

CONSTRUCTION SPECIFICATIONS

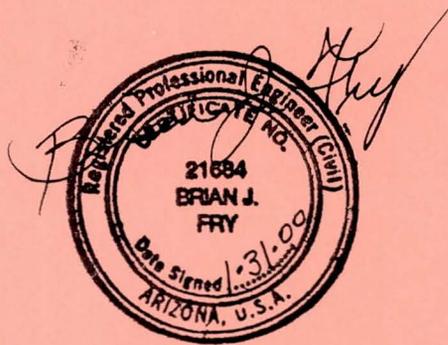
FOR

CONTRACT FCD 1999C055

PARKWOOD RANCH DETENTION BASIN

(C.A.P. Detention Basin #5)

PCN 442.03.30



(Engineer's Seal)

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 2801 W. Durango  
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Prepared By

Dibble & Associates

2633 East Indian School Road, Suite 401

Phoenix, Arizona 85016

for

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

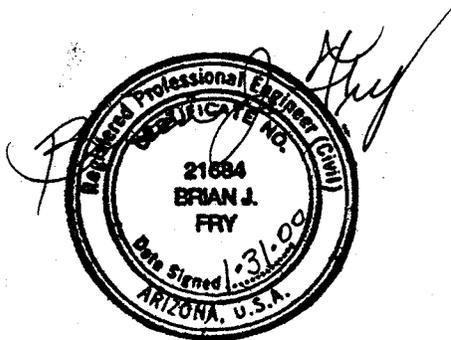
Recommended by: Edward A. Raleigh Date: 2/14/00  
 Edward A. Raleigh, P.E.  
 Manager Engineering Division

Issued for Public Bidding by: Michael S. Ellegood Date: FEB 2, 2000  
 Michael S. Ellegood, P.E.  
 Chief Engineer and General Manager

SUPPLEMENTARY TO MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM  
 STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION EDITION OF 1998  
 AND REVISIONS AND SUPPLEMENTS THROUGH 1999.

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FOR  
CONTRACT FCD 1999C055  
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(C.A.P. Detention Basin #5)

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STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION EDITION OF 1998  
AND REVISIONS AND SUPPLEMENTS THROUGH 1999.

**ATTENTION**  
**ALL PROSPECTIVE BIDDERS**

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

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

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

Please submit your bids accordingly.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CONTRACT FCD 1999C055

PARKWOOD RANCH DETENTION BASIN  
(C.A.P. Detention Basin #5)

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(Area to left reserved  
for Engineer's Seal)

## FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

### INVITATION FOR BID

**BID OPENING DATE:** March 21, 2000 at 2:00 P.M. (local time)

**PROJECT LOCATION:** The project is located within the City of Mesa.

**PROPOSED WORK:** The proposed project includes construction of Parkwood Ranch Basin and outlet channel. The Parkwood Ranch detention basin is located east of Crismon Road and north of Southern Avenue. The outlet channel for Parkwood Ranch Basin is located about one-half (1/2) mile east of Crismon Road draining south towards ADOT drainage channel. The construction includes, but is not limited to, basin and channel excavation, concrete inlet and outlet structures, low flow pipes and concrete drop structures, and box culverts, headwalls, catchbasins, invert access ramps, grouted riprap and shotcrete construction and landscaping.

#### **BIDS:**

**SEALED BIDS** for the proposed work will be received by the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009 until **2:00 P.M. (local time) on Tuesday, March 21, 2000** and then publicly opened and read at 2801 West Durango Street, Phoenix, Arizona 85009. All bids are to be marked in accordance with Section 102.9 of the MAG Uniform Standard Specifications and addressed to the Chief Engineer and General Manager, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009. No bids will be received after the time specified for bid opening. All bids must be submitted on proposal forms furnished by the Flood Control District of Maricopa County and included in the Construction Specifications. The Board of Directors reserves the right to reject any and all bids and to waive minor informalities in any bid received if advantageous to the Flood Control District of Maricopa County.

#### **PRE-BID CONFERENCE:**

**A Pre-Bid conference will be held on Tuesday, March 7, 2000 at 2:00 P.M. (local time)** in the New River/Harquahala conference room at the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009. All potential contractors and subcontractors are encouraged to attend this pre-bid conference and to be prepared at that time to submit in writing and discuss any comments concerning this solicitation.

**Questions or items for clarification may be addressed to the Contracts Branch Manager, in writing, at least five (5) working days prior to bid opening date.** Questions received after this deadline may not be accepted. Responses to all questions submitted will be sent to all planholders by addenda. Verbal interpretations, unless specifically addressed by an addendum, shall not be binding nor have any legal effect.

#### **ELIGIBILITY OF CONTRACTOR:**

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

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

**CONTRACT TIME:**

All work on this contract is to be completed within one hundred fifty (150) calendar days from the date of Notice to Proceed.

**MINORITY/WOMEN-OWNED BUSINESS ENTERPRISE (M/WBE) PARTICIPATION:**

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

The Maricopa County Minority and Women-Owned Business Enterprise Program, effective January 1, 1992, is incorporated herein by reference.

**Two Affidavits are included herein.** The first form, the "M/WBE Assurances Affidavit," must be completed and submitted with the bid – **Failure to do so may be cause for rejection of the bid.** If M/WBE goals have been established, the first and second low bidders must complete and return the second form, "Actual M/WBE Participation Affidavit," to the Flood Control District of Maricopa County by 4:00 P.M. on the seventh (7<sup>th</sup>) calendar day after bid opening.

**For this contract, a goal of ten percent (10%) M/WBE is established for Minority/Women-Owned Business Enterprises.** Bidders unable to meet the established goal must submit "Good Faith" documentation. Failure to implement good faith efforts in accordance with the City of Phoenix, Maricopa County Consolidated Certification Program for M/WBE to the satisfaction of the District may result in rejection of the bid. Complete instructions and additional forms are available from the Flood Control District of Maricopa County, Contracts Branch, telephone number 602-506-4433, 602-506-8378, or 602-506-4876.

**PROJECT PLANS, SPECIAL PROVISIONS AND CONTRACT DOCUMENTS:**

Plans and Construction Specifications may be obtained from the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009 upon payment of **\$17.50** by cash, check or postal money order payable to the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. This payment will not be refunded. Mail orders for project documents must include an additional \$8.00 for first class U.S. postage and handling. The total \$25.50 will not be refunded. Regardless of circumstances, we cannot guarantee mail delivery.

Each bid must be accompanied by a Bid Bond executed on the District-supplied bond form, cashier's or certified check or postal money order equal to 10 percent (10%) of the bid, made payable to the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY as a guarantee that if the work is awarded to the bidder, the bidder will within ten (10) days of receipt of the Proposal Acceptance, enter into proper contract and bond condition for the faithful performance of the work otherwise, said amount may be forfeited to the said BOARD OF DIRECTORS.

**PRINCIPLE ITEMS AND APPROXIMATE QUANTITIES**

<b>QUANTITY</b>	<b>UNIT</b>	<b>DESCRIPTION</b>
115,036	CY	Detention Basin Excavation
386	SY	6" ABC Maintenance Road
186	CY	Concrete
98	LF	8' X 3' Concrete Box
216	LF	10' X 3' Concrete Box
1939	LF	24" Storm Drain Pipe
201	LF	30" Storm Drain Pipe
586	LF	Safety Rail
1944	SY	Shotcrete
8643	SF	Grouted Riprap

**BID**

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

Gentlemen:

The following Bid is made for the Parkwood Ranch Detention Basin (C.A.P. Detention Basin #5), Contract FCD 1999C055, in the County of Maricopa, State of Arizona.

The following Bid is made on behalf of

---

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

The Undersigned certifies that the approved Plans, Supplementary General Conditions, Special Provisions, Forms of Contract, Bonds, and Sureties authorized by the Board of Directors and constituting essential parts of the bid, have been carefully examined and also that the work site has been personally inspected.

The Undersigned declares that the amount and nature of the work to be done is understood and that at no time will misunderstanding of the Plans, Construction Specifications, Special Provisions, Supplementary General Conditions, or conditions to be overcome, be pled. On the basis of the Plans, Construction Specifications, Special Provisions, Supplementary General Conditions, the Forms of Contract, Bonds, and Sureties proposed for use, the Undersigned proposes to furnish all the necessary machinery, equipment, tools, apparatus, and other means of construction, to do all the work and to furnish all the materials in the manner specified and to finish the entire project within the time hereinafter proposed and to accept, as full compensation therefore, the sum of various products obtained by multiplying each unit price, herein bid for the work or materials, by the quantity thereof actually incorporated in the complete project, as determined by the Engineer or Architect.

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

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

The Undersigned further proposes to execute the Contract Agreement and furnish satisfactory Bonds and Sureties within ten (10) days of receipt of Notice of Bid acceptance, **TIME BEING OF THE ESSENCE**. The Undersigned further proposes to begin work as specified in the contract attached hereto, and to complete the work within one hundred fifty (150) calendar days from the effective date specified in the Notice to Proceed, and maintain at all times a Payment and Performance Bond, approved by the Board

of Directors, each in an amount equal to one hundred percent (100%) of the contract amount. This Bond shall serve not only to guarantee the completion of the work on the part of the Undersigned, but also to guarantee the excellence of both workmanship and material and the payment of all obligations incurred, said Bonds and Sureties to be in full force and effect until the work is finally accepted and the provisions of the Plans, Specifications, and Special Provisions fulfilled.

A bid bond in the amount and character named in the Invitation to Bid, and amounting to not less than ten percent (10%) of the total bid, is enclosed. The bid bond is submitted as a guaranty of good faith that the Bidder will enter into a written contract to do the work, as provided, if successful in securing the award thereof. It is therefore agreed that if the Undersigned withdraws its bid at any time except as herein provided, or if the bid is accepted and the Undersigned fails to execute the contract and furnish satisfactory Bonds and Sureties as herein provided, the Flood Control District of Maricopa County shall be entitled and is hereby given the right to retain the said Bid Bond as liquidated damages.

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

Addendum No. _____	Dated _____

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

**BID SCHEDULE**

PAY ITEM NO.	DESCRIPTION	UNIT	APPROX QUANTITY	UNIT PRICE	AMOUNT
105	Partnering	LSUM	1	\$10,000.00	\$10,000.00
107-1	NPDES/SWPPP Permits	LSUM	1		
107-2	Public Information and Notification Allowance	LSUM	1	\$10,000.00	\$10,000.00
107-3	Project Signs allowance	LSUM	1	\$2,000.00	\$2,000.00
201	Clearing and Grubbing	LSUM	1		
202	Mobilization	LSUM	1		
215-1	Detention Basin Excavation	CY	115036		
215-2	Trapezoidal Earth Channel Excavation	CY	23312		
220-1	Plain Riprap	CY	30		
220-2	Grouted Rock	SF	8643		
310-1	6" 95% Compacted ABC Maintenance Road	SY	5051		
310-2	6" 95% Compacted ABC Invert Access Ramp	SY	386		
310-3	3" 95% Comp. DG w/ Stabilizer Maintenance Road	SY	5720		
321	Asphaltic Concrete Turnout (Special Detail)	SY	45		
336	Pavement Replacement (COM Std M-19.4, Type 'B')	SY	179		
340	Concrete Sidewalk (MAG Std 230, Modified)	SF	1319		
350	Removals	LSUM	1		
401	Traffic Control	LSUM	1		
420	Remove and Replace Chain Link Fence (ADOT Std C-12.20)	LF	30		
421	14' Single Gate (ADOT Std C-12.10, Type 1)	EA	2		
430-1	24" Box Tree	EA	67		
430-2	15 Gallon Tree	EA	11		
430-3	5 Gallon Shrub / Ground Cover / Accent	EA	392		
430-4	1 Gallon Shrub / Ground Cover / Accent	EA	29		
430-5	Seeding (Lawn)	SF	502175		
430-6	6" x 12" Concrete Header	LF	3800		
430-7	Decomposed Granite	SF	62820		
440-1	RPA Backflow Preventer with Enclosure	EA	1		

**BID SCHEDULE**

PAY ITEM NO	DESCRIPTION	UNIT	APPROX QUANTITY	UNIT PRICE	AMOUNT
440-2	8" Class 200 PVC Sleeve	LF	20		
440-3	6" Class 200 PVC Sleeve	LF	20		
440-4	4" Schedule 40 PVC Sleeve	LF	140		
440-5	2" Schedule 40 PVC Sleeve	LF	60		
440-6	6" Class 200 PVC Main Line	LF	2960		
440-7	6" Isolation Gate Valve	EA	7		
440-8	3" Class 200 PVC Lateral	LF	860		
440-9	2-1/2" Class 200 PVC Lateral	LF	3360		
440-10	2" Class 200 PVC Lateral	LF	3140		
440-11	1-1/2" Class 200 PVC Lateral	LF	3340		
440-12	1-1/4" Class 200 PVC Lateral	LF	340		
440-13	1" Class 200 PVC Lateral	LF	4620		
440-14	3/4" Class 200 PVC Lateral	LF	1180		
440-15	1/2" Class 315 PVC Drip Lateral	LF	8660		
440-16	2" Remote Control Valve (Turf)	EA	38		
440-17	Emitter Valve Assembly	EA	6		
440-18	Master Valve and Flow Meter	EA	1		
440-19	Hunter I-20 Turf Head	EA	60		
440-20	Hunter I-40 Turf Head	EA	203		
440-21	Multi Outlet Emitter	EA	92		
440-22	Single Outlet Emitter	EA	421		
440-23	Drip Lateral Flush Cap Outlet	EA	19		
440-24	Motorola MIR5000 Field Satellite Unit w/ Enclosure	EA	1		
440-25	Trenching for Power Service Connection	L.SUM	1		
440-26	Restoration of Existing Irrigation System	L.SUM	1		
440-27	Control Wire	LF	33220		
505-1	Concrete (Class 'A', Including Reinforcing Steel)	CY	186		
505-2	10'x3' Concrete Box Culvert (ADOT Std B-02.10)	LF	216		
505-3	8'x3' Concrete Box Culvert (ADOT Std B-02.10)	LF	98		

**BID SCHEDULE**

PAY ITEM NO.	DESCRIPTION	UNIT	APPROX QUANTI TY	UNIT PRICE	AMOUNT
505-4	2 - 8' x 4' Concrete Box Culvert (ADOT Std B-02.20)	LF	78		
505-5	Concrete Headwall (MAG Std 501-1)	EA	3		
505-6	3' Concrete Inlet Wings (ADOT Std B-04.30)	EA	2		
505-7	3' Concrete Outlet Wings (ADOT Std B-04.10)	EA	2		
505-8	4' Concrete Inlet Wings (ADOT Std B-04.30)	EA	1		
505-9	4' Concrete Outlet w/ Apron (ADOT Std B-04.10, Modified)	EA	1		
505-10	Downdrain Spillway (Special Detail)	EA	7		
505-11	Concrete Apron (ADOT Std B-06.10, Modified)	EA	5		
505-12	30" Concrete Collar (MAG Std 505)	EA	1		
515	Trash Rack (Special Detail)	EA	5		
520	Safety Rail	LF	586		
525	Shotcrete (Including Welded Wire Fabric Reinforcement)	SY	1944		
610-1	Vert. Realign. of 16" Water Main (Class 50 DIP w/ Res. Joints)	L.SUM	1		
610-2	Realign 8" PVC Storm Drain (Special Detail)	L.SUM	1		
610-3	16" x 4" Tapping Sleeve, Valve, Box and Cover (MAG Std 340)	EA	1		
610-4	4" DIP Water Line	LF	12		
610-5	4" Water Meter (MAG Std 345-1)	EA	1		
615	21" HDPE Sewer Line Replacement w/ 20" D.I.P.	L.SUM	1		
618-1	24" Storm Drain Pipe	LF	1939		
618-2	30" Storm Drain Pipe	LF	201		
618-3	Drain Pipe Connect. to Conc. Box Culv. (Pipe Penetration Detail)	EA	4		
625	Manhole (MAG Std 520 and 522)	EA	6		
<b>TOTAL BID AMOUNT WRITTEN IN NUMBERS</b>					
<b>TOTAL BID AMOUNT WRITTEN IN WORDS</b>					

**IF BY AN INDIVIDUAL:**

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

(Printed Name)

(Title)

(Address)

\_\_\_\_\_  
(Signature)

(Date)

(Telephone Number)

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

\_\_\_\_\_  
(Firm Name)

(Firm Address)

\_\_\_\_\_  
(Signature - Title)

(Date)

(Telephone Number)

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

_____	_____
_____	_____
_____	_____
_____	_____

\*\*The name and post office address of each Member of the Firm or Partnership must be shown, or of each Manager of an L.L.C., also address of the registered office of the L.L.C.

**IF BY A CORPORATION:**

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

(Corporation Address)

\_\_\_\_\_  
(Printed Name)

(Title)

(Telephone Number)

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

(Signature)

(Date)

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

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

(Address)

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

(Address)

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

(Address)

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

**SUBCONTRACTOR LISTING**

As required in Section 102.6 of the Supplementary General Conditions, the following is a listing of Subcontractors and material suppliers (including any minority and women-owned business participation) that are to be used in the event the undersigned should enter into contract with the Owner. Although this list will not be considered as final commitment on the part of the successful proposer, any Subcontractor changes from those listed must have Owner's written approval prior to commencement of Subcontractor work on site.

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(Signature)

**SURETY BOND**

KNOW ALL MEN BY THESE PRESENTS:

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

WHEREAS, the said Principal is herewith submitting its proposal for **Parkwood Ranch Detention Basin (C.A.P. Detention Basin #5), Contract FCD 1999C055.**

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

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, AD, 200\_\_.

