining, as required by the Plans, including protection of existing utilities, and dewatering if required. Trench excavation and backfill are included in earthwork quantities above.

B: Materials

B.1 Portland Cement:

Portland Cement shall be Type II, low alkali and shall comply with MAG 725.2, ASTM C150, CSA A-5, or AASHTO M8t.

B.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.

B.3 Aggregate:

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

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

C: Proportioning:

The contractor shall use the soil aggregate, flyash content, lime cement content, and moisture content determined by the Soils Engineer in accordance with laboratory tests. Material sampling, testing and certification shall be as follows: portland cement - certification required per shipment; flyash - certification required per shipment and one gallon sample; lime - certification required per shipment and one gallon weekly. The Contractor shall allow a minimum of eight (8) days for the cement content results. During the course of the work, the Soil Engineer shall adjust the job mix proportions whenever necessary in order to achieve the minimum design strength shown in Section H. The Contractor may have to blend overbank silty soils with the clean in-situ sands to maintain ideal soil gradations as specified below and avoid cement overrun. Special blending shall require constructing separate stockpiles for materials to be blended and it shall be performed by the utilization of the separate storage feed bins at the plant to the satisfaction of the Soils Engineer.

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

The Plasticity Index shall be a maximum of 5.

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

D: 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 pulverization, cement and water application, mixing transporting, placing compacting, finishing, and curing as provided in these Specifications. Proper moisture content shall be determined in accordance with the requirements of AASHTO T134-70.

Optimum moisture content shall be computed to the nearest 0.1 percent.

E. Construction Requirements:

E.1 Required Contractor Submittals:

Prior to the start of the construction, the Contractor shall submit to the Soils Engineer, in writing, for approval, by the Flood Control District of Maricopa County (FCDMC), the following items:

- a. The approximate length of soil-cement to be placed prior to starting compaction operations.
- b. The type of compaction equipment to be used.
- c. The type of watering equipment to be used.
- d. The method used to keep surfaces continually moist until subsequent layers of soil cement are placed.
- e. The method used to cure permanently exposed surfaces.
- f. The proposed source of soil, if other than required excavations.

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E.3 Mixing
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with screening, feeding and metering devices that will add the soil, cement (flyash and lime, if utilized), and water mixer in the specified quantities. It should also be equipped with a hydraulically or mechanically operated discharge hopper having a minimum capacity of six (6) cubic yards. Scales are required at both the cement feed, and either to soil or total mix feed locations. Each scale shall record weight of the material and have a digital read-out, such that the total discharged weight per hour is displayed. These shall be calibrated, certified and approved by the Soils Engineer at least forty-eight (48) hours prior to the start of production. Each scale shall be calibrated to an accuracy of plus/minus 2.0%. Soil and cement shall be mixed sufficiently to prevent balls from forming when water is added.

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(fly ash)

E.4 Required Moisture

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

E.5 Handling

*more than one (1)
percent below optimum & shall
not be more than one (1) percentage
point above.*

- number and*
- a. The approximate length of soil-cement to be placed prior to starting compaction operations.
 - b. The type of compaction equipment to be used.
 - c. The type of watering equipment to be used.
 - d. The method used to keep surfaces continually moist until subsequent layers of soil cement are placed.
 - e. The method used to cure permanently exposed surfaces.
 - f. The proposed source of soil, if other than required excavations.

E.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 Soils Engineer. The subgrade shall be scarified to a depth of 6-inches. The subgrade shall be compacted to a minimum of ninety-five (95%) percent of maximum dry density determined in accordance with ASTM D698.

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

E.3 Mixing

Soil-cement shall be central-plant mixed in an approved twin shaft continuous-flow or batch-type pugmill. The plant shall be equipped with screening, feeding and metering devices that will add the soil, cement (flyash and lime, if utilized), and water mixer in the specified quantities. It should also be equipped with a hydraulically or mechanically operated discharge hopper having a minimum capacity of six (6) cubic yards. Scales are required at both the cement feed, and either to soil or total mix feed locations. Each scale shall record weight of the material and have a digital read-out, such that the total discharged weight per hour is displayed. These shall be calibrated, certified and approved by the Soils Engineer at least forty-eight (48) hours prior to the start of production. Each scale shall be calibrated to an accuracy of plus/minus 2.0%. Soil and cement shall be mixed sufficiently to prevent balls from forming when water is added.

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E.5 Handling

*more than one (1)
percent below optimum & shall
not be more than one (1) percentage
point above.*

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

The Contractor shall take all necessary precautions to avoid damage to completed soil cement by the equipment and to avoid the deposition of raw earth or foreign materials between layers of soil-cement. Earth ramps crossing completed soil cement must have at least two (2) foot compacted thickness. Where ramps are constructed over soil-cement that is not to grade, all foreign materials and the uppermost one (1) inch of the previously placed soil-cement mixture must be removed prior to the continuation of the soil-cement construction.