\_\_\_\_\_  
Agency of Record, State of Arizona

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Agency Address and Phone Number:

\_\_\_\_\_  
Signature

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

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Title)

**Bond Number:** \_\_\_\_\_

\_\_\_\_\_  
Surety Name

\_\_\_\_\_  
(Signature)

**ATTACH SURETY POWER OF ATTORNEY**

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

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Title)

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

STATE OF \_\_\_\_\_ )  
County of \_\_\_\_\_ )§

\_\_\_\_\_ being first duly sworn, deposes and says:

That he/she is \_\_\_\_\_ of \_\_\_\_\_ bidding on contract for **Parkwood Ranch Detention Basin (C.A.P. Detention Basin #5), Contract FCD 1999C055**, in the County of Maricopa, State of Arizona.

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

\_\_\_\_\_  
(Signature of Affiant)

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 200\_\_.

\_\_\_\_\_  
(Notary Public)

\_\_\_\_\_  
My Commission Expires

**CERTIFICATION OF LICENSE**

Pursuant to A.R.S. Section 32-1169, I hereby state that I hold a current contractor's license, duly issued by the office of the Registrar of Contractors for the State of Arizona, said license has not been revoked, that the license number is \_\_\_\_\_ that my privilege license number (as required by A.R.S. Section 42-5005) is \_\_\_\_\_; and that, if any exemption to the above licensing requirements is claimed;

1. The basis for the claimed exemption is \_\_\_\_\_ and;
2. The name(s) and license number(s) of any general, mechanical, electrical, or plumbing contractor(s) to be employed on the work are:

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

IT IS UNDERSTOOD THAT THE FILING OF AN APPLICATION CONTAINING FALSE OR INCORRECT INFORMATION CONCERNING AN APPLICANT'S CONTRACTOR'S LICENSE OR PRIVILEGE LICENSE WITH THE INTENT TO VOID SUCH LICENSING REQUIREMENTS IS UNSWORN FALSIFICATION PUNISHABLE ACCORDING TO A.R.S. SECTION 13.2704.

\_\_\_\_\_  
Signature of Licensee

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

Company: \_\_\_\_\_





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

**M/WBE PARTICIPATION REPORT**  
*(To be attached with each request for pay)*

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

Prime Contractor: \_\_\_\_\_

Contractor Contact Person: \_\_\_\_\_

Contractor Address: \_\_\_\_\_

Contractor Telephone Number: \_\_\_\_\_

Contractor Fax Number: \_\_\_\_\_

Contract Description: \_\_\_\_\_

Contract Number: \_\_\_\_\_

Invoice For Pay Period of (indicate dates): \_\_\_\_\_

M/WBE Subcontractor/Subconsultant Name: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Type of Firm: \_\_\_\_\_

Type of Work performed for this contract  
by this M/WBE firm: \_\_\_\_\_

Total M/WBE Subcontract Amount  
for this Subcontractor: \_\_\_\_\_

Amount Paid to this M/WBE  
Subcontractor on this invoice payment: \_\_\_\_\_

Total paid to this Subcontractor since the  
contract start date: \_\_\_\_\_

Total M/WBE Contract Goal this project = \_\_\_\_\_%

Total M/WBE Participation  
on this contract to date = \_\_\_\_\_%

Send to: **Flood Control District of Maricopa County  
Contracts Branch  
2801 West Durango Street  
Phoenix, Arizona 85009**

## CONTRACT AGREEMENT

THIS AGREEMENT, made and entered into **this** \_\_\_\_\_ **day of** \_\_\_\_\_ by and between the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, hereinafter called the Owner, acting by the through its' BOARD OF DIRECTORS, and \_\_\_\_\_, hereinafter called the Contractor.

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

ARTICLE I – SCOPE OF WORK: The Contractor shall construct, and complete in a workmanlike and substantial manner and to the satisfaction of the Chief Engineer and General Manger, a project for the Flood Control District of Maricopa County, designated as **Parkwood Ranch Detention Basin (C.A.P. Detention Basin #5), Contract FCD 1999C055** and furnish at its' own cost and expense all necessary machinery, equipment, tools, apparatus, materials, and labor to complete the work in the most substantial and workmanlike manner according to the Plans and Construction Specifications on file with the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona, and such modifications of the same and other directions that may be made by the Flood Control District of Maricopa County as provided herein.

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

ARTICLE III – TIME OF COMPLETION: The Contractor further covenants and agrees at its' own proper cost and expense, to do all work as aforesaid for the construction of said improvements and to completely construct the same and install the material therein, as called for by this agreement free and clear of all claims, liens, and charges whatsoever, in the manner and under the conditions specified within \_\_\_\_\_ calendar days following notice to proceed.

ARTICLE IV – PAYMENTS: For and in consideration of the faithful performance of the work herein embraced as set forth in the contract documents, which are a part hereof and in accordance with the directions of the Owner, through its Engineer and to its satisfaction, the Owner agrees to pay the said Contractor the amount earned, computed from actual quantities of work performed and accepted or materials furnished at the unit bid price on the Proposal made a part hereof, and to make such payment in accordance with the requirements of A.R.S. Section 34-221, as amended. The Contractor agrees to discharge it's obligations and make payments to its subcontractors and suppliers in accordance with A.R.S. Section 34-221.

ARTICLE V – TERMINATION: The Owner hereby gives notice that pursuant to A.R.S. Section 38-511(A) this contract may be canceled without penalty or further obligation within three (3) years after execution if any person significantly involved in initiation, negotiation, securing, drafting or creating a contract on behalf of the Owner is, at any time while the contract or any extension of the contract is in effect, an employee or agent of any other party to the contract in any capacity or a consultant to any other party of the contract with respect to the subject matter of the contract. Cancellation under this section shall be effective when written notice from the Chief Engineer and General Manager of the Owner is received by all of the parties to the contract. In addition, the Owner may recoup any fee for commission paid or due to any person significantly involved in initiation, negotiation, securing, drafting or creating the contract on behalf of the Owner from any other party to the contract arising as a result of the contract.

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

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

ARTICLE VIII – M/WBE PROGRAM: The Owner will endeavor to ensure in every way possible that minority and women-owned business enterprises shall have every opportunity to participate in providing professional services, purchased goods, and contractual services to the Owner without being discriminated against on the grounds of race, religion, sex, age, disability, or national origin. The City of Phoenix and Maricopa County Minority, Women-Owned and Disadvantaged Business Enterprise Program is incorporated by reference.

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

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

\_\_\_\_\_  
Party of the First Part

\_\_\_\_\_  
Signature

By: \_\_\_\_\_  
Printed Name

Title: \_\_\_\_\_

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

\_\_\_\_\_  
Tax Identification Number

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
PARTY OF THE SECOND PART

RECOMMENDED BY:

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

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

ATTEST:

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

**LEGAL REVIEW**

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

\_\_\_\_\_  
District General Counsel      Date

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

KNOW ALL MEN BY THESE PRESENTS:

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

WHEREAS, the Principal has entered into a certain written contract with the Flood Control District of Maricopa County, dated the \_\_\_\_\_ day of \_\_\_\_\_ for the Parkwood Ranch Detention Basin (C.A.P. Detention Basin #5), Contract FCD 1999C055 which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal promptly pays all monies due to all persons supplying labor or materials to the Principal or the Principal's Subcontractors in the prosecution of the work provided for in the contract, this obligation is void. Otherwise it remains in full force and effect.

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

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

Witness our hands this \_\_\_\_\_ day of \_\_\_\_\_, 200\_\_.

\_\_\_\_\_  
Agency of Record, State of Arizona

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Agency Address and Phone Number:

\_\_\_\_\_  
Signature

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

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title:

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

\_\_\_\_\_  
Surety Seal

\_\_\_\_\_  
Signature

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

\_\_\_\_\_  
Printed Name

**Bond Number:** \_\_\_\_\_

**ATTACH SURETY POWER OF ATTORNEY**

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

KNOW ALL MEN BY THESE PRESENTS:

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

WHEREAS, the Principal has entered into a certain written contract with the Flood Control District of Maricopa County, dated the \_\_\_\_\_ day of \_\_\_\_\_ the Parkwood Ranch Detention Basin (C.A.P. Detention Basin #5), Contract FCD 1999C055 which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal faithfully performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of the contract during the original term of the contract and any extension of the contract, with or without notice to the Surety, and during the life of any guaranty required under the contract, and also performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of all duly authorized modifications of the contract that may hereafter be made, notice of which modifications to the Surety being hereby waived; the above obligation is void. Otherwise it remains in full force and effect.

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

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

Witness our hands **this** \_\_\_\_\_ day of \_\_\_\_\_, 200\_\_.

\_\_\_\_\_  
Agency of Record, State of Arizona

\_\_\_\_\_  
Agency Address and Phone Number:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Bond Number:** \_\_\_\_\_

**ATTACH SURETY POWER OF ATTORNEY**

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Signature

By: \_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title:

\_\_\_\_\_  
Surety Seal

\_\_\_\_\_  
Signature

By: \_\_\_\_\_  
Printed Name

## INDEMNIFICATION REQUIREMENTS

To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the Flood Control District of Maricopa County (District) and Maricopa County, their agents, representatives, officers, directors, officials, and employees from and against all claims, damages, losses and expenses, including but not limited to attorney fees, court costs, expert witness fees, and the cost of appellate proceedings, relating to, arising out of, or alleged to have resulted from the acts, errors, omissions or mistakes relating to the performance of this contract. Contractor's duty to defend, indemnify and hold harmless the District and Maricopa County, their agents, representatives, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, or injury to, impairment, or destruction of property, including loss of use resulting therefrom, caused by any acts, errors, omissions or mistakes in the performance of this contract including any person for whose acts, errors, omissions or mistakes, the Contractor may be legally liable.

The amount and type of insurance coverage requirements set forth herein will in no way be construed as limiting the scope of the indemnity in this paragraph.

### Abrogation of Arizona Revised Statutes Section 34-226:

In the event that A.R.S. § 34-226 shall be repealed or held unconstitutional or otherwise invalid by a court of competent jurisdiction, then to the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the District and Maricopa County, their agents, representatives, officers, directors, officials and employees from and against all claims, damages, losses and expenses (including but not limited to attorney fees, court costs, and the cost of appellate proceedings), relating to, arising out of, or resulting from Contractor's work or services. Contractor's duty to defend, indemnify and hold harmless the District and Maricopa County, their agents, representatives, officers, directors, officials and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, injury to, impairment or destruction of property including loss of use resulting therefrom, caused in whole or in part by any act or omission of the Contractor, anyone Contractor directly or indirectly employs or anyone for whose acts Contractor may be liable, regardless of whether in is caused in part by a party indemnified hereunder, including the District and Maricopa County.

The amount and type of insurance coverage requirements set forth below will in no way be construed as limiting the scope of the indemnity in this paragraph.

The scope of this indemnification does not extend to the sole negligence of the District and Maricopa County.

## INSURANCE REQUIREMENTS

Contractor, at Contractor's own expense, shall purchase and maintain the herein stipulated minimum insurance with companies duly licensed, possessing a current A.M. Best Company Rating of at least B++ or a Financial Performance Rating (FPR) of at least 6, or approved unlicensed companies in the State of Arizona with policies and forms satisfactory to the District.

All insurance required herein shall be maintained in full force and effect until all work or service required to be performed under the terms of the contract is satisfactorily completed and formally accepted. Failure to do so may, at the sole discretion of the District, constitute a material breach of this contract.

The Contractor's insurance shall be primary insurance as respects the District, and any insurance or self-insurance maintained by the District shall not contribute to it.

Any failure to comply with the claim reporting provisions of the insurance policies or any breach of an insurance policy warranty shall not affect coverage afforded under the insurance policies to protect the District.

The insurance policies may provide coverage which contains deductibles or self-insured retentions. Such deductible and/or self-insured retentions shall not be applicable with respect to the coverage provided to the District under such policies. The Contractor shall be solely responsible for the deductible and/or self-insured retention and the District, at its option, may require the Contractor to secure payment of such deductibles or self-insured retentions by a surety bond or an irrevocable and unconditional letter of credit.

The District reserves the right to request and to receive, within ten (10) working days, certified copies of any or all of the herein required insurance policies and/or endorsements. The District shall not be obligated, however, to review such policies and/or endorsements or to advise Contractor of any deficiencies in such policies and endorsements, and such receipt shall not relieve Contractor from, or be deemed a waiver of the District's right to insist on strict fulfillment of Contractor's obligations under this contract.

The insurance policies required by this contract, except Workers' Compensation, shall name the District and Maricopa County, their agents, representatives, officers, directors, officials, and employees as Additional Insureds.

The policies required hereunder, except Workers' Compensation, shall contain a waiver of transfer of rights of recovery (subrogation) against the District and Maricopa County, their agents, representatives, officers, directors, officials and employees.

### **Required Coverage**

#### **Commercial General Liability.**

Contractor shall maintain Commercial General Liability insurance with a limit of not less than \$1,000,000 for each occurrence with a \$2,000,000 Products/Completed Operations Aggregate and a \$2,000,000 General Aggregate Limit. The policy shall include coverage for bodily injury, broad form property damage, personal injury, products and completed operations and blanket contractual coverage including, but not limited to, the liability assumed under the indemnification provisions of this contract which coverage will be at least as broad as Insurance Service Office, Inc. Policy Form CG 00 01 10 93 or any replacement thereof. The coverage shall include X,C,U.

The policy shall contain a severability of interest provision, and shall not contain a sunset provision or commutation clause, or any provision which would serve to limit third party action over claims.

The Commercial General Liability additional insured endorsement shall be at least as broad as the Insurance Service Office, Inc.'s Additional Insured, CG 20 10 11 85, and shall include coverage for Contractor's operations and products and completed operations.

If the Contractor subcontracts any part of the work, services or operations awarded to the Contractor, he shall purchase and maintain, at all times during prosecution of the work, services or operations under this contract, an Owner's and Contractor's Protective Liability insurance policy for bodily injury and property damage, including death, which may arise in the prosecution of the Contractor's work, service or operations under this contract. Coverage shall be on an occurrence basis with a limit not less than

\$1,000,000 per occurrence, and the policy shall be issued by the same insurance company that issues the Contractor's Commercial General Liability insurance.

**Automobile Liability:**

Contractor shall maintain Automobile Liability insurance with an individual single limit for bodily injury and property damage of no less than \$1,000,000, each occurrence, with respect to Contractor's vehicles (whether owned, hired, non-owned), assigned to or used in the performance of this contract. Coverage will be at least as broad as coverage code 1, "any auto" (Insurance Services Office, Inc. Policy Form CA 00 01 12 93, or any replacements thereof). Such insurance shall include coverage for loading and off-loading and off-loading hazards. If hazardous substances, materials, or wastes are to be transported, MCS 90 endorsement shall be included and \$5,000,000 per accident limits for bodily injury and property damage shall apply.

**Workers' Compensation:**

The Contractor shall carry Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Contractor's employees engaged in the performance of the work or services, as well as Employer's Liability insurance of not less than \$1,000,000 for each accident, \$1,000,000 disease for each employee, and \$1,000,000 disease policy limit.

In case any work is subcontracted, the Contractor will require the Subcontractor to provide Workers' Compensation and Employers' Liability insurance to at least the same extent as required of the Contractor.

**Builders' Risk (Property) Insurance:**

The Contractor shall purchase and maintain, on a replacement cost basis, Builders' Risk insurance in the amount of the initial contract amount, as well as subsequent modifications thereto for the entire work at the site. Such Builders' Risk insurance shall be maintained until final payment has been made or until no person or entity other than the District has an insurable interest in the property required to be covered, whichever is earlier. This insurance shall include interest of the District, the Contractor, and all subcontractors and sub-subcontractors in the work during the life of the contract and course of construction, and shall continue until the work is completed and accepted by the District. For new construction projects, the Contractor agrees to assume full responsibility for loss or damage to the work being performed and to the structures under construction. For renovation construction projects, the Contractor agrees to assume responsibility for loss or damage to the work being performed at least up to the full contract amount, unless otherwise required by the contract documents or amendments thereto.

Builders' Risk insurance shall be on an all-risk policy form and shall also cover false work and temporary buildings and shall insure against risk of direct physical loss or damage from external causes including debris removal, demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for architect's service and expenses required as a result of such insured loss and other "soft costs" as required by the contract.

Builders' Risk insurance must provide coverage from the time any covered property comes under Contractor's control and/or responsibility, and continue without interruption during construction, renovation, or installation, including any time during which the covered property is being transported to the construction installation site, and while on the construction or installation site awaiting installation. The policy will provide coverage while the covered premises or any part thereof are occupied. Builders' Risk insurance shall be primary and not contributory.

Required coverage may be modified by an amendment to the contract documents.

If the contract required testing of equipment or other similar operations, at the option of the District, the Contractor will be responsible for providing property insurance for these exposures under a Boiler Machinery insurance policy.

**Certificates of Insurance:**

Prior to commencing work or services under this contract, Contractor shall furnish the District with Certificates of Insurance (Attachment 3), or formal endorsements as required by the contract, issued by Contractor's insurer(s), as evidence that policies providing the required coverage's, conditions, and limits required by this contract are in full force and effect. Such certificates shall identify this contract number and title.

In the event any insurance policy(ies) required by this contract is(are) written on a "claims made" basis, coverage shall extend for two (2) years past completion and acceptance of the Contractor's work or services and as evidenced by annual Certificates of Insurance.

If a policy does expire during the life of the contract, a renewal certificate must be sent to the District fifteen (15) days prior to the expiration date.

**Cancellation and Expiration Notice:**

Insurance required herein shall not expire, be cancelled, or materially changed without thirty (30) days prior written notice to the District.

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
CERTIFICATE OF INSURANCE**

CONTRACT FCD 1999C055

PROJECT TITLE: Parkwood Ranch Detention Basin (C.A.P. Basin #5)

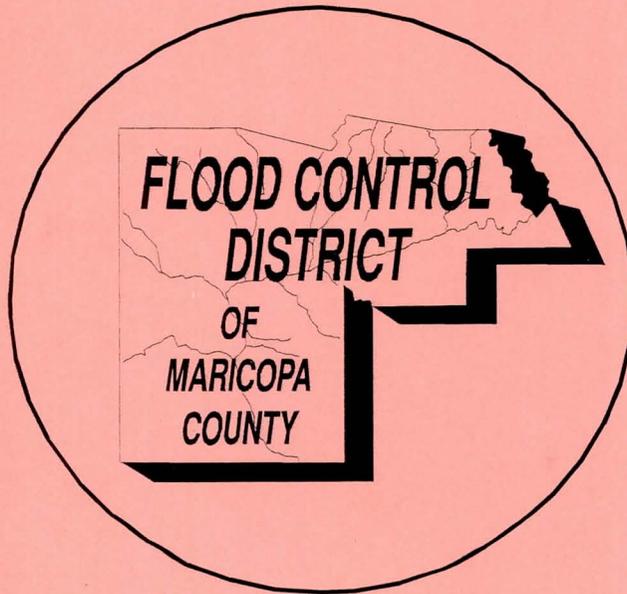
NAME AND ADDRESS OF INSURANCE AGENCY:	<b>*INSURANCE COMPANIES AFFORDING COVERAGES:</b>	
	Company Letter	A
	Company Letter	B
	Company Letter	C
NAME AND ADDRESS OF INSURED:	Company Letter	D
	Company Letter	E
	Company Letter	F

This certificate of insurance certifies that policies of insurance listed below have been issued to the insured named above and are in full force at this time.

*CO. LTR.	TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE (MM/DD/YY)	EXPIRATION DATE (MM/DD/YY)	LIMITS
	<b>COMMERCIAL GENERAL:</b> <input checked="" type="checkbox"/> : LIABILITY FORM <input checked="" type="checkbox"/> : PREMISES OPERATIONS <input checked="" type="checkbox"/> : CONTRACTURAL <input checked="" type="checkbox"/> : BODILY INJURY <input checked="" type="checkbox"/> : BROAD FORM PROPERTY DAMAGE <input checked="" type="checkbox"/> : PERSONAL INJURY <input checked="" type="checkbox"/> : PRODUCTS AND COMPLETED OPERATIONS HAZARD <input checked="" type="checkbox"/> : EXPLOSION AND COLLAPSE <input checked="" type="checkbox"/> : UNDERGROUND HAZARD <input checked="" type="checkbox"/> : INDEPENDENT CONTRACTORS				GENERAL LIABILITY, \$1,000,000  EACH OCCURENCE \$2,000,000  PRODUCTS/COMPLETED OPERATIONS AGGREGATE \$2,000,000  GENERAL AGGREGATE
	<b>COMPREHENSIVE AUTO:</b> <input checked="" type="checkbox"/> : LIABILITY AND NON-OWNED				Each Occurrence \$1,000,000
	<input type="checkbox"/> : EXCESS LIABILITY				NECESSARY IF UNDERLYING NOT ABOVE MINIMUM
	<input checked="" type="checkbox"/> : WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				Employer's Liability: each accident \$1,000,000 Disease: each employee \$1,000,000 Disease: policy limit \$1,000,000
	<input checked="" type="checkbox"/> : BUILDERS' RISK ALL-RISK FORM				REPLACEMENT COSTS
	<input checked="" type="checkbox"/> : OTHER:	Except for Professional Liability Insurance and Workers' Compensation Insurance, the Flood Control District of Maricopa County and Maricopa County, their agents, representatives, officers, Directors, Officials, and employees are named as Additional Insured's.			

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

<b>FLOOD CONTROL DISTRICT OF MARICOPA COUNTY</b> 2801 WEST DURANGO STREET PHOENIX, ARIZONA 85009	DATE ISSUED: _____  _____ AUTHORIZED REPRESENTATIVE
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# **SUPPLEMENTARY GENERAL CONDITIONS**

**CONTRACT 1999C055**

**PARKWOOD RANCH DETENTION BASIN  
(C.A.P. Detention Basin #5)**

**PCN 442-03-30**

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
CONTRACT 1999C055  
PARKWOOD RANCH DETENTION BASIN  
(C.A.P. Detention Basin #5)  
PCN 442-03-30**

**SUPPLEMENTARY GENERAL CONDITIONS**

**SPECIFICATIONS**

Except as otherwise amended in these Supplementary General Conditions and the Construction Special Provisions, construction of this project shall be in accordance with all applicable Maricopa Association of Governments (MAG) Uniform Standard Specifications and Uniform Standard Details, dated 1998, together with the City of Mesa, Supplements to MAG Details.

**PRECEDENCE OF CONTRACT DOCUMENTS**

This Contract and its designated documents, whether taken separately or together, are to be interpreted according to full intent, meaning, and spirit, and shall be deemed to mutually explain each other and to be descriptive of any materials to be furnished and the work to be performed under this Contract. In cases of any difference or discrepancy between the Contract documents, the order of precedence shall be (a) Addendum to the Invitation for Bids, (b) the Contract form, (c) Supplementary General Conditions, (d) Construction Special Provisions, (e) Project Plans, (f) City of Mesa Supplements to MAG, and (g) MAG Uniform Standard Specifications and Uniform Standard Details, including revisions through December, 1999 only.

**Subsection 101.2 - Definitions and Terms:**

- (1) Change the definition of the phrase "Board of Supervisors" to being the Board of Directors acting under the authority of the laws of the State of Arizona and in their capacity of the Board of Directors of the Flood Control District of Maricopa County.
- (2) Change the definition of the phrase "Budget Project" to being a project financed by funds set aside in the annual budget or otherwise approved by the Flood Control District of Maricopa County Board of Directors.
- (3) Add to the definition of the phrase "Contract Documents," the phrase "Supplementary General Conditions."
- (4) Change the definition of the term "Engineer" to being the person appointed by the Flood Control District of Maricopa County Board of Directors to the office of Chief Engineer and General Manager of the Flood Control District of Maricopa County acting directly or through its authorized representative, the Chief of the Flood Control District of Maricopa County Planning and Project Management Division.
- (5) Change the definition for the phrase "Notice of Award" to a letter from the Flood Control District of Maricopa County advising Contractor that it is the successful bidder and the Flood Control District of Maricopa County has accepted its proposal.
- (6) Change the definition of the term "Owner" to the Flood Control District of Maricopa County, acting through its legally constituted officials, officers, or employees.
- (7) Add the definition for Maricopa County Minority Business Office (MBO), the office responsible for administering the Maricopa County Minority and Women Owned Business Enterprise Program.
- (8) Add the definition for the Maricopa County Minority and Women Owned Business Enterprise Program as being the Program adopted by the Board of Supervisors effective January 1, 1992.

**Subsection 102.4 - Examination of the Plans, Special Provisions, and Site Work:**

Add the following:

The soil borings logs and geotechnical report, including ground water conditions, are available for review at the Owner's office, and Contractors are encouraged to do so. Existing moisture conditions shall be no basis for claim for additional monies or time extensions. The Contractor shall manipulate the existing soil as required to achieve stable soil conditions and the required densities, as well as safe and stable side slopes during construction activities.

**Subsection 102.5 - Preparation of Bid:**

Add the following:

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

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

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

**Subsection 102.6 - Subcontractors' List:**

Add the following:

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

**Subsection 102.7 - Irregular Proposals:**

Add the following:

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

**Subsection 103.6 - Contractor's Insurance:**

Add the following:

A statement from bidder's insurance carrier shall be included in the proposal certifying that it will furnish the specified kind and amounts of insurance to the bidder if it is awarded the contract. As required by law, the statement will be from an insurance carrier or carriers authorized to do business in the State of Arizona, or countersigned by an

agent of the carrier authorized to do business in the State of Arizona. Concurrently with the execution of the contract, Contractor shall furnish a Certificate of Insurance using the included Certificate that names the additional insureds as set out in the Certificate. The Certificate shall also name the additional insureds as Certificate Holders. The types of insurance and the limits of liability shall be as indicated on the included form.

**Subsection 103.6.1(D) - Contractor's Insurance:**

Add the following:

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

**Subsection 103.6.2 - Indemnification of the Contracting Agency against Liability:**

Add the following:

Additionally, Contractor shall execute the Indemnification found in the Contract Documents.

**SECTION 104 – SCOPE OF WORK**

Add the following:

This project is located within City of Mesa and County unincorporated area. The project includes a detention basin (Basin #5, Parkwood Ranch Detention Basin) at Southern Avenue and Cheshire Street, East of Crismon Road, and an earthen outlet channel draining south into an existing ADOT channel. The project also includes constructing inlet/outlet structures, box culverts, headwalls, open channels, landscaping, irrigation system, catch basins, and manholes. Several utilities will be relocated as shown on the plans and in accordance with MAG Standard Specifications.

**Subsection 104.1 - Work to be Done:**

Add the following sentence to 104.1.1:

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

The Contractor shall be responsible to coordinate and schedule work to minimize disruption or conflicts with other projects in the project area.

The Contractor shall provide sanitation pick-up for affected residents by relocating trash containers, or by providing alternative measures acceptable to the Sanitation Division of the City Public Works Department.

The Contractor shall coordinate with special events organizer to coordinate traffic during the event.

The Contractor shall provide safety construction fencing around all open trenches and excavations during non-working hours.

The Contractor shall provide for the safety and welfare of the public by adequately fencing all excavations and trenches that are permitted by the Engineer to remain open when construction is not in progress.

Fencing shall be securely anchored to approved steel posts located six (6) feet on center, having a minimum height of six (6) feet, and shall consist of wire mesh fabric of sufficient weight and rigidity to adequately span a maximum supporting post separation of six (6) feet.

Night work will not be allowed on this project unless otherwise approved by the Engineer.

Due to the close proximity to the residential areas, the Contractor shall use adequate dust control measurements.

**Subsection 104.2.3 - Changes:**

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

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

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

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

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

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

**Subsection 104.2.4 - Cost Estimates or Price Proposals:**

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

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

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

**Subsection 104.2.6 - Value Engineering:**

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

(B) **Definitions.**

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

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

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

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

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

- (1) A description of the difference between the existing contract requirement and that proposed, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, and the effects of the change on the end item's performance. All design changes must be submitted on 24"x 36" standard drawing sheets along with supporting calculations. Each drawing sheet and at least the content sheet of the calculations shall be sealed by an Engineer registered in the State of Arizona.
- (2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revision.
- (3) A separate, detailed cost estimate for the affected portions of the existing contract requirements and the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amount attributable to subcontracts under paragraph (g) below.
- (4) A description and estimate of costs the Owner may incur implementing the VECP, such as test and evaluation and operating and support costs. This is an estimate based only on the Contractor's understanding of additional efforts to be expended by the Owner, should the VECP be accepted. The final cost will be determined by the Owner.
- (5) A prediction of any effects the proposed change would have on collateral costs to the agency, i.e., costs of operation or maintenance.
- (6) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.
- (7) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved and previous Owner actions, if known.

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

(E) **Owner Action.**

- (1) The Owner shall notify the Contractor of the status of the VECP within 15 calendar days after receipt from the Contractor. If additional time is required, the Owner shall notify the Contractor within the 15-day period and provide the reason for the delay and the expected date of the decision. The Owner will process VECPs expeditiously; however, it shall not be liable for any delay in acting upon a VECP.

If the VECP is not accepted, the Owner shall notify the Contractor in writing, explaining the reasons for rejection.

The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Owner.

- (4) Any VECP may be accepted, in whole or in part, by the Owner's award of a change order to this contract, citing this subsection. The Owner may accept the VECP, even though an agreement on price reduction has not been reached, by issuing the Contractor a notice to proceed with the change. Until a notice to proceed is issued or a change order incorporates a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The Owner's decision to accept or reject all or any part of any VECP shall be final and not subject to disputes or otherwise subject to litigation.

(F) **Cost Sharing.**

**Rates.** The Owner's share of savings is determined by subtracting the Owner's costs from instant contract savings and multiplying the result by 50 percent. The Contractor's share shall be the remaining 50 percent.

- (2) **Payment.** Payment of any share due the Contractor for use of a VECP on this contract shall be authorized by a change order to this contract to accept the VECP, reduce the contract price or estimated cost by the amount of instant contract savings, and provide the Contractor's share of savings by adding the amount calculated to the contract price.

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

**Subsection 105.1 - Authority of the Engineer:**

Add the following:

**105.1.1 - Engineer's Evaluation:**

Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to subsections 105.2.1, 105.3.1 and 106.4, but such time shall not exceed 20 calendar days. Engineer will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. Engineer will record time required by Engineer and Engineer's Consultants in evaluating substitutes proposed or submitted by Contractor pursuant to subparagraphs 105.3.1 and 106.4(B) and in making changes in the Contract Documents (or in the provisions of any other direct contract with Owner for work on the project) occasioned thereby. Whether or not Engineer accepts a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer and Engineer's Consultants for evaluating each such proposed substitute item.

**Subsection 105.2.1 – Plans and Shop Drawings:**

Add the following:

Shop drawings means drawings, submitted to the Engineer by the Contractor pursuant to the contract, showing in detail (i) the proposed fabrication and assembly of structural elements and (ii) the installation (i.e., form, fit and attachment details) of materials or equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract.

Product Data is information on manufactured items, either stock or modified, and includes descriptive literature, operating data, performance curves, certified dimensional drawings, wiring or schematic control diagrams, piping, instrumentation, parts lists, and operating, maintenance and lubrication manuals.

**Subsection 105.3 - Conformity with Plans and Specifications:**

Add the following:

**105.3.1 - Substitute Construction Methods or Procedures:**

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

**Subsection 105.5 - Cooperation of Contractor:**

Add the following:

**105.5.1 - Partnering**

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

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

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

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

**ITEM 105-1 - PARTNERING**

**Subsection 105.5.2 – Pre-Construction Meeting:**

After award of the contract and prior to the commencement of the work or mobilization, a pre-construction meeting

shall be scheduled at a location and time to be agreed upon between the Owner and the Contractor. The Contractor shall make all necessary arrangements to have essential personnel of his company and of his principal subcontractors present at the meeting. Each representative shall have authority to make commitments and act for his firm. The purpose of the pre-construction meeting is to discuss any specific concerns or potential problems that the Contractor is aware of, to provide general information appropriate to the contract, to identify responsible individuals for various functions within each organization, and to develop tentative dates for the start of construction. The Contractor shall submit to the Engineer during the pre-construction meeting the following documents:

- Mix design composition
- Manufacturer's certification for all materials
- Material data safety sheets
- Preliminary work schedule
- Preliminary traffic control plan
- Shop drawings
- Emergency telephone numbers
- Signing authority letter
- Name and telephone number of the certified safety professional

The pre-construction meeting will cover topics such as critical elements of the work schedule, payment application and processing of invoices. Additionally, a scheduled start date for the work will be determined.

The Contractor shall be responsible to take minutes of the pre-construction meeting and distribute copies to all meeting participants. The meeting minutes shall be distributed within 48 hours of the meeting. At the subsequent construction progress meeting, the minutes will be attested or revised, as appropriate. The cost for attendance at the pre-construction meeting, and preparation and distribution of meeting minutes shall be incidental to the project and no extra payment will be made.

**Subsection 105.5.3 - Construction Progress Meetings:**

Construction progress meetings shall be scheduled weekly, or as considered necessary by the Owner. The Contractor shall make all arrangements to have essential personnel of his company and of his principal subcontractors present at all progress meetings; representatives shall have authority to make commitments and act for their firms. The Contractor shall assume full responsibility to act for and commit any subcontractor employed by the Contractor, whether or not such subcontractor is represented at the meeting.

During the construction progress meeting, the Owner's representative will act as chairman and will advise the Contractor of any administrative matters connected with the contract. The Contractor shall submit for review his two-week rolling schedule. The Contractor's representative at these meetings shall be prepared to discuss and resolve construction problems and concerns, material delivery and vendor data submittals status, construction progress as measured against the Contractor's approved construction schedule and the Contractor's short range construction activities as provided on his two-week rolling schedule. The Contractor shall not be relieved of his responsibility to fulfill all of the terms of the contract as a result of any inferences drawn or suggestions made available at these meetings.

The Contractor shall be responsible to take minutes of the construction progress meetings and distribute copies to all meeting participants. The meeting minutes shall be distributed within 48 hours of the meeting. At the subsequent construction progress meeting, the minutes will be attested or revised, as appropriate. The cost for attendance at meetings, and preparation and distribution of meeting minutes shall be incidental to the project and no extra payment will be made.

**Subsection 105.6 - Cooperation with Utilities:**

Add the following:

An attempt has been made to determine the location of all underground utilities, drainage pipes, and structures; however, it shall be the Contractor's responsibility to cooperate with the pertinent utility companies so that any obstructing utility installation(s) may be adjusted. The location of the underground and overhead utilities as shown

on the plans is based on the best available information. The Contractor shall not assume that this represents an exact location of the line. No guarantee is made to the accuracy of the location shown on the plans. The Contractor shall determine for himself the exact location of all utilities. Should Contractor's operations result in damage to any utility the location of which has been brought to its attention, he shall assume full responsibility for such damage. There also exists the strong likelihood that other abandoned older and undocumented underground utility and irrigation lines exist within the project area. Contractor shall contact Arizona Blue Stake (telephone number 602-263-1100) a minimum of two (2) working days before beginning any underground work. In addition, Blue Stake notification(s) shall be maintained on a current basis.

The Contractor shall be required to abide by the requirements of the United States of America, Department of Energy, Western Area Power Administration (WAPA) as stated in the License Agreement attached at the end of these specifications.