E.6 Placing

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

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

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, provided that the Contractor will not be required to keep such surfaces continually moist for a period longer than seven (7) days. Mixing shall not proceed when the soil aggregate or the area on which the soil-cement is to be placed is frozen. Soil-cement shall not be mixed or placed when the air temperature is below forty-five (45) degrees F (7 degrees C), unless the air temperature is at least forty (40) degrees F (5 degrees C) and rising.

E.7 Compaction:

Soil-cement shall be uniformly compacted to a minimum of 95% of maximum density as determined by AASHTO T134 and Arizona 222b and shall be verified by field density tests. In place moisture and density shall be determined in accordance with AASHTO T191, T238 and T239 procedures; however, Arizona 231 is not acceptable. Wheel rolling with only hauling equipment shall not be an acceptable method of compaction.

At the start of compaction, the mixture shall be in a uniform, loose condition throughout its full depth. Its moisture content shall be

grading, spreading or watering

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

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

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.

when the air temperature is below forty-five (45) degrees F (7 degrees C), unless the air temperature is at least forty (40) degrees F (5 degrees C) and rising.

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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 E.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 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 of the completed layer, if smooth, shall be scarified to a depth of at least one (1) inch, at a minimum of one (1) inch spacing, with a spike-tooth instrument prior to placement of the next lift. The surface, after said scarifying, shall be swept using a power broom or other method approved by the Soils Engineer to completely free the surface of all loose material prior to actual placement of the soil-cement mixture for the next lift.

E.8 Finishing *The spacing of scores shall not exceed 13" measured across the direction of soil cement placement.*

After compaction, the soil-cement shall be further shaped, if necessary, to the required lines, grades and cross sections and rolled in a reasonable smooth surface. The face of soil-cement above riverbed shall be trimmed at the end of each days placement.

E.9 Curing

Temporarily exposed surfaces shall be kept moist as set forth in Subsection E.6.

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

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

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

E.10 Construction Joints

At the end of each day's work, or whenever construction operations are interrupted for more than two (2) hours, a transverse construction joint shall be formed by cutting back into the completed work to form a full-depth vertical face.

E.11 Maintenance

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

F: Inspection and Testing

The Soils Engineer, with the assistance and cooperation of the Contractor, will make such inspections and tests as he deems necessary to insure the conformance of the work to the Contract Documents. These inspections and tests may include, but will not be limited to: (1) the taking of test samples of the soil-cement and its individual components at all stages of processing and after completion, and (2) the close observation of the machines, and methods meeting requirements of the Contract Documents shall be approved by the Soils 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 referenced ASTM, or AASHTO Specifications in effect as of the date of advertise for bids on the project.

Testing for proper compaction shall be done on at least every other lift of compacted soil-cement and every 1000 cubic yards of placed soil-cement at any location chosen by the testing personnel. If the lift being tested does not pass the minimum 95% density requirements, it must be reworked as directed by the Soils Engineer until it passes or be removed at the Contractor's expense. The Contractor shall not be permitted to continue placing lifts of soil-cement on any lift which has failed the compaction test until such time as that lift has been reworked, retested, and passed as to meeting density requirements.

The initial acceptance of material shall in no way preclude further examination and testing at any time, during the course of construction or subsequent warranty period, the Soils Engineer suspects that the material is no longer properly represented by 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.

G: Measurements and Payments

G.1 Measurements

Soil-cement work shall be measured by (1) the number of cubic yards of compacted-in-place soil cement bank protection channel lining between the limits shown by the specified lines, grades, and cross-sections shown on the plans and (2) the number of tons of cement,

flyash, and lime incorporated into the soil cement used for tests and for the bank protection channel lining between the limits shown on the plans. Nonpayment shall be made for any waste or excess placement of cement and/or soil cements by the contractor during the handling, mixing, placing, etc. operations.

G.2 Payments

Soil cement work shall be paid for at the contract unit price per cubic yard of compacted-in-place soil cement and at the contract unit price per ton of cement, flyash and lime furnished, multiplied by the respective quantities obtained in accordance with the proceeding paragraph. 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 channel lining dewatering, watering, mixing, placing, compacting, curing and grading, inspection and testing assistance and all incidental operations.