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

<u>Name of Utility Company</u>	<u>Contact Person</u>	<u>Phone #</u>
Salt River Project (Electric)	Jim Frescholtz	602-236-0840
Southwest Gas	Robert Sprague	602-484-5343
U.S. West Communications (US West)	John Aker	602-630-0496
Salt River Project – Water	Robert Maurer	602-236-2962
City of Mesa – Water/Sewer/Gas	Burt Williams	480-644-2784
Cox Communications	Scott Gusso	623-322-7210
Western Area Power Administration (WAPA)	Roy Watson	602-352-2554
Central Arizona Project (CAP)	Abe Sahli	623-869-2126

**Subsection 105.8 - Construction Stakes, Lines, and Grades:**

Add the following:

- A. The Engineer will furnish a Benchmark which the Contractor will use to set line and grade for all construction. All other surveying required for the project shall be the Contractor's responsibility. The Engineer will not set any construction stakes.
- B. Before any construction work is started, the Engineer shall perform all base surveys and cross sections of existing conditions that may be required as a basis for quantity determination.
- C. The Contractor shall submit original construction surveyor's notes duly signed by a Registered Land Surveyor to the Engineer at the end of the project. Copies of the survey notes shall be submitted to the Engineer at the first weekly meeting after being generated.
- D. As-built plans sealed by an Engineer registered in the State of Arizona shall be provided by the Contractor to the Owner prior to project close out.

**Subsection 106.1 - Source of Materials and Quality:**

Add the following:

Select Material, Aggregate Base, Mineral Aggregate, concrete, steel products and pipe shall be obtained from commercial sources. Contractor shall pay all royalties or any other charges or expenses, incurred in connection with

the securing and hauling of the material. Contractor will be required to furnish Engineer with a list of its proposed commercial sources prior to use, and shall present certificates stating that the material produced from any commercial sources is in accordance with the Uniform Standard Specifications and these Supplementary General Conditions.

**Subsection 106.4 - Trade Names and Substitutions:**

Replace with the following:

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

- (A) "Or-Equal": If in the Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.
- (B) Substitute Items: If in Engineer's sole discretion an item does not qualify as an "or-equal" item under subparagraph 106.4 (A), it will be considered a proposed substitute item. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by Engineer will include the following and may be supplemented in the Special Provisions. The Engineer may decide what is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall first make written application to Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice Contractor's achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for work on the project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other Contractors affected by the resulting change, all of which will be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish additional data about the proposed substitute.

If the final placement of a product will remain the property of the municipality or utility and/or owned by the municipality or utility, that entity is responsible for issuing written approval for any equivalent or "or-equal" products. The Contractor or Supplier will submit to that entity the request and documentation for written approval of a product substitution. The Contractor will provide the entity's written approval to the Engineer at the "Pre-Construction" Meeting.

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

**Subsection 106.5 - Contractors Marshaling Yards:**

Add the following:

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

The Contractor shall grade all construction yards, easements and limits of construction which are disturbed by construction or construction related activities to the lines and grades shown on the plans; or as a minimum, where no line or grade is shown, to a condition similar to or better than the pre-existing condition.

The Contractor may use the vacant area shown as "future parking lot" as a marshaling yard. The Contractor shall obtain prior approval from the District before using this area, and shall be responsible for stabilizing the disturbed area per Section 230 of the Special Provisions at no additional cost to the District or the City of Mesa.

**Subsection 107.2 - Permits:**

Replace with the following:

Contractor shall obtain all permits and licenses, including but not limited to those required by **City of Mesa and Salt River Project (SRP)**; pay all charges, fees, taxes, and provide all notices necessary and incidental to the due and lawful prosecution of the work. Permits for earth moving may be obtained from Air Pollution Control, Maricopa County Department of Environmental Management, 2406 South 24<sup>th</sup> Street, Suite E-214, Phoenix, Arizona 85034, telephone number (602) 506-6700. The cost for the earth moving dust control permit is \$80 plus \$8 per acre. The above permit costs are subject to change. It is the responsibility of the Contractor to verify these costs.

The Contractor shall be required to abide by the requirements of the United States of America, Department of Energy, Western Area Power Administration (WAPA) as stated in the License Agreement attached at the end of these specifications.

**Subsection 107.2.1 - NPDES Permit Requirements:**

Add the following:

- A. This project is subject to the National Pollutant Discharge Elimination System (NPDES) Storm water requirements for construction sites under the Environmental Protection Agency (EPA) General Permit for Arizona. Under provisions of that permit, the Contractor shall be designated as permittee, and shall take all necessary measures to assure compliance with the NPDES General Permit for Arizona as well as all other applicable Federal, State and local laws, ordinances, statutes, rules and regulations pertaining to Storm water discharge. As the permittee, the Contractor is responsible for preparing, in a manner acceptable to the EPA, all documents required by this regulation, including but not necessarily limited to:
  - 1. Storm water Pollution Prevention Plan (SWPPP) for the project, including certification of compliance form. Contractor shall be required to develop, implement, update and revise the SWPPP, as necessary, in order to assure compliance with the EPA permit requirements. The SWPPP shall be retained on the project site at all times during construction.
  - 2. Notice of Intent (NOI) to assure compliance with the NPDES General Permit for Arizona, including certification of signatures.
  - 3. Notice of Termination (NOT) of coverage under NPDES General Permit for Arizona.
- B. Preliminary copies of the NOI and the SWPPP shall be submitted to Owner during the pre-construction meeting and shall be subject to review by Owner prior to implementation.

- C. Contractor shall submit the completed and duly signed NOI forms no later than forty-eight (48) hours prior to the initial start of construction on the project to the following agencies:

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

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

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

City of Mesa  
20 E. Main Street, Suite 500  
P. O. Box 1466  
Mesa, AZ 85211-1466

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

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

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

- F. Upon project completion, acceptance and demobilization, Contractor shall submit its completed, duly executed NOT form to the EPA, with a copy to the Arizona Department of Environmental Quality (and the appropriate municipality), at the address listed in Section (B) above, thereby terminating all NPDES permit coverage for the project. Contractor shall then surrender to Owner copies of the SWPPP, inspection information and all other documents prepared and maintained by the Contractor in compliance of the NPDES General Permit. Contractor shall retain the originals of such documents for a period of three (3) years following the completion of the project.
- G. The Lump Sum price for the SWPPP shall include all material, labor, and all other costs relating to the preparation, installation and maintenance of the SWPPP during project construction, including assuring proper operation of the pollution control devices installed, and all maintenance, cleaning, and disposal costs associated with clean-up and repair following storm events, runoff or releases on the project. The Lump Sum price for the SWPPP shall be inclusive of all costs, and no additional claims shall be made by Contractor under any other specification provision of these documents, including Changed Conditions. Payment for this bid item shall be upon completion and acceptance of the project, as per Section 109.1.

H. Copies of all required forms and guidance for preparing the SWPPP are available in the "Drainage Design Manual for Maricopa County, Volume III Erosion Control." The manual is available at the Flood Control District, 2801 West Durango Street, Phoenix, Arizona 85009.

Payment for NPDES/SWPPP permit requirements shall be made on the basis of lump sum for all work described in Subsection 107.2 .1 for:

**ITEM 107-1 NPDES/SWPPP PERMITS**

**Subsection 107.4 - Archeological Reports:**

Add the following:

Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the Contractor, or any person working on his behalf, shall be immediately reported to the Engineer. The Contractor shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Engineer. An evaluation of the discovery will be made by authorized personnel and the Engineer to determine appropriate actions to prevent the loss of significant cultural or scientific resources.

**Subsection 107.5:**

Add the following:

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

**Subsection 107.5.2 - Compliance with the Arizona Communication Standard:**

Add the following:

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

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

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

**Subsection 107.5.4.1 Contractor's Status During any Hazard Remediation:**

If remediation of any discovered Regulated Substance, contamination or asbestos is necessary, the Owner will address the problem, and if this interferes with the project's critical path, then the CPM and project schedule will be reviewed and revised as mutually acceptable by the Engineer and Contractor to minimize the impact to the **total project schedule**. An extension in contract time for any delay to Contractor then resulting may be granted by Owner in accordance with Subsection 108.7.

If any Regulated Substance, asbestos, or other type of contamination is encountered that results in a changed condition, then a change order may be issued in accordance with the contract.

If the delay impacts the CPM in such a manner that Contractor is prevented from continuing work on any portion of the project, and Owner issues a suspension of work order, then Contractor shall be entitled to compensation in the form of a **one-time payment** of Demobilization and Remobilization costs, which shall be no more than 6 percent of the original bid item for mobilization.

*ask  
Fred?  
do we  
need this?*

**Subsection 107.6.3 Public Information and Notification:**

Add the following:

The Contractor shall employ a specialty public information service as a subcontractor to provide the community relations program for the project as described herein. The name and address of the public information subcontractor shall be submitted with the bid as specified in subsection 102.6 of the Supplementary General Conditions. Contractor shall work closely with his subcontractor in developing and carrying out the community relations program, but shall not expect to actually perform the work of providing the public information services. Contractor shall submit a history of the subcontractor's qualifications and experience in public information services at the pre-construction conference for acceptance by the Engineer. The community relations program shall be designed to run the full length of calendar days in the contract for this project. The program will include but not be limited to:

Printing and distributing a pre-construction information letters, public notices and news letters to all residents, business, schools, farm operations, etc. within an area bounded by **Crismon Road on the west, Broadway Road on the North, Signal Butte Road on the east and US 60 (Superstition Freeway) on the south**, Printing and distribution of public notices and/or newsletters.

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

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

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

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

The Contractor shall submit a Public Information and Notification Plan to the Engineer at the pre-construction meeting. No payments shall be made for this item until the Engineer approves the plan.

The plan and work which is eligible for reimbursement shall include: meetings with impacted businesses, schools, emergency services, residents, etc.; scheduling; preparation and distribution of newsletter at least BI-weekly; and maintaining a 24-hour telephone hot line for complaints.

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

Any items not listed here and listed in Section 401, Subsection 104.4 or any other Section or Subsection of this Special Provision that requires the Contractor to inform the public will be responsibility of the General Contractor. It will be up to the General Contractor to delegate that authority to the Public information SubConsultant. The cost

of such item will not be paid from this allowance. However, this cost will be incidental to the bid item cost for constructing such item.

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

**ITEM 107-2 - PUBLIC INFORMATION AND NOTIFICATION ALLOWANCE**

**Subsection 107.6.4 - Project Signs:**

Contractor shall provide and install six (6) project information signs as directed by the Engineer, at the pre-construction meeting, before beginning construction. The signs will inform the public of the forthcoming project, construction dates, and suggested alternate travel routes. Project signs shall include the names of all agencies participating in the project. Signs shall be constructed in accordance with the Project Sign Information drawing to be provided to the Contractor at the pre-construction meeting. The signs shall be installed at the location(s) approved by the Engineer. The Contractor shall maintain the signs as necessary, and update the information as requested by the Engineer. Payment shall be made according to the allowance in the Bidding Schedule in installments of 50% upon installation, and the remaining 50% upon final payment for the work.

**ITEM 107-3 PROJECT SIGNS ALLOWANCE**

**Subsection 107.8 - Use of Explosives:**

Add the following:

Because of the proximity to the residential areas, schools and the CAP Canal, the use of explosives will NOT be permitted for any construction activities on the project.

**Subsection 107.9 - Protection and Restoration of Property:**

Add the following:

The Contractor shall protect-in-place all existing structures and other features as identified on the plans. This includes but is not limited to landscaping on the private front yards and back yards, mail boxes, traffic signs, curbs and sidewalks, driveways, existing utilities shown as protect in place, fences, gates, irrigation box structures, and other items shown as protect in place on the construction plans.

The Contractor shall limit all construction activities to the areas shown in the plans and shall not disturb any areas other than as required for construction as shown on the plans.

The Contractor will grade all Temporary Construction and Permanent Easement areas, and project areas which are disturbed during construction to the lines and grades shown on the plans, or as a minimum, where no lines and grades are shown, to a condition similar to or better than the pre-existing condition.

**Subsection 107.10 - Contractor's Responsibility for Work:**

Add the following:

The Contractor shall not remove any vegetation, plants and/or trees outside the rights-of-way.

The Contractor shall protect-in-place the existing block wall along the west and east sides of the property boundary. Any damage to the block wall or foundation of the block wall shall be repaired "in-kind" and/or to the satisfaction of the owner.

The Contractor shall take all necessary action to protect the public from the construction work area.

The Contractor shall take all necessary action to ensure that all construction materials are stored in such a manner that storm runoff from the storage area does not divert the flows or block the historical runoff patterns.

All of the existing chain link fence not shown as removal and replacement shall be protected in place. Any damage to the chain link fence shall be repaired by the Contractor at no cost to the District.

**Subsection 108.1 - Notice to Proceed:**

Delete Paragraph (A) and replace with the following:

- (A) Contractor shall commence work within seven (7) calendar days after the date of the Notice to Proceed and complete all work within **one hundred and fifty (150)** calendar days beginning the day following the effective date specified in the Notice to Proceed.

**Subsection 108.2 - Subletting of Contract:**

Add the following:

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

**Subsection 108.4 - Contractor's Construction Schedule:**

Delete in its entirety and replace with the following:

Contractor shall submit a proposed work schedule to Engineer at the pre-construction meeting for review before starting work using the Primavera or other similar software program that is acceptable to the Engineer. Weekly updates shall be submitted to Engineer at the weekly coordination meeting.

Contractor shall be solely responsible for the planning, scheduling and execution of the work to assure timely completion of the project.

**Subsection 108.4.1 - Contractor's Billing Schedule:**

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

**Subsection 108.5 - Limitation of Operations:**

Add the following:

The normal work-week shall be 40 hours, Monday through Friday, and the work hours will be determined at the pre-construction meeting. This does not imply that this contract can be completed on time utilizing normal working hours. The Contractor shall furnish sufficient forces and shall work such hours including night shifts and overtime operations as necessary to ensure the completion of the work within the time required. To work other than normal working hours, for other than emergency situations, the Contractor shall give the Engineer at least 24 hours advance notification and receive written approval before working. Should the Contractor elect to perform any work after regular working hours, on weekends, or legal holidays, any charges incurred by the Owner for inspection of the work, surveys or tests of materials will be deducted from monies due or to become due to the Contractor.

**Subsection 108.9 - Failure to Complete on Time:**

Add the following:

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

**Subsection 109.2 – Scope of Payment:**

Add the following:

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

The "complete-in-place" rate shall include but not necessarily be limited to all labor, material and equipment costs for preparation, installation, construction, modification, alteration or adjustment of the items, which shall include all costs for salaries and wages, all payroll additives to cover employee benefits, allowances for vacation and sick leave, company portion of employee insurance, social and retirement benefits, all payroll taxes, contributions and benefits imposed by any applicable law or regulation and any other direct or indirect payroll-related costs. The rate shall also include but not necessarily be limited to all costs for indirect charges or overhead, mileage, travel time, subsistence, materials, freight charges for material to Contractor's facility or project site, equipment rental, consumables, tools, insurance to the levels specified in Section 103.6, CONTRACTOR'S INSURANCE, all applicable taxes, as well as Contractor's fee and profit. This rate shall further include all site clean-up costs and hauling of construction debris to disposal sites designated by the Engineer.

Payment will be made for only those items listed in the proposal and will not be made in accordance with the measurement and payment provisions of the MAG Standard Specifications where this differs from the items listed in the proposal. All materials and work necessary for completion of this project are included in proposal items. Any work or materials not specifically referred to in these items are considered incidental to the item and are included in the unit price. **Payment shall not be made for unused materials.**

It is the responsibility of the bidders to contact all municipalities in the area to determine if they will charge Contractor sales taxes or any other fees for work on this project. Any such taxes or fees shall be paid by Contractor.

**Subsection 109.7 - Payment for Bond Issue and Budget Projects:**

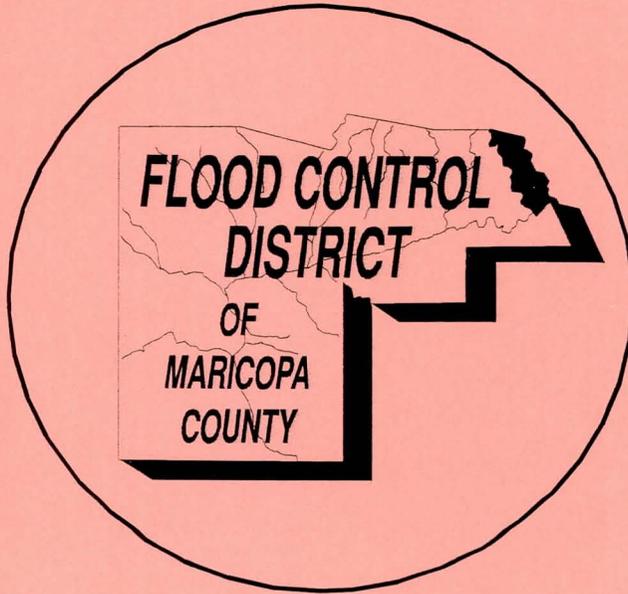
(A) To third paragraph, add:

Payment or release of retained funds shall be made to the Contractor within thirty (30) days following final payment to the Contractor [reference (B) following], and Contractor furnishing to Engineer satisfactory receipts for all labor and material billed and waivers of liens from any and all persons and Subcontractors holding claims against the work. Additionally, Contractor shall furnish a completed Certificate of Performance to Engineer evidencing it has satisfactorily discharged all its duties in connection with the work to be performed under this Contract. The form of Certificate of Performance shall be provided to Contractor by the Engineer.

(B) Add the following:

The final payment will be made to Contractor by Owner within thirty (30) days following receipt of Engineer's final estimate and receipt by Owner of Consent of Contractor's Surety to said final payment. If payment will be longer than thirty (30) days as aforesaid, Owner will provide Contractor specific written findings for reasons justifying the delay in payment.

The Contractor's monthly pay estimates will be initially processed by the Engineer during the last week of the month covered.



## **SPECIAL PROVISIONS**

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY**

**CONTRACT 1999C055**

**PARKWOOD RANCH DETENTION BASIN  
(C.A.P. Detention Basin #5)**

**PCN 442-03-30**

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
 CONTRACT 1999C055  
 PARKWOOD RANCH DETENTION BASIN  
 (C.A.P. Detention Basin #5)  
 SPECIAL PROVISIONS**

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# FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

## CONTRACT 1999C055

### PARKWOOD RANCH DETENTION BASIN (C.A.P. Detention Basin #5)

PCN 442-03-30

#### SPECIAL PROVISIONS

##### SECTION 201 CLEARING AND GRUBBING

Clearing and Grubbing shall conform to Section 201 of the MAG Uniform Standard Specifications except as modified herein:

##### **201.1 Description:**

Add the following:

This work shall consist of removing objectionable material from the right-of-way, easements and such other areas as may be specified in the special provisions. Clearing and grubbing shall be performed in advance of grading operations. The contractor shall protect in place all perimeter masonry walls, footers, and chain link fences during clearing and grubbing operations unless identified in the plans to be removed. Removal of trees, tree roots, stumps, vegetation, rubbish, debris, tires, and other concrete debris is also included in this section.

##### **201.5 Payment:**

Add the following:

Objectionable material collected as part of this operation shall be disposed of at an approved landfill site and shall be subject to landfill fees so assessed, which will be included in the lump sum price bid for this item. Weigh tickets from all landfill disposal must be furnished to the Engineer.

Payment for clearing and grubbing shall be at the lump sum price bid, and shall be full compensation for furnishing all labor, equipment, disposing of refuse and all other items that are incidental or appurtenant thereto.

##### **ITEM 201 - CLEARING AND GRUBBING**

##### SECTION 202 MOBILIZATION

Add this section to the MAG Uniform Standard Specifications:

##### **202.1 Description:**

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

This section shall also include stabilization of all soils which are disturbed by the Contractor during construction. Soil stabilization shall be per Section 230, Dust Palliative, of these specifications

##### **Field Office**

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

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

The field office shall be an approved and weatherproof building or mobile trailer providing a minimum of 500 square feet of clear floor space, not including the toilet area. The structure shall have a minimum ceiling height of 7 feet and shall be provided with weatherproof doors equipped with locking devices. Windows shall also be provided with adequate locking devices. The Contractor shall also provide the following:

**Lighting** - Electric light, non-glare type luminaries to provide minimum illumination level at desk height level.

**Heating & Cooling** - Adequate electrically powered equipment to maintain an ambient air temperature of 72 degrees Fahrenheit plus or minus 8 degrees.

**Telephone Line and Fax/Computer Line** - Two outside telephone lines with telephones for the exclusive use of the Engineer. The Contractor will pay for the cost of the line and local calling charges. Long distance charges made on this line will be paid for by the District.

**Toilet** - a commode and wash sink in a separately enclosed room within the building or mobile trailer, properly ventilated and complying with applicable sanitary codes. The Contractor shall provide water service.

**Maintenance** - The Contractor shall maintain all facilities and furnished equipment in good working condition.

**Fire Extinguisher** - Two non-toxic, dry chemical, fire extinguishers meeting Underwriters Laboratories, Incorporated approval for Class A, Class B, and Class C fires with a minimum ratings of 2A: 20B: 10C.

**Electricity** - The Contractor shall provide electric power and pay for all electric services.

**Furnishings** - Two office desks with drawers, two office chairs (padded, swivel type), one drafting table (adjustable height 3 feet by 6 feet, one conference table, eight folding chairs, and one draftsman's stool.

**Fax, Printer, Copier** - The Contractor shall provide a 3 in 1 fax, printer and copier for the exclusive use of the Engineer.

**First Aid Kit.**

**Potable water supply or service.**

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

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

#### **202.2 Payment:**

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

#### **ITEM 202 - MOBILIZATION**

#### **SECTION 206 STRUCTURE EXCAVATION AND BACKFILL**

Structure excavation and backfill shall conform to Section 206 of the MAG Uniform Standard Specifications except as modified herein:

#### **206.2 Foundation Material Treatment:**

Add the following:

Foundation bearing surfaces shall be free of debris and water softened materials prior to placing concrete and reinforcing steel. Any loose or disturbed zones shall be removed and replaced with compacted fill or lean concrete.

**206.4 Structural Backfill:**

Add the following:

Compaction of structure backfill soils against embedded footings, walls, and headwall structures shall be accomplished to a minimum 95 percent of the maximum ASTM D698 density.

Compaction against wing walls, or channel lining within 3 feet of the walls or lining shall be accomplished using non-wheeled, hand operated compaction equipment only.

Backfill behind subsurface walls designed to support utilities, pavement, channels, or other facilities should be compacted to density criteria from Section 211. Backfills shall consist of free draining granular soils which exhibit low expansive potentials. The material shall be free of vegetation, debris, organic contaminants, and fragments larger than 6 inches in size.

Compaction operations shall be accomplished by mechanical methods. Water settling or jetting shall not be permitted.

On-site soils with P.I.'s not greater than 12 may be used in structure fills or backfills. Imported soil used for fills under pavements, or channels, backfills around structures should be granular soils conforming to the following requirements:

Sieve Size	Percent Passing
3"	100
3/4"	60-80
#8	35-80
#200	0-12

(Arizona Test Method 201)

**206.5 Payment:**

Add the following:

No payment will be made for structure excavation and backfill as such; the cost thereof shall be included in the bid price for the construction or installation of the items to which such excavation and backfill are incidental or appurtenant.

**SECTION 211 FILL CONSTRUCTION**

Fill Construction shall conform to Section 211 of the MAG Uniform Standard Specifications except as modified herein:

**211.1 Description:**

Add the following:

Fill construction shall consist of constructing embankments except as may otherwise be specified, including the preparation of the areas upon which they are to be placed; the construction of berms; the placing and compacting of approved material within areas where unsuitable material has been removed; and the placing and compacting of material in holes, pits, and other depressions.

**211.6 Payment:**

Add the following:

No separate payment will be made for fill construction. Material placed in fill construction will be paid for under ITEM 215-Detention Basin Excavation, as appropriate.

**SECTION 215 EARTHWORK FOR OPEN CHANNELS**

Earthwork for open channels shall conform to Section 215 of the MAG Uniform Standard Specifications except as modified herein:

**215.1 Description:**

Add the following:

Open channels for the purpose of this section shall mean lined or unlined trapezoidal channels, and detention basins. The work in this section includes stripping, excavation, overexcavation, fill, backfill, berm construction, grading and disposal of excavated and removed material. Any remaining excavated material shall become property of the Contractor and shall be removed from the site.

**215.2 Stripping:**

Add the following:

The excavation areas shall be stripped of all existing fill zones, backfill zones, unstable soils and loose wash bed deposits. During stripping observe the surface for evidence of buried debris, vegetation or disturbed materials which will require additional removal. If encountered, these materials should be removed at no cost to the District.

The ground surface in fill areas shall be prepared by scarifying, moisture conditioning, and compacting the exposed surface soils to a depth of 12 inches.

**215.4 Fill and Backfill:**

Add the following:

Unless otherwise specified in the special provisions, material obtained from the project excavations may be presumed to be suitable for use as fill or backfill provided that all organic material, rubbish, debris, and other objectionable material is first removed. *Stone, broken portland cement concrete and bituminous type pavement obtained from the project excavations shall not be permitted in the backfill or fill.*

Add the following:

Subgrade, fill, backfill, subbase fill or base material shall be compacted to the following minimum percent compaction of the ASTM D698 maximum dry density in each lift:

<u>Material Minimum Percent Compaction</u>	
Soil: Berm Fill	95
Backfill:*	90

\* - Outside of berm areas.

The moisture content of on-site or imported soil materials at the time of compaction shall be optimum plus or minus 3%

The fill material for the open channels shall be compacted in horizontal lifts not to exceed 8 inches in depth and to a minimum density of 95% of the maximum density as determined in accordance with ASTM D-698 within a moisture content range of plus or minus 2% of optimum.

**215.7 Measurement:**

Add the following:

Measurement for earthwork for open channels and detention basins will be made according to the quantity of material excavated from natural ground to the finished grades shown on the plans. No measurement will be made for fill construction, imported material, or disposal of excess material. The Engineer will verify the quantities of excavation by a method which in his/her opinion is best suited to obtain an accurate determination.

**215.8 Payment:**

Add the following:

Earthwork for open channels and detention basins will be paid for at the contract unit price per cubic yard of excavation as stipulated in the proposal. Earth V-ditch construction will be paid at the unit price bid per lineal foot. Such price shall include clearing, stripping, excavation, overexcavation, fill, backfill, compaction, grading, hauling, removal and disposal of excess excavated material and debris.

**ITEM 215-1 - DETENTION BASIN EXCAVATION**

**ITEM 215-2 - TRAPEZOIDAL EARTH CHANNEL EXCAVATION**

**SECTION 220 RIPRAP CONSTRUCTION**

Riprap construction shall conform to Section 220 of the MAG Uniform Standard Specifications except as modified herein:

**220.1 Description:**

Add the following:

The construction of riprap shall consist of furnishing and placing stone at the base of the downdrain spillway structure as shown on the plans and specified in the special provisions.

The construction of grouted rock shall consist of furnishing and placing bedding, grouted rock, filter fabric and drains as shown on the plans and specified in the special provisions.

**220.2 Materials:**

Add the following:

Materials furnished for riprap shall conform to the requirements of Section 703, *except that waste concrete and sacked concrete shall not be used.*

Add the following:

**220.2.1 Fabric:** Riprap and grouted rock construction shall include furnishing and installing a woven or non-woven high survivability filter fabric meeting the following requirements

Nonwoven:

Property	Requirement	Test Method
Grab Tensile Strength, N	890	ASTM D 4632
Grab Elongation at Break, %	45 minimum 115 maximum	ASTM D 4632
Puncture Strength, N	360	ASTM D 4833
Burst Strength, M Pa	2.20	ASTM D 3786
Trapezoidal Tear, N	220	ASTM D 4533
Permittivity, second <sup>-1</sup>	0.07	ARIZ 730
Apparent Opening Size, Sieve Size, $\mu$ m	106 - 600	ASTM D 4751
Ultraviolet Stability %	70	ASTM D 4355

Woven:

Woven fabric shall meet the physical requirements listed above for nonwoven fabric except that the grab elongation at break, percent, shall be 13 minimum, 115 maximum.

**220.2.2 Construction Requirements:**

The identification, packaging, handling, and storage of the geotextile fabric shall be in accordance with ASTM D 4873. Fabric rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Each roll shall be labeled or tagged to provide product identification sufficient to determine the product type, manufacturer, quantity, lot number, roll number, date of manufacture, shipping date, and the project number and name to which it is assigned. Rolls will be stored on the site or at another identified storage location in a manner which protects them from the elements. If stored outdoors, they shall be elevated and protected with a waterproof, light colored, opaque cover. At no time shall the fabric be exposed to sunlight for a period exceeding 14 days.

When the fabric is required, it shall be placed in the manner and at the locations shown on the project plans. The surface to receive the fabric shall be free of obstructions, depressions, and debris. The fabric shall be loosely laid and not placed in a stretched condition.

The strips shall be placed to provide a minimum 2 foot overlap for each joint. On horizontal joints, the uphill strip shall overlap the downhill strip. On vertical joints, the upstream joint shall overlap the downstream strip.

**220.2.2.1 Grouted Rock:**

Rock- Rock for grouted rock shall conform to MAG Section 701.4 "Quarry Stone". The minimum size of the rock in any dimension shall be greater than the nominal grout thickness. Rock size shall be as follows:

<u>Dmin</u>	<u>D50</u>	<u>Dmax</u>
10"	12"	14"

(Test Requirements - Section 701.4.2 of the MAG Specifications is modified to allow a minimum apparent specific gravity of 2.4 per ASTM C-127 for stone used as riprap.)

Wash the rock free of fines or soil which would affect the grout bond.

Grout- Concrete for the grout shall be an approved batch meeting the following requirements: All concrete shall develop 2,000 psi compressive strength within 28 days, the cement shall be Type V as specified in Section 725, the stone aggregate shall conform to the gradation requirements of Size Number 8 coarse aggregate (3/8 inch to No. 8) as specified in ASTM C-33. The quality of the sand and gravel shall be as specified in Section 701. The slump shall be within a range of 5 to 7-inches. A maximum of 30% of cement material may be fly Ash (ASTM C-618, Type C or F). Color shall be approved by the Engineer prior to placement.

The bed for the riprap shall be shaped and trimmed to provide even surfaces. Remove all soft, yielding material and replace with approved material as specified in MAG Section 215.3.

Excavate for placement of rock layer as indicated. Placement methods will minimize disturbance of the subgrade. Machine place rocks into position following details indicated. Starting at the lowest point, generally place rocks in stepped fashion with the bottom of the uphill rock below the top of the downhill rock by half the height of the rock minimum. Care shall be taken to remove all fines and smaller rock. Wash the stone free of fines or soil which would affect the grout bond. The concrete grout shall be placed by injection methods by pumping under low pressure, positive displacement methods, through a 2-inch maximum diameter hose to ensure complete penetration of the grout into the stone layer. The grout shall fully penetrate the entire depth of riprap. The finish surface shall have no more than 4" of stone protruding above the grout. The operator shall be able to stop the flow and will place grout in the voids and not on the surface stone. Clean and wash any spillage before the grout sets. The visual surfaces of the stone will be free of grout to provide a clean natural appearance. A "pencil" vibrator will be used to make sure all voids are filled between and under stones. The intent is to fill all voids from the subgrade level through the stone layer. In all cases, grout must penetrate to subgrade. The pencil vibrator may be used to smooth the appearance of the surface, but the Contractor shall use a wood float to smooth and grade the grout to drain. The grout mix shall be stiffened and other measures taken to retain the grout in steep locations.

The exposed surface of the completed grout layer shall be approximately 4 inches below the upper surface plane of rock stones as shown on drawings. Excess grout and grout splatter shall be removed from the exposed surfaces of the rock without causing damage to the grouted rock placement. After the grout has been placed, the portion of stone projecting above the ground surface shall be cleared by air-water blasting. Removal and cleanup of grout from the exposed surface of the rock shall be done to the satisfaction of the Engineer.

The Contractor shall submit mix design of the grout at least 20 days prior to the placement. The grout mix shall be stiffened and other measures taken to retain the grout in steep locations. The Contractor is recommended to layout a test section and have that reviewed and approved by the Engineer before proceeding to the additional work.

**220.7 Measurement:**

Add the following:

The exposed surface area of the grouted rock will be measured within the limits of dimensions shown on the plans and computed to the nearest square foot.

**220.8 Payment:**

Payment for riprap will be made for the number of cubic yards of riprap in place, on the basis of unit prices stipulated in the proposal and shall include preparation of ground surfaces, filter fabric, trenching, material, equipment, and labor. No separate payment will be made for filter fabric.

**ITEM 220-1 - PLAIN RIPRAP**

Payment for grouted rock will be made at the contract unit price bid per square foot of Grouted Rock, on the basis of unit prices stipulated in the proposal and shall include preparation of ground surfaces, filter fabric, trenching, material, equipment, and labor. No separate payment will be made for filter fabric or thickened edges at termination as detailed on the plans.

**ITEM 220-2 - GROUTED ROCK**

**SECTION 225 WATERING**

Water for compacting and dust control shall conform to Section 225 of the MAG Uniform Standard Specifications except as modified herein:

**225.1 Description:**

Add the following:

The work performed under this contract shall include applying all water required for the control of dust as considered necessary in the execution of the work, including excavation, and on roads used to haul material for the safety and convenience of the traveling public, for the reduction of the dust nuisance to adjacent property, and as may be directed by the Engineer.

The project site is located within a densely developed residential area. Therefore, pre-soaking prior to excavation and continuous dust control efforts during construction will be required for this project. The contractor will maintain adequate pre-soak conditions during excavation, and adequate dust control during loading and transport operations to minimize dust.

**225.2 Water Supply:**

Add the following:

The Contractor may obtain a fire hydrant meter from City of Mesa Public Works Services. All construction water may be obtained through the hydrant meter. Contractor shall pay all fees related to the hydrant meter and all water bills for construction water regardless of the water source.

The contractor shall furnish all connections, wrenches, valves and small tools that may be necessary to meet the requirements pertaining to the hydrant use.

**225.5 Payment:**

Add the following:

No separate payment will be made for watering as such; the cost thereof shall be included in the bid price for the construction or installation of the items to which such watering is incidental or appurtenant.

**SECTION 230 DUST PALLIATIVE APPLICATION**

**230.1 Description:**

This section shall govern the application of dust control palliatives (agents) on unpaved roads, traffic surfaces, vacant lots, construction sites and road shoulders. Dust palliatives may also be used to protect erosion of slopes, embankments, sediment control and re-vegetated areas, and for soil stabilization.

The Contractor shall use a dust palliative for soil stabilization in all areas where the native soil is disturbed by the Contractor, including but not limited to staging areas and unpaved paths used for vehicle travel. This applies specifically to the west side of the property labeled as "future parking lot" and the area immediately south of the future parking lot, as well as all other disturbed areas or as directed by the Engineer.

Dust palliatives may be applied as topical treatments to penetrate an undisturbed surface, or may be applied to larger areas using mixing methods that blend the product with surface material and then compact the mixture to provide a stabilized, dust resistant, surface course.

**230.2 Materials:**

Materials to be used as dust palliatives shall conform to the requirements of Section 792. The Contractor shall use an Acrylic Copolymer type dust palliative or approved alternative as directed by the Engineer.

Water used for diluting dust palliatives and for pre-wetting of treated subgrade shall be either potable or from a source compatible with dust palliative ingredients.

**230.3 Equipment:**

The Contractor shall provide all equipment necessary to complete the work. The equipment may include but not be limited to motorized graders, distribution trucks mixing and pulverizing equipment, pneumatic-tired rollers, sprinkler systems, etc. All equipment used for this work is subject to approval by the Engineer. Equipment that does not perform satisfactorily shall be removed from the job.