H. Mix Design Methodology:

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

I. Mix Design for this Project

For bidding purposes only, the estimated mix design for channel bank protection shall be as follows:

Base Cement Content	8.0%
Addition for Durability and Erosion	2.0%
Flyash	1.5%
Lime	1.0%

I.1: Total Cement Required

The cement and aggregate are to be weight batched per the approved mix design. The water content of aggregate shall be monitored continuously and the mixing water adjusted accordingly.

The percent of cement to be used in the mix shall be calculated to be the weight of cement divided by the total weight of the dry compacted soil-cement. The actual mix design used on this project shall be determined by laboratory tests on material stockpiled.

Additional flyash shall be used with the approval of the Soils Engineer. A maximum of fifteen (15) percent of the total weight of cement may be replaced with flyash, in accordance with the requirements detailed in Section 725 of the MAG Standard Specifications. An additional scale shall be required for the flyash and shall conform to Section 5.3 Mixing, of these Technical Provisions. Flyash will be considered for incorporation into the mix design upon receipt of a Value Engineering proposal from the Contractor.

J. Stockpiling of Aggregate:

Soil aggregate stockpile shall construction on level, firm ground free of brush, trees, stumps, roots, rubbish, debris and other objectionable or deleterious material.

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

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

K. Testing Procedures for Determination of Cement Content Required for Soil-Cement Mixtures (A Modification of Arizona 220 Test Method):

K.1 Description

- a. This method of test is intended for determining the percentage of Portland Cement required in developing soil-cement mixtures by the determination of the compressive strength of molded specimens at varying cement contents.

b. Equipment Required:

- (1) Mold - A cylindrical metal mold having a capacity of 1/30 cubic foot with an internal diameter of 4.0 inches plus/minus .005 inch and a height of 4.585 inches plus/minus .005 inch equipped with a detachable collar approximately 2 1/2 inches in height.
- (2) Rammer - A metal rammer manually or mechanically operated having a 2 inch diameter circular face and weighing 5.5 lbs. The rammer shall be equipped with a suitable arrangement to control the height of drop to a free fall of 12 inches above the elevation of the cement treated mixture.
- (3) Balance - A balance or scale of at least 5 kg. capacity sensitive to 0.5 gm.
- (4) Drying Oven - A thermostatically controlled drying oven capable of maintaining a temperature of 230 degrees plus/minus 9 degrees F (110 degrees plus/minus 5 degrees C).
- (5) Straightedge - A rigid steel straightedge 12 inches in length having one beveled edge.
- (6) Sieve - 3/4 inch sieve conforming to the requirements of the Specifications for sieves for Testing Purposes (ASTM E11-81 and AASHTO M92).
- (7) Miscellaneous mixing tools and pans.
- (8) Speedy Moisture Tester (optional).
- (9) Equipment required for the determination of the Compressive Strength of Cylindrical Concrete Specimens (ASTM C39, C42, C511).

K.2 Sample Preparation:

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

and fly ash

- d. Add the first of the cement contents to be used and mix thoroughly together.

(1) Example: If the percent cement selected is 10%

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

TOTAL = 2500 gms. (100%)

(2) Example: If the mix design percentages selected are cement (10%), flyash (1.5%) and lime (1%):

Dry Soil Weight = 2,187.5 gms. (87.5%)
Portland Cement = 250.0 gms. (10%)
Flyash = 37.5 gms. (1.5%)
Lime = 25.0 gms. (1%)

TOTAL = 2,500.0 gms. (100%)

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

K.3 Compaction:

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

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

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

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

- b. Compact a duplicate specimen in same manner as Step (a).

- c. Extrude both samples from their respective molds using caution and place on glass or non-absorptive plates and store for curing in a moist condition, (i.e., a moist cabinet or a moist room meeting the requirements of ASTM C-511-80).
- d. Determine the moisture content of the prepared samples from the residue.
- e. Determine the Wet Density and Dry Density of the samples.
- f. Repeat steps (a) through (d) on additional samples with increased cement content (in 2% increments) until a complete bracketing of specification requirements is met.

K.4 Determine of Compressive Strength:

- a. At least two (2) cylinders for compressive tests will be taken for each 1,500 cubic yards or less of soil-cement placed.
- b. All specimens must be cured as specified in a moist condition for six (6) days and then immersed for a period of 24 hours in water maintained at 73.4 plus/minus 3 degrees F (23 plus/minus 1.7 degrees C).
- c. Specimens shall then be prepared for the compression test in accordance with ASTM C617.
- d. The compressive strength of the cylinders shall then be determined in accordance with ASTM C-39 and ASTM C-42.
- e. The results.....

Items 2 & 3: 24" & 36" Pipe

This item includes the excavation, bedding, placement and backfill of the pipe, as shown on the plans. The pipe may be either R.G.R.C.P. or C.I.P.P. Class IV.