Distributor trucks shall be pressure type with a computer-controlled applicator. Spray bars and extensions on distribution trucks shall be of the full circulating type. The spray bar shall be adjustable to permit varying height above the surface to be treated.

**230.4 Preparation of Surface:**

All surface preparation shall be in conformance with Maricopa County Rule 310 and 310.01 as applicable.

**230.4.1 Topical Preparation:**

Prior to the application of the dust palliative, the surface shall be graded to provide drainage.

Unless otherwise stated in the manufacturer's technical data, all areas to receive the dust palliative shall be uniformly moistened. Moisture must be maintained on the surface until the time of the application. Dust palliatives shall not be applied when the surface is excessively wet or saturated.

**230.4.2 Surface Course Preparation:** Areas to receive dust palliative shall be graded and scarified to at least the minimum depth and width shown on the plans. The material shall be damp at time of scarification to reduce dust and aid in pulverization. Soil clods shall be pulverized until all material, exclusive of gravel or stone, will pass a 1½-inch [37.5mm] sieve.

All debris, weeds, organic material, stone larger than 4-inches [102-mm], etc. shall be removed from the site. Surface gravel or stones shall be removed or thoroughly mixed with the surrounding soils to obtain a homogeneous mixture.

If pre-wetting is required, ample amount of water shall be added and mixed with the in-place material to obtain a moisture content near optimum. This moisture content shall be established prior to and maintained until the application of the dust palliative. The methods to establish and maintain the moisture shall be done in accordance with manufacturer's recommendations. The moisture must be uniformly distributed throughout the surface course and over the underlying undisturbed soil. Dust palliatives shall not be applied when the soil is excessively wet or saturated. Moisture content shall be determined in accordance with either ASTM D 2922, D 3017 or D 4944.

**230.5 Application:**

**230.5.1 General:** The dust palliative shall be applied by a pressure type distribution truck. Corners or surface that cannot be accessed by the distributor truck shall be hand sprayed by means of hoses or bars pressurized by a gear pump or air tanks.

The dust palliative shall be applied at the dilution ratio and application rate specified in accordance with Section 792, unless otherwise directed by the Engineer. Products may be applied in multiple passes at reduced application rates to meet the total application rate specified and/or assure uniform coverage.

**230.5.2 Topical Application:** Topical applications shall be rolled only when recommended by the manufacturer. Complete penetration of palliative will be required prior to the surface rolling. Complete penetration occurs when the compaction equipment will not track or pick up the dust palliative and/or the top layer of the surface material.

**230.5.3 Surface Course Application:** Mixing shall be done in-place using mixing equipment or by motorized grader (blade mixing). The blending methods utilized shall result in a uniformly treated mixture of soil and dust palliative at or near optimum moisture content (minus any post-compaction dust palliative top coat application quantity). The dilution ratio may be adjusted to bring the mixture to the desired moisture content. The amount of area treated each day shall be limited to that which the Contractor can thoroughly mix and compact within that work day.

Complete penetration of palliative will be required prior to compaction. Complete penetration occurs when the compaction equipment will not track or pick up the blended material.

The blended material shall be shaped to the required grade line and cross section shown on the plans and be compacted at least 95% of maximum density in accordance with ASTM D 698, unless otherwise directed by the Engineer. The final surface shall be rolled to a smooth and even grade. Immediately after the compaction, a top coat of dust palliative shall be applied.

**230.6 Curing:**

No equipment or traffic will be permitted on the treated surface for 24 hours.

**230.7 Weather Conditions:**

Dust palliatives shall be applied only when the ambient temperature is above 40°F [5°C] and there is no possibility of rainfall during or within 24 hours after placement. Application during high wind should be avoided.

**230.8 Payment:**

No additional payment will be made for Dust Palliative as such; the cost thereof shall be included in the bid price for Item 202, Mobilization, or the construction or installation of other items to which such dust palliative is incidental or appurtenant.

**SECTION 301 SUBGRADE PREPARATION**

Subgrade preparation shall conform to Section 301 of the MAG Uniform Standard Specifications except as modified herein:

**301.1 Description:**

Add the following:

This section shall govern the preparation of natural, or excavated areas prior to the placement of sub-base material for maintenance roadways and invert access ramps. It shall include stripping and disposal of all unsuitable material including existing pavement and obstructions such as stumps, roots, rocks, etc., from the area to be covered with untreated base.

**301.8 Payment:**

Add the following:

Payment for subgrade preparation shall be included in the cost of ITEM 310 - Untreated Base in those areas where subgrade preparation is required prior to placement of untreated base.

**SECTION 310 UNTREATED BASE**

Placement of untreated base shall conform to Section 310 of the MAG Uniform Standard Specifications except as modified herein:

**310.1 Description:**

Add the following:

Aggregate base course, also referred to as ABC, shall be placed as shown on the plans and shall comply with

Subsection 702.2

**310.4 Payment:**

Payment for untreated base will be made on the basis of the price bid per square yard. Such payment shall include material, transportation, labor, equipment, placement, and compaction. No allowance will be made for spilling or waste beyond the limits of placement shown on the plans.

**ITEM 310-1 - 6" ABC MAINTENANCE ROAD**

**ITEM 310-2 - 6" ABC INVERT ACCESS RAMP**

**ITEM 310-3 - 3" DG W/ STABILIZER MAINTENANCE ROAD**

**SECTION 321 ASPHALT CONCRETE PAVEMENT**

Asphalt Concrete Pavement shall conform to Section 321 of the MAG Uniform Standard Specifications except as modified herein:

**321.9 Payment:**

Add the following:

Asphalt concrete pavement will be paid for at the at the contract unit price per square yard.

**ITEM 321 - ASPHALTIC CONCRETE TURNOUT**

**SECTION 336 PAVEMENT MATCHING AND SURFACING REPLACEMENT**

Pavement matching and surfacing replacement shall conform to Section 336 of the MAG Uniform Standard Specifications except as modified herein:

**336.1 Description:**

Add the following:

Street and alley pavement and surfacing within the rights-of-way, removed by construction activities or to be widened or matched in connection with the improvement of Public Works, shall be placed as shown on the plans and applicable standard details, in accordance with this specification and/or the special provisions.

Asphalt concrete pavement replacement shall be constructed in accordance with Type B of Mesa Standard Detail M-19.4, as indicated on the plans, and as required by Sections 321 and 710.

**336.2 Materials and Construction Methods:**

Add the following:

The Contractor shall be responsible for backfilling and replacing pavement in all street excavations per the City of Mesa Policy Statement for Street Trench Backfilling and Pavement Replacement, Revised September 29, 1999. Copies of this policy statement are available at the City of Mesa Public Works Service Desk, at no charge. Asphalt must be approved by the East Valley Asphalt Committee. A special permit is not required.

SPECIAL ATTENTION IS CALLED TO THE POLICY STATEMENT REQUIREMENTS FOR TRANSVERSE TRENCHES. BACKFILL IN ALL TRANSVERSE TRENCHES SHALL BE ABC SLURRY, WITH ONE SACK OF CEMENT PER CUBIC YARD OF MIX. ALL COSTS FOR FURNISHING AND INSTALLING THE SLURRY MIX SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE APPLICABLE ITEMS. NO ADDITIONAL COMPENSATION WILL BE MADE FOR THE SLURRY MIX.

IN ADDITION THE PAY WIDTH FOR PAVEMENT REPLACEMENT SHALL BE IN ACCORDANCE WITH THE PAY WIDTHS LISTED IN M.A.G. UNIFORM STANDARD SPECIFICATIONS SECTION 336.4 EXCLUDING ANY ADDITION FOR "T"-TOP PAVEMENT REPLACEMENT. IN COMPUTING PAY QUANTITIES BY THE SQUARE YARD, THE PRODUCT OF THE LENGTH OF PAVEMENT REPLACEMENT MEASURED ALONG THE CENTERLINE OF THE TRENCH AND THE PAY WIDTHS LISTED, EXCLUDING ANY ADDITION FOR "T"-TOP PAVEMENT REPLACEMENT, SHALL BE USED. NO DIRECT PAYMENT WILL BE MADE FOR SURFACE COURSE PAVEMENT REPLACEMENT OUTSIDE OF THE SPECIFIED PAY WIDTHS. THE CONTRACTOR SHALL INCLUDE THE COST FOR SURFACE COURSE PAVEMENT REPLACEMENT AND MILLING THAT IS BEYOND THE SPECIFIED PAY WIDTHS IN THE UNIT PRICE BID PER SQUARE YARD OF PAVEMENT REPLACEMENT.

The maximum length of open trench from the point of initial excavation to the point where finished grade of native and/or A.B.C. backfill has been installed shall not exceed 300 feet.

Where pavement replacement is called for, the maximum length of exposed A.B.C. backfill prior to the installation of base course asphalt concrete shall not exceed 300 feet. Surface course asphalt concrete shall not be installed sooner than two (2) weeks after base course, but no later than three (3) Weeks.

**336.5 Payment:**

Add the following:

Direct payment for pavement or surfacing replacement will be made at the contract price per square yard and includes all materials and subgrade preparation required for the pavement replacement.

**ITEM 336 - PAVEMENT REPLACEMENT (MESA STD DET M-19.4, TYPE B)**

**SECTION 340 CONC. CURB, GUTTER, SIDEWALK, DRIVEWAY AND ALLEY ENTRANCE**

Construction of concrete curb, gutter, sidewalk, driveway, and alley entrances shall conform to Section 340 of the MAG Uniform Standard Specifications except as modified herein:

**340.1 Description:**

Add the following:

This work shall consist of construction of curb, gutter, and sidewalk and driveway entrances according to the plans and these specifications. Concrete Sidewalk shall be 6 feet in width.

**340.6 Payment:**

Add the following:

Payment for the above named items will be made in accordance with the unit bid price for bid Item 340, Concrete Sidewalk. Such payment shall include full compensation for furnishing all labor, material, tools and equipment and accomplishing all work in conformance with the contract documents.

**ITEM 340 - CONCRETE SIDEWALK (MAG STD DET 230, MODIFIED)**

**SECTION 350 REMOVAL OF EXISTING IMPROVEMENTS**

Removal of existing improvements shall conform to Section 350 of the MAG Uniform Standard Specifications except as modified herein:

**350.1 Description:**

Add the following:

This work shall consist of removal and disposal of various existing improvements as called out on the plans, and shall include any other items necessary for the accomplishment of the improvements.

**350.3 Misc. Removal & Other Work:**

Add the following:

- (I) Remove existing Concrete Headwall
- (J) Remove existing Concrete Sidewalk
- (K) Remove existing AC Pavement
- (L) Remove existing Concrete Box Culvert
- (M) Remove existing Barrier
- (N) Remove existing 8" Storm Drain
- (O) Remove existing Concrete Header
- (P) Sawcut and Remove existing Concrete Channel Lining
- (Q) Remove existing Landscaping and Irrigation System

**350.4 Payment:**

Add the following:

Payment for removals will be made at the lump sum bid price. Such payment shall be full compensation for

furnishing all labor, equipment, and material required to complete all work described herein or on the plans.

## **ITEM 350 - REMOVALS**

### **SECTION 401 TRAFFIC CONTROL**

Traffic control shall conform to Section 401 of the MAG Uniform Standard Specifications except as modified herein:

#### **401.1 Description:**

Add the following:

This work shall consist of traffic control devices and flagmen or pilot cars in accordance with MAG Specification 401, Part VI of the manual on Uniform Traffic Control Devices (1998 Edition, including Revision 3 dated September 3, 1993.) The cost for any damage to traffic signal equipment (loop detectors, pull boxes, conduit, etc...) is the Contractor's responsibility. All repair work will be done by the Contractor at his own expense to the satisfaction of the City of Mesa Traffic Signal Group. Copy of standards may be obtained from City of Mesa Public Works Services.

#### **401.2 Traffic Control Devices:**

Add the following:

All signs, cones, and other traffic control devices and all equipment necessary for the control of traffic shall be furnished by the Contractor. The Contractor shall be responsible for maintaining the necessary traffic control devices until normal traffic flow is restored.

#### **401.5 General Traffic Regulations:**

Add the following:

During non-peak hours, one (1) traffic lane in each direction on Southern Avenue and the left turn lane at the Southern Avenue and Cheshire Street intersection shall remain open. Left turns may be prohibited as directed by the City Inspector.

During the peak hours of 6:30 a.m. to 8:30 a.m. and 4:00 p.m. to 6:00 p.m. the Contractor shall maintain all existing traffic lanes on Southern Avenue and Cheshire Street, including left turns at the intersection unless otherwise approved by the City inspector.

The Contractor shall submit a certification statement signed by the Contractor and the barricade subcontractor stating that they certify and warrant that the barricades will be erected and maintained in compliance with the barricade manual.

The Contractor shall employ a "designated" person who will be responsible for ensuring that all barricades, signs, barricade lights, signals, and other traffic control devices are established and maintained in strict compliance with the City of Mesa Traffic Barricade Manual and the contract requirements. The designated person shall:

1. Inspect all barricading and traffic control devices on a regular, recurring basis and submit a daily (including weekends and holidays) report, in writing, to the inspector of such inspections the next work day;
2. Ensure that existing City-owned traffic signals do not conflict with barricades and signs or give misleading signals to pedestrians and motorists. He/she shall immediately bring conflicting conditions to the attention of the inspector. The inspector will coordinate with the City's Traffic Signals Group for any required changes to traffic signal sequencing, timing, or outages;
3. Ensure that flagmen, when employed, are trained in accordance with the O.S.H.A. regulations (29 CFR 2926.201 Signaling); and,
4. Immediately respond to all call-outs by the inspector, the Stand-by inspector, or Base Operations; cooperate with Police or Fire Department Investigators; and, on his/her own responsibility, re-establish barricades and traffic control devices, as necessary.

The "designated" person required by this section may be the same as the "competent" person required for trench safety (O.S.H.A. Regulations- 29 CFR 1926.650(i)) provided such person is qualified in accordance with O.S.H.A. Regulation (29 CFR 1926.21(1)) for these duties.

The Contractor shall certify, by letter, that the designated person has read and will comply with the requirements of the City of Mesa Traffic Barricade Manual. The Safety Certification letter shall be provided to the City at the preconstruction conference. The Safety Certification should include the name of the "designated" person, the name of the "competent" person (if different from the designated person), telephone numbers where they can be reached 24-hours per day, and any restrictions or limitations on their duties and authorities.

#### Business Access Requirements

Access shall be maintained to adjacent businesses at all times during their hours of operation. Access may be maintained by such measures as constructing driveways in half sections, or by providing bridging over the new concrete. Properties having more than one point of access shall not have more than one access restricted for more than fourteen (14) calendar days at any given time. Access to adjacent driveways shall be provided during all non-working hours. Any business restrictions shall be coordinated with the affected business in writing at least seven (7) days prior to imposing restrictions.

#### Pedestrian Access Requirements

The contractor shall ensure that all sidewalks on this project remain open and safely useable at all times. Such measures as backfilling or ramping to existing sidewalks, or providing alternate sidewalk areas adjacent to existing sidewalks may be used. In high pedestrian use areas, the Engineer may request temporary hard-surface walkways, such as plywood sheets to be installed at no additional cost to the District.

#### Sanitation Pickup

The contractor shall provide sanitation pickup for affected residents by relocating trash containers, or by providing alternative measures acceptable to the Sanitation division of the City of Mesa.

#### Special Sign Requirements

The contractor shall provide, erect, and maintain informational and directional access signs that may be required by the Engineer. The cost shall be included in bid item 401, Traffic Control.

#### **401.5.1 Special Traffic Regulations:**

##### Prior to excavation, the Contractor shall:

1. Develop a haul route and obtain a no fee permit from the City of Mesa.
2. Obtain City of Mesa Street Transportation Department approval of haul route, truck volumes, and operating hours.
3. Obtain a City of Mesa grading permit for proposed spoil location, if applicable.
4. The City of Mesa permit does not release the Contractor from the requirements of MAG Subsection 108.5.

Costs incurred by the requirements of this section shall be included in the bid items listed in the Bid Schedule. No additional payment shall be made for barricades, other traffic control devices, salaries, or other work or materials required by this section.

#### **401.7 Payment:**

Add the following:

Payment for traffic control, including all mobilization, signage, materials, and maintenance shall be made on the basis of the lump sum price bid for bid item 401, Traffic Control.

#### **ITEM 401 -TRAFFIC CONTROL**

#### **SECTION 420 CHAIN LINK FENCES**

Chain link fence construction shall conform to ADOT Standard Detail C-12.20 and Section 902 of the ADOT Standard Specifications, except as modified herein:

#### **420.1 Description**

Add the following:

This work includes installing new chain link fence as replacement for fence removed on the north right-of-way line of the Superstition Freeway (US 60). The new fence shall match the existing fence in kind.

#### **420.5 Payment:**

Add the following:

The price bid paid per linear foot for chain link fence shall include full compensation for furnishing all labor, materials, tools, and equipment, and doing all the work involved in constructing the fence complete in place as specified on the plans, and in the special provisions, except for furnishing and installing gates.

Full compensation for clearing the line of the fence and disposing of the resulting material, excavating high points in the existing ground between posts, excavating and furnishing and placing concrete footings, connecting new fences to structures and existing fences, and any other related work shall be considered as included in the price bid per linear foot of fence.

#### **ITEM 420 - REMOVE AND REPLACE CHAIN LINK FENCE (ADOT STD C-12.20)**

#### **SECTION 421 GAME FENCE GATES**

Smooth wire game fence gate construction shall conform to the following section which is added to the MAG Uniform Standard Specifications:

#### **421.1 Description:**

The work under this section shall consist of furnishing all materials and constructing gates at the locations and in accordance with the details shown on the plans. Gates shall be constructed according to ADOT Standard Drawing C-12.10, for Type 1 Single Gate except that all wire shall be barbless and shall be constructed in accordance with the requirements of these specifications.

#### **421.2 Materials:**

Gate wire shall be 12-1/2 gauge steel wire with no barbs and shall be either zinc coated or aluminum coated. Zinc coated steel wire shall conform to the requirements of ASTM A 121, Class 1 coating. Aluminum coated steel wire shall conform to the requirements of ASTM A 585, Type 1, Class 1 coating.

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

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

Posts and braces shall be painted Desert Beige.

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

Stays shall be 9 1/2 gauge twisted wire designed for screw-on type installation. Stays shall be zinc coated steel of good commercial quality. The minimum weight of zinc coating shall be 0.3 ounce per square foot of uncoated wire surface.

Tie wires, hog rings and post clips shall be zinc coated steel of good commercial quality and shall be of the same gauge as the fence fabric being fastened. The minimum weight of zinc coating shall be 0.3 ounce per square foot of uncoated wire surface.

#### **421.3 Construction:**

The Contractor shall clear the gate lines of all earth, trees, brush and other obstructions which interfere with the proper construction of gates. Disposal of removed material shall be in accordance with the requirements of Section 201.

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

Any high points which interfere with the placing of gate wire shall be excavated to provide the clearance shown in the detail.

Spacing of the twisted vertical wire stays shall be as shown on the detail for the type of gate specified. The vertical wire stays shall be woven into every horizontal wire.

The Contractor shall be responsible for reconnecting the existing fence to the posts of the new gate. Any existing fence which is removed shall be replaced in kind. Materials used for reconnection of the existing fence shall be equivalent to or better than the existing fence.

**421.4 Measurement:**

Gates shall be measured per each structure installed.

**421.5 Payment:**

Gates will be paid for at the unit price bid for each size of gate required by the plans or special provisions, which price shall include full compensation for furnishing the gates, together with all necessary gate posts, fittings and hardware, and doing all the work involved in installing the gates complete in place as specified. If double gates are required, each double gate pair will be paid for at the unit price bid and such unit price shall include furnishing and installing both leaves.

Full compensation for clearing the line of the gate and disposing of the resulting material, excavating high points in the existing ground between posts, excavating and furnishing and placing concrete footings, connecting new fences to structures and existing fences, and any other related work shall be considered as included in the price bid per linear foot of fence and no additional allowance will be made therefor.

**ITEM 421 - 14' SINGLE GATE (ADOT C-12.10, TYPE 1)**

**SECTION 430 LANDSCAPE PLANTING**

**430.1 DESCRIPTION**

Provide complete landscaping and planting installation in accordance with the Contract Documents and conform to Maricopa Association of Governments (MAG) "Uniform Specifications for Public Works Construction" current edition Section 430 and 795, Flood Control District of Maricopa County (FCDMC) and City of Mesa requirements. Any Sections of The MAG not indicated herein or modified by the Drawings, shall remain in effect per the MAG Documents.

Work shall include, but is not limited to: site fine grading, material procurement, material testing, soil preparation, planting, tree staking, turf installation, rock ground cover installation, landscape restoration where necessary, obtaining and paying all required permits and fees, providing all necessary traffic control, and maintenance, establishment and warranty of all landscape work.

**430.2 GENERAL**

The unit price bid items includes the cost for all work to furnish and install the complete landscaping as shown or as indicated on the Landscape Drawing Plan Sheets including the respective notes, legends, and detail sheets that are not covered by any other Bid Item.

Materials and installation shall conform to MAG Sections 795 and 430, respectively, except as noted herein or on the drawings.

Transplanting or removal of any existing plants shown on the plans along with the associated costs of obtaining any required permits from the FCDMC, City and the State of Arizona are to be included in this bid item.

All references to the Owner within these Technical Specifications or on the Drawings shall refer to the Flood Control

District of Maricopa County (FCDMC).

Landscape areas shall be smooth graded as shown on the drawings unless otherwise indicated. All imported soil or on site soil used as fill or backfill shall meet or be amended to conform to M.A.G. Section 795.2 and shall not contain more than ten percent aggregate or rock by volume. Aggregate or rock shall not be nested or layered within the planting pit backfill.

Any subsurface obstructions, materials or substances which conflict with or impact the installation of plants; may be detrimental or restrictive to plant health, rootzone development and drainage; is not considered fertile friable soil; shall be excavated and removed to a minimum of two (2) times the rootball container depth and four (4) times the rootball container width for containerized plants and to a minimum depth of twelve inches (12") for turf areas.

All landscape plants, materials and surfaces shall be planted, established and maintained in accordance with MAG Section 430, except that the Maintenance/Establishment period shall be 90 calendar days from the completion and acceptance date of all pre-maintenance inspection and landscape planting and restoration punch list items of the project as determined by the FCDMC Representative. If this period extends beyond the final acceptance date of the project, the FCDMC will retain ten percent of the bid for project landscaping until the requirements for final acceptance are met at the end of the maintenance/establishment period.

This Bid Item shall also include the cost for restoration of all existing landscape areas or other existing improvements which are disturbed or impacted by any work completed under this contract. The limits of this work shall be as determined by the limit of disturbance or as necessary to complete the satisfactory restoration of impacted areas in accordance with MAG Section 107.9 and as indicated on the plans. This item includes, but is not limited to:

The restoration of existing landscape and all non-paved landscape areas as indicated on the plans.

The removal, relocation or replacement of existing landscape plants and other materials or surfaces which are disturbed or damaged by this project.

The work shall be neatly joined, coursed, connected, attached, blended or butted (as applicable) to the existing conditions to the satisfaction of the FCDMC representative. Existing undamaged materials may be reused, subject to approval. Contractor shall provide a sample replacement of all material prior to any restoration or replacement work.

The FCDMC reserves the right to reject any replacements or restorations that do not meet the criteria for these items. The Contractor shall remove and replace any such rejected work to the FCDMC's satisfaction at no additional expense.

For existing landscaped areas, outside the allowable limits of work, the Contractor shall restore the granite, rock, soil or other existing landscape surfaces using material(s) to match the existing in type, quality and appearance.

Existing landscape items in the way of new construction or which conflict with vehicular sight visibility requirement shall be removed or relocated to an area near the present location as shown on the plans or as directed by the FCDMC's Representative.

#### **430.2.1 RELATED WORK**

The Contractor shall be responsible for the procurement, installation and completion of all work items and components of work items indicated, including: coordination, scheduling and sequencing of all work between the various trades required to complete the work and in accordance with the Contract Documents.

SECTION 425 - TOPSOILS

SECTION 440 - LANDSCAPE (SPRINKLER) IRRIGATION SYSTEMS

OTHER SECTIONS OF SPECIFIED WORK INDICATED HEREIN

**430.2.2 QUALITY CONTROL**

Within 14 days after the award of contract, the Contractor shall submit a list of all specified landscape materials, sources, locations, phone numbers and contact persons to the FCDMC Representative for review and approval. Prior to bringing plant materials onto the site, the FCDMC Representative is to visually inspect the proposed materials. The Contractor shall make all necessary arrangements with the FCDMC Representative to have the plant material inspected in accordance with MAG Section 430.52. Contact Theresa Hoff (telephone number: 602-506-1502) at the FCDMC for inspection. The FCDMC Representative may reject any material which shall be replaced with acceptable material by the Contractor.

The Contractor shall provide certificates of inspection and testing for all materials and equipment as required by law and regulation.

Note: Any and all required laboratory testing and analysis reports shall be paid for by the Contractor.

All packaged materials shall be delivered sealed in the manufacturers original packaging and shall have the manufacturers certified analysis printed or stamped on each container.

For all non-packaged materials, the Contractor shall provide analysis and testing reports from an independent certified agricultural soils testing laboratory or agency. The laboratory must be approved by the FCDMC. The Contractor shall provide certification and documentation that all required materials, equipment and products meet or exceed these specifications. The Contractor shall submit all certification, testing reports and samples to the FCDMC Representative for acceptance. Final acceptance of all materials shall be determined by the FCDMC Representative.

The landscape Contractor shall have experience in the construction and installation of landscape planting, turf facilities and related irrigation systems. If requested by the FCDMD Representative, the Contratractor must be capable of providing positive references and project installation examples of work of a similar nature and complexity to this project, completed within the last two years.

The Contractor shall assign a project superintendent to be on site at all times. The assigned superintendent shall have a minimum five (5) years experience in the construction and installation of landscape planting, turf facilities and related irrigation systems. The project superintendent shall be subject to approval by the FCDMC.

**430.3.1 TURF SOIL PREPARATION (PREPARATION OF IN- PLACE SOILS)**

Turf soil preparation indicated on the drawings shall be prepared in accordance with M.A.G. Section 430.3 and as indicated on the Drawings and as specified herein. The top eight inches of all landscape areas indicated to receive turf planting shall consist of a homogeneous mixture of topsoil, as specified; organic soil conditioner, as specified; and processed sand, as specified.

Soil Preparation Soil Mix: The soil preparation soil mix shall be a proportional mixture thoroughly mixed by volume of topsoil, organic soil conditioner, sand, fertilizer and selected soil amendments as follows:

1. Topsoil - 2 parts.
2. Organic Soil Conditioner (Processed Peat) --1 part.
3. Processed Sand - 1 part
4. Mix 5 lbs. of 16-20-0 commercial grade fertilizer per cubic yard of topsoil and organic soil conditioner mulch mixture.
5. Other soil amendment types and quantities as determined by the soils analysis.

Organic soil conditioner shall be processed peat moss product available from Western Agricultural Products Company, Phoenix, Arizona (602) 269-5756 or approved equal, free of sticks, stones or other debris and comply with the following USGA specifications.

<u>Parameter</u>	<u>Specified Range</u>
Total Carbon	>85%
Carbon to Nitrogen Ratio	20:1 to 30:1

Total Ash	15% or less
pH	6.5 to 7.5
% Moisture	30% to 50%

<u>Sieve Size</u>	<u>% Passing</u>
2.0 mm	95 - 100%
1.0 mm	80 %

Processed Sand shall be "Rootzone Sand" as available from Pioneer Sand Company (602) 926-8200 or approved equal. A clean processed brick/masonry class sand may be utilized pending testing and submittal of sample along with testing results and approval by the FCDMC Representative

Commercial grade fertilizer shall be a slow release nitrate of a granular form and free flowing condition. Chemical analysis shall be 25% nitrogen (N), 4% phosphoric acid (P205), 8% potassium (K20)

Soil Sulphur shall be Agri-Sul, Dispersul or approved equal, shall be used only if test analysis determines Soil Sulphur is a recommended additive.

Gypsum shall be a finely graded, agricultural quality Gypsum product, shall be used only if test analysis determines Gypsum is a recommended additive.

**430.3.2 SEEDING**

The Turf variety shall be Common Bermuda - Cynadon dactylon. Common Bermuda shall be fancy hulled which is certified 98 percent pure and have a germination rate of 88 percent. The weed seed content of Common Bermuda shall not exceed 0.35.

The planting season for Bermuda grass seed is from April 15 to September 1.

All lawn/turf areas must be established by hydroseeding and accepted prior to September 15th.

Turf shall be installed by hydroseed and hydromulching over a weed free, amended, prepared and finish graded soil surface where indicated on the plans.

Hydroseeding shall be accomplished through the application of a combined water slurry mixture of hydromulch, seed and hydromulching fertilizer over all areas designated for lawn/turf at the following minimum rates\*:

- Seed: 3.5 pounds per 1000 square feet
  - Hydromulch: 45 pounds per 1000 square feet
  - Hydromulching Fertilizer: 8 pounds per 1000 square feet
- Clean, fresh water shall be used in quantity specified by seed company.

\* Minimum rates shall be modified based on recommended rates by seed provider, for installation in Mesa, AZ.

All hydroseeding products shall be delivered to the site in unopened containers. Opening of containers and mixing of hydromulch slurry shall occur in the presence of the Owner's Representative. Provide a minimum 3 business days prior notification.

All drifting or over spray of hydromulch mixture shall be immediately removed from all surfaces not indicated for lawn/turf installation at the completion of hydromulching operations.

All reseeding and repair of lawn/turf areas shall be completed a minimum of 30 days prior to the end of the Maintenance / Establishment Period.

**430.3.3 MAINTENANCE(LAWN/TURF AREAS)**

Begin maintenance at time of lawn/turf installation completion and continue until acceptance at the end of the Maintenance / Establishment Period. Maintenance activities shall include: watering, weeding, mowing trimming and other operations required to establish a smooth, uniform finish graded lawn / turf coverage and healthy stand of

grass, free of any discoloration and bare patches. At the end of the Maintenance / Establishment Period and upon the FCDMC acceptance of the lawn/turf areas, the City of Mesa will take over responsibility for all maintenance.

Any damaged areas or any areas greater than 12" in diameter which fail to show a good stand shall be reworked and replanted until an acceptable stand of grass is obtained.

#### **430.4 (DECOMPOSED GRANITE AREAS) ROCK GROUND COVER**

The work consists of furnishing all equipment, materials and labor required for the grading and preparation of landscape surfaces, two applications of pre-emergent, and placement of rock ground cover material within the project area, in the locations shown and in accordance with the project plans, MAG and these Technical Specifications.

Decomposed Granite rock ground cover shall be 3/4" minus coral to match existing Parkwood Ranch landscape areas. The Contractor shall confirm that a sufficient quantity is available so that the entire area will be of the same composition and appearance. Provide sample to the FCDMC for approval. Installation shall conform to MAG Section 430 and as indicated on the plans.

All landscape areas designated to receive rock ground cover, unless otherwise noted, shall be treated with two (2) applications of approved pre-emergent herbicide as required by MAG and as indicated on the drawings. The first application shall be applied over the graded soil surface prior to placement of rock ground cover. The second application shall be applied to the finish graded and compacted rock ground cover surface. Apply pre-emergent as specified by the manufacturer.

Finish grade for the rock ground cover in all areas shall be as detailed and as follows: 1 inch below any adjacent concrete walkway and 2" below adjacent curbs or other vehicular pavements. The required (minimum) installed depth indicated on the drawings shall be after settlement and shall be uniform throughout all areas designated to receive rock ground cover.

#### **430.5 TREE, SHRUB AND GROUND COVER PLANTING**

All planting shall be completed under strict compliance with the Contract Documents.

##### **430.5.1 SUBSTITUTIONS**

Any and all requests for substitutions will be submitted in writing prior to Award of Contract. Upon Award of Contract the Contractor shall immediately secure and have held by the supplier, all specified landscape materials or those which have been approved for substitution, until time of delivery to the site.

##### **430.5.6 SHRUB AND TREE PITS**

Plant pits shall be sized per the details, unless otherwise indicated in the Contract Documents.

Plant pit backfill may utilize on site native soil as long as the soil meets the specifications for topsoil.

In rocky site conditions, on-site soils to be used for backfill may be screened to meet the specifications for maximum aggregate content in topsoil. Refer to Section 430.2 for removal of sub-surface conditions impacting the installation or health of plants.

Nested or layered aggregate or other infertile materials located beyond the limits of the plant pit or within the potential root growth zone of the plants/turf, shall be considered a subsurface obstruction and removed as specified.

Plant pit fertilizer tablets shall be as specified under M.A.G. Section 430.5.6.

All pits shall be excavated to the detailed dimensions with the sides of pit roughened or scarified.

#### **430.6 HEADER INSTALLATION**

Headers shall be as indicated and detailed in the Drawings "6 x 12" Concrete Header" and shall conform to the requirements of MAG Section 340.

### **430.7 PLANT ESTABLISHMENT GUARANTEE AND MAINTENANCE:**

Unless otherwise authorized, the Contractor shall maintain and be responsible for all landscape areas and materials on a continuous basis as installations are completed during the course of work and until final project acceptance.

All existing and new plants shall be kept in a healthy, growing condition by watering, pruning, spraying, weeding and any other necessary operations or maintenance. Plant saucers and beds shall be kept free of weeds, grass and other undesirable vegetation. Plants shall be inspected at least once per week and appropriate maintenance performed.

The Contractor shall maintain the irrigation system and make any necessary repairs regardless of cause to assure a complete and operational system is provided at the time of final acceptance.

A pre-maintenance inspection will be performed upon substantial completion of all landscape planting and irrigation work under this contract. The Contractor shall be present at the inspection and a punch list of items requiring remedial work shall be generated. Upon completion of the punch list items and approval by the FCDMC, the 90 day maintenance/establishment period will begin.

**Final maintenance Inspection:** At the end of the 90 day maintenance/establishment period a final inspection will be performed. If, after this inspection, the FCDMC agrees that all planting areas are weed free and plant materials are in satisfactory growing condition, written Notice of Acceptance will be given to the Contractor for landscape installation.

Maintenance inspections will occur periodically. If landscape areas are improperly maintained, if appreciable plant replacement is required, or other corrective work becomes necessary, the Contractor shall continue to maintain the entire site until all items are corrected and accepted at no cost to the FCDMC.

Any corrective work disturbance, repairs or replacements completed during the 90 day maintenance/establishment period shall be subject to an additional 90 day maintenance/establishment period from the time of acceptance of the corrective work.

The cost of plant establishment, maintenance and warranty shall be included in the Landscape Planting Bid Item. Ten percent (10%) landscape retention will be paid at the end of the successful completion of the 90 day plant establishment period.

#### **430.7.1 WARRANTY**

**Required:** Warranty plant materials to be in a healthy thriving condition for specific periods at or after the completion of the maintenance/establishment period as follows:

1 & 5 gallon shrubs and ground cover - at end of maintenance/establishment period (90 days)

Trees and all other plant material - at end of maintenance/establishment period (90 days)

Lawn Areas - warranty a full stand of turf at the end of the maintenance/establishment period (90 days), perform soil preparation and reseeding as required to provide a fully established stand of turf at the stated time, at no additional cost to the FCDMC.