Item 4: Manhole

This item includes, excavation bedding, construction, backfill and rim adjustment of the storm drain manholes, complete in place as shown on the plans.

Items 5 & 6: Inlet Structures w/ Trash Racks.

This item includes excavation, foundations, structures and appurtenances to construct the inlet structures complete in place as shown on the levee plans.

Item 7: Pipe Plug

This item includes all work and materials necessary to plug both ends of the 24" Irrigation pipe that is to be abandoned under Camelback Road just west of the new levee drainage system.

Item 8: Rip Rap

This item includes all work and materials necessary to supply and install the rip rap at the out fall into the temporary retention basin (Sheet 14 of 22) including but not limited to excavation, hauling and placement.

Item 9: Gunite

This item includes all work and materials necessary to complete the gunite installation at the north terminus of the levee construction including but not limited to excavation, turndown construction, welded wire fabric, placement and finishing as necessary.

Item 10: Cobbles

This item includes all work and materials to complete the infiltration trench in the temporary retention basin (Sheet 14 of 22) including but not limited to excavation, supplying and hauling cobbles and placement.

Item 11: RCBC Construction

This item includes all work and materials necessary to complete the construction of the the triple 10' x 3' reinforced concrete box culvert (Sheets 8 & 9 of 10) including but not limited to excavation, reinforcing steel, concrete, forming, stripping, finishing, backfilling, wingwalls, handrails and other appurtenances as shown on the plans.

SECTION C - SEWER CONSTRUCTION

Item 1: 8" V.C.P.

This item includes all work and materials necessary to install the 8" V.C.P. sewer pipe shown on the plans, including but not limited to excavation, bedding, placement, marking, backfill and compaction.

Item 2: 8" Plug

This item includes all work and materials necessary to plug both ends of all the new sewer pipe installation.

SECTION D - WATER CONSTRUCTION

All water construction items include all work materials to complete the water line installation as shown on the plans. All other items normally required but not enumerated including but not limited to thrust blocks, fittings, etc. are considered incidental and should be included in the unit prices for the other items. Unit prices shall include excavation, bedding, placement, backfill, disinfecting purification and testing.

SECTION E - PAVING CONSTRUCTION

Items 1,2,& 3: Asphalt Paving

These items include all work and materials necessary to complete the asphalt paving including but not limited to fine grading, subgrade preparation and compaction, A.B.C. and select supply, haul; placement and compaction and Asphaltic Concrete supply haul placement and completion to line and grade as shown on the plans per the specifications.

Items 4,5,6 & 12: Curb & Gutter & Concrete Construction

These items include all work and materials necessary to place the curb and gutter, sidewalk/bikepath and vally gutters to line and grade as shown on the plans, including but not limited to excavation, compaction, concrete, placement, finishing and curing.

Item 7: Thickened Edge

This item includes all work and materials necessary to construct the asphalt thickened edge as shown on the plans including but not limited to excavation, placement, finishing and backfill.

Item 8 & 9: Survey Monuments

This item includes all work and materials necessary to install the survey monuments as shown on the plans including but not limited to excavation and placement. The owner shall provide appropriate survey support.

Item 10: Barricade

This item includes all work and materials necessary to install the barricades as shown on the plans.

Item 11: Adjustments

This item includes all work and materials necessary to adjust water valve box covers to the finished pavement surface.

SECTION F - MISCELLANEOUS CONSTRUCTION

Items 1 & 2: Chain Link Fence & Gates

This item includes all work and materials necessary to install 6'high chain link fence at locations shown on the plan. Gates shall be located as shown on the plans.

Item 3: Pipe Access Gate

This item includes all work and materials necessary to fabricate and install the gate as detailed on sheet 4 of 22 of the levee plans.

Item 4: A.B.C

This item includes all work and materials to install the 4" A.B.C. drive along the top of the levee including but not limited to subgrade preparation placement, compaction and fine grading.

Item 5: Utility Trench

This item includes all work and materials necessary in conjunction with the excavation bedding, shading and backfilling of the various tiers in a common utility trench to be shared by S.R.P., telephone and CATV. The trench will be 24" wide and 5' deep. Conduit and/or wire installation will be done by others.

Item 6: Bonds

The owner shall reimburse the contractor for this actual cost of any required bonds. Permit fees will also be reimbursed.

Item 7: Mobilization

For purposes of this contract mobilization shall be defined as per Section 901 of the ADOT Standard Specifications dated 1982.

SOIL-CEMENT COMPRESSIVE STRENGTH TEST REPORT

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

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

Tested By _____ Date _____ Reviewed By _____ Date _____

Remarks _____