**Replacements:** Immediately replace, repair or repeat applications as specified over any rejected plant material or surfaces at no cost to the FCDMC. Immediately replace with like kind, in a satisfactory condition, any plant materials not surviving, in poor condition, or not showing vigorous healthy new growth at the end of the pertaining warranty period, all at no cost to the FCDMC. Perform replanting as specified herein for the original planting. Maintain, establish and warranty all replacement plantings the same as required for original plantings.

**Contractor's Observations:** To insure that the required warranties are not impacted by the City of Mesa's maintenance, the Contractor shall check the landscaped areas at least once every two weeks during the warranty periods and notify the FCDMC in writing of any advised changes or concerns.

Periodic Inspection: Appointed personnel representing the Contractor and the FCDMCD will perform bi-weekly inspections of the landscape installation. Plants requiring replacement and other required corrective measures shall be completed prior to the next bi-weekly inspection meeting.

Final Inspection: Notify the FCDMC's Representative seven days prior to the end of the warranty period that final landscaping inspection is requested. The FCDMC's Representative will make an inspection and give the Contractor notice of any plantings or other work of this section that are not acceptable and require correction: Contractor shall immediately make such corrections.

Warranty Exceptions: The Contractor is not responsible for plant loss or damage caused by unusually extreme weather, or lack of maintenance by the City of Mesa.

#### **430.8 MEASUREMENT**

The Unit Cost Bid Items include the cost for all work to furnish and install the complete landscaping and restoration as shown on the Contract Documents, that is not covered by other bid items.

The Contractor shall complete and provide unit cost prices for each of the items listed under Description in the Schedule of Bid Items Form provided herein. Each unit price shall include all incidental or contingency work, materials, equipment, services, labor, warranties, etc., required to provide and install each listed item complete, in place and operational as indicated or directed by the Contract Documents. Any items not listed on the Schedule of Bid Items are considered incidental to the items listed. No additional compensation beyond the Unit Cost Bid total amount will be permitted for failure to completely ascertain all aspects of the project. The unit prices will be used as a basis of adjustment to the Bid total amount only if the Owner requests the Contractor to add or delete landscape work from that which is indicated in the Contract Documents.

- ITEM 430-1 - 24" BOX TREE**
- ITEM 430-2 - 15 GALLON TREE**
- ITEM 430-3 - 5 GALLON SHRUB**
- ITEM 430-4 - 1 GALLON SHRUB**
- ITEM 430-5 - SEEDING (LAWN)**
- ITEM 430-6 - 6"X12" CONCRETE HEADER**
- ITEM 430-7 - DECOMPOSED GRANITE**

#### **SECTION 440 IRRIGATION SYSTEM**

##### **440.0.1 DESCRIPTION**

Provide complete installation of a fully automated landscape irrigation system in accordance with the Contract Documents and conform to Maricopa Association of Governments (MAG) "Uniform Specifications for Public Works Construction" current edition Section 440 and 757, Flood Control District of Maricopa County (FCDMC) and City of Mesa requirements. Any Sections of The MAG not indicated herein or modified by the Drawings, shall remain in effect per the MAG Documents.

The Contractor shall furnish all necessary labor, materials, and equipment required to complete the installation of the automated irrigation system providing full coverage to all plants and turf areas. All permits for installation and construction of any of the work included under this section shall be obtained by the Contractor.

All references to the Owner within these Technical Specifications or on the Drawings shall refer to the Flood Control District of Maricopa County (FCDMC).

Landscape irrigation system installation work shall include, but is not limited to: material procurement, material and installation testing, all above and below ground system installations, trenching, piping, valves, backflow prevention assemblies, controllers, wiring cabinet/cage enclosures with pads, fittings, turf heads, emitters, irrigation restoration where necessary, preparation of record drawing as-builts, obtaining and paying all required permits and fees, providing all necessary traffic control and maintenance and warranty of all irrigation work.

#### **440.0.1 RELATED WORK**

The Contractor shall be responsible for the procurement, installation and completion of all work items and components of work items indicated, including: coordination, scheduling and sequencing of all work between the various trades required to complete the work and in accordance with the Contract Documents.

#### **SECTION 425 - TOPSOILS**

#### **SECTION 430 - LANDSCAPING AND PLANTING**

#### **OTHER SECTIONS OF SPECIFIED WORK INDICATED IN THE CONTRACT DOCUMENTS**

#### **440.0.2 QUALITY CONTROL**

Within 14 days after the award of contract, the Contractor shall submit a list of all specified irrigation materials and manufacturer product data and specification sheets and all required shop drawings for fabricated items to the FCDMC Representative for review and approval. All materials shall be delivered new, protected and maintained in an undamaged condition throughout the entire installation. The FCDMC Representative may reject any material which shall be replaced with acceptable material by the Contractor.

The Contractor shall provide certificates of inspection and testing for all materials and equipment as required by law and regulation.

Note: Any and all required laboratory testing and analysis reports shall be paid for by the Contractor.

All equipment and packaged materials or components shall be delivered sealed in the manufacturers original packaging and shall have the manufacturers instructions and warranties included.

#### **440.0.3 SUBMITTALS**

Within 14 days after the award of contract, the Contractor shall submit six (6) copies listing the types, sizes, model numbers and manufacturer's catalog data sheets for all specified irrigation materials, components and equipment, including Shop Drawings as indicated with finish and color samples for all purchased or fabricated items to the FCDMC Representative for review and approval. All irrigation submittal data and information shall be bound in a three ring binder with the project name on the cover and edge binding.

No substitution will be allowed without prior written approval by the FCDMC

Equipment or material installed or furnished without prior approval of the FCDMC may be rejected and the Contractor required to remove such materials from the site at his own expense and shall include the replacement with the approved specified item.

Approval of any item, alternate or substitute indicated only that the product or products apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.

#### **Record Drawings**

The Contractor shall provide and keep up to date a complete set of "record" drawings which shall be corrected daily to show all changes in the location of irrigation heads, controllers, backflow preventers, valves, drains, meters, points of connection, pull boxes and wire splice boxes, pipe and wire routing and other changes that may have been made from the original drawings and specifications as provided to him. The Contractor shall dimension from two permanent points of reference, building corners, sidewalk, or road intersections, etc., the location of the following items:

1. Water meter location including connections through backflow preventer.
2. Controller location including connections through power service source.
3. Mainline pipe
4. Isolation ball valves.
5. Quick coupler valves

6. Control valves.
7. Routing of both drip and turf lateral lines and heads
8. Routing of control wiring.
9. End location and length of all sleeving and/or conduits.

Record Drawings shall include all installations, modifications and relocations resulting from restoration of impacts to existing landscape irrigation systems.

Prior to final acceptance, the Contractor shall furnish reproducible "record" drawings prepared by a qualified draftsman showing the entire completed system as actually installed. This is the responsibility of the Contractor and shall not be construed to be the responsibility of any other party. This drawing shall be accurate and to scale. The symbols for valves, heads, and piping, etc. shall be the same as shown on the original drawings. The legend shall also be modified to designate any "record" changes. The "record" drawings shall be drawn on 3mil mylar base sheets reproduced from the original drawings available from the FCDMC. The final drawings shall be dated and clearly labeled "RECORD AS-BUILT DRAWING" and signed by the person responsible for the information contained on the drawings. No final acceptance or start of project warranties will be issued until all record drawings are completed and submitted by the Contractor and approved by the FCDMC Representative.

#### **Controller Charts**

- A. Record drawings shall be acceptable to the FCDMC before controller charts are prepared.
- B. Provide one controller chart for each controller supplied prior to final acceptance.
- C. The chart shall show the area controlled by the automatic controller and the area each controller station or valve covers. Each chart shall be the maximum size which will fit inside the controller enclosure/cabinet door.
- D. The chart is to be a reduced drawing of the actual as-built system. However, in the event the controller sequence is not legible when the drawing is reduced, the necessary information shall be enlarged on the original to a size that will be readable after reduced.
- E. The chart shall be a black line or blue line ozalid print and a different color shall be used to indicate the area of coverage for each station.
- F. When completed and approved, the chart shall be hermetically sealed (laminated) between two pieces of plastic, each piece being a minimum 10 mils thick.
- G. These charts shall be completed and approved prior to final inspection of the irrigation system.

#### **Product Handling**

The Contractor shall be responsible for correct procedures in loading, unloading, staking, storing, transporting and handling all materials to be used in the system. The Contractor shall avoid rough handling which could affect the useful life of equipment. Pipe shall be handled in accordance with the manufacturer's recommendations on loading, unloading and storage. All PVC pipe shall be transported in a vehicle which allows the length of pipe to lie flat so as not to subject it to undue bending or concentrated external load at any point. Any section of pipe that has been dented or damaged will be discarded and, if installed, shall be replaced with new piping.

#### **Project Understanding Confirmation**

Prior to start of any work the Contractor shall submit confirmation that the assigned superintendent has inspected and reviewed, with the FCDMC, the City of Mesa Representative and the Parkwood Ranch representative, all existing site areas to be impacted by work under this Contract and fully understands and accepts the extent of work required to complete the required improvements in accordance with the Contract Documents and to the satisfaction of the FCDMC. Confirmation shall also include that the Contractor understands the intended limit of work. The limits of work shall extend to the limits necessary to remove, reconfigure, modify, replace or repair as necessary any adjacent areas or existing improvements requiring restoration as a result of work or impacts resulting from this Contract. Confirmation shall also include that the Contractor has notified and has completed all required Blue Stake markings.

#### **440.1 GENERAL**

The unit price Bid Items shall include the cost for all work to furnish and install the complete and fully automated landscape irrigation system as shown or as indicated on the Landscape Irrigation Drawing Plan Sheets, including the respective notes and detail sheets that are not covered by any other Bid Item.

Materials and installation shall conform to MAG Sections 440 and 757, respectively, except as noted herein or on the drawings.

Irrigation quantities where indicated are for general reference only. It shall be the responsibility of the Contractor to determine all quantities and materials necessary to complete the work in accordance with the notes and symbols shown on the plans and as herein specified.

This section includes installation specifications for all items installed as part of the landscape irrigation system. certain construction procedures or minor equipment installation procedures may have been omitted from these specifications that are necessary for the proper installation of the system. Carefully investigate the structural and finished conditions affecting all of the work and plan the work accordingly, furnishing such fittings, etc., as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the work to be installed. The work shall be installed in such a manner as to avoid conflicts between irrigation systems, planting, pavements, utilities, and other existing or constructed site improvements or architectural features.

In any case, all materials and equipment shall be installed in a neat and workmanlike manner according to manufacturer's recommendations and specifications, local and state codes, as shown on the Drawings and as specified herein. If the drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by the above rules and regulations, the provisions of these specifications and drawings shall take precedence. Discrepancies or conflicting information in the Documents shall be brought to the attention of the Engineer and the Engineer shall determine the course of action. Contractor assumes full responsibility for work installed without clarification.

#### **440.1.1 LANDSCAPE IRRIGATION SYSTEM REMOVAL AND RESTORATION**

Cost of work to restore any existing landscape irrigation systems that are disturbed by any work under this project shall be included in these bid items. Materials and installation shall conform to MAG Sections 440, and 757 respectively, except as noted herein or on the drawings.

#### **440.2 TRENCH EXCAVATION AND BACKFILL**

All trenching and trenching backfill shall be complete, settled and compacted prior to the start of any planting or hydroseeding.

All topsoil and soil preparation requirements shall be maintained above all trench areas. Top eight inches of all trench backfill in lawn turf areas shall be approved soil preparation soil mix.

#### **440.3 PIPE INSTALLATION**

The Contractor shall be responsible for providing all piping necessary to provide a complete and fully operational irrigation system, including all sub-lateral piping, risers and fittings to each plant emitter or turf head as specified and detailed whether or not piping is shown on the plans.

Type, class or schedule of PVC or metallic pipe shall be as shown on the drawing, except that Schedule 80 must be used for all pipe and fittings with threaded joints.

PVC sleeves that must be installed under paved surfaces and structures are included and shall be the responsibility of the Contractor to coordinate the installations prior to completion of the pavements or structures. Where sleeving is to placed beneath existing pavements or structures the Contractor will be responsible for any required boring necessary to complete the installation.

All pipe installed beneath any paving or structures shall be sleeved and sleeved separately from wire, in PVC pipe sleeves. Size and type as required or as shown on the drawings.

#### **Existing Trees:**

Where it is necessary to excavate adjacent to existing trees, the Contractor shall use all possible care to avoid injury to trees and tree roots. Excavation in areas where roots two inch (2") and larger occur shall be done by hand. All

roots two inches (2") and larger in diameter, except directly in the path of pipe or conduit, shall be tunneled under and shall be heavily wrapped with burlap to prevent scarring or excessive drying. Where a trenching machine is run close to trees having roots smaller than two inches (2") in diameter, the wall of the trench adjacent to the tree shall be hand-trimmed, making clean cuts through. Roots two inches (2") and larger in diameter shall be painted with two coats of Tree Seal or equal. Trenches adjacent to trees, should be closed within 24 hours, and where this is not possible, the side of the trench adjacent to the tree shall be kept shaded with burlap or canvas.

#### 440.3.1 PLASTIC PIPE AND FITTINGS:

All PVC pipe shall bear the following markings:

- a. Manufacturer's name.
- b. Nominal pipe size.
- c. Schedule or class.
- d. Pressure rating in PSI
- e. National Sanitation Foundation (NSF) approval.
- f. Date of extrusion.

All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable IPS schedule and NSF seal of approval.

#### PVC Pressure Mainline Pipe, PVC Sleeves, Perforated Pipe and Fittings

Continuous Pressure mainline piping sizes less than 3" shall be PVC schedule 40, Type I, solvent weld; sizes 3" and larger shall be class 200, SDR 21, rubber ring joint type.

1. Pipe shall be made from NSF approved Type I, Grade I PVC compound conforming to ASTM specification D 2241. Piping shall be SDR solvent weld.
2. Solvent-weld fittings shall be Schedule 80, 1-2, II-I NSF approved conforming to ASTM test procedure D2467.
3. Installation procedure for rubber ring joint type pipe shall comply with manufacturer's recommendations.
4. Detectable tape shall consist of 0.35 mil thick solid foil core encased in a protective plastic jacket that is resistant to alkalis, acids and other destructive elements commonly found in soil. The lamination shall have sufficient strength that the layers cannot be separated by hand. The total composite thickness shall be 4.3 mils minimum. The foil core is to be visible to ensure continuity.

Detectable tape shall have a minimum tensile strength of 63 lbs. in the machine direction and 68 lbs. in the transverse direction per three (3) inch strip.

A continuous warning message repeated every 16 to 36 inches shall be imprinted on the tape surface. The tape shall be colored: designating the code appropriate to the type of line which the tape is protecting.

Detectable tape shall be applied to all pressurized main line.

#### Non-continuous pressure PVC Lateral Line Piping (Including Emitter Lateral Piping)

1. Non-continuous pressure buried lateral line piping shall be PVC Class 200 with solvent-weld joints for sizes ½" and larger.
2. Pipe shall be made from NSF approved, Type I, Grade II PVC compound conforming to ASTM resin specification D1784. All pipe shall meet requirements set forth in Federal Specification PS-22-70, with an appropriate standard dimension ratio.
3. Except as noted in paragraphs 1 and 2 above, all requirements for non-continuous pressure lateral-line pipe

and fittings shall be the same as for solvent-weld pressure mainline pipe and fittings as set forth in Section 440.3.1 of these specifications.

#### 440.3.2 BRASS PIPE AND FITTINGS

- A. Where indicated on the drawings, use red brass screwed pipe conforming to Federal Specification #WW-P-351.
- B. Fittings shall be red brass conforming to Federal Specification #WW-P-460.

#### 440.3.3 COPPER PIPE AND FITTINGS

- A. Where indicated on drawings, use copper pipe conforming to all requirements of ASTM B-88 Type K rigid.
- B. All copper pipe shall be new, seamless copper pipe designed for underground water service plumbing purposes, etc.

#### 440.4 VALVES, VALVE BOXES AND SPECIAL EQUIPMENT INSTALLATION

Automatic Remote Control Valves, Electric Solenoid Type: The automatic remote control valves, to be as indicated on drawings or alternate approved by the FCDMC's Representative, slow acting diaphragm type electric solenoid operated valves of sizes as indicated on the drawings. The valves shall be solenoid actuated, hydraulic operating valves of the globe screwed pattern type. Valves will be a type that can operate under low flow and at low pressure with an operating range of 15 to 200 psi.

Master Valve and Flow Meter - As indicated on drawings, install downstream from Backflow Preventer prior to any "tee" in the main line. Install per manufacturer's recommendations.

##### Valve Boxes:

All remote control valves, isolation ball or gate valves, pressure regulators, wye filters, wire splices, pipe stub-ups or flush outlets unless otherwise indicated, shall be installed in suitable plastic or other type valve access box of proper size as required for easy access to the valve. Access boxes shall be completed with plastic or other approved type lids. All valve boxes, lids and extensions, where required, shall be from a single manufactured source either Carson/Brooks or Ametek bolt down locking models, or alternate approved by the Owner's Representative. Valve boxes installed in Rock Ground Cover areas shall be beige in color.

##### Isolation Ball/Gate Valves:

1. Isolation valves larger than 2-1/2" shall be gate valves per MAG Standard Details and Specifications.
2. Isolation valves 2-1/2" and smaller shall be 125-lb SWP bronze ball valves with full port openings and resilient seated with screw-in bonnet, non-rising stem.
3. Isolation valves 2-1/2" and smaller shall have threaded ends and shall be equipped with a stainless steel neoprene coated lever handle that fully opens and closes in 1/4 turn.
4. Isolation valves 2-1/2" and smaller shall be equal to those manufactured by Nibco, Hammond.
5. All Isolation valves shall be installed per detail.

##### Backflow Preventer:

The backflow prevention device shall be a reduced pressure type (RPA) with enclosure cage as specified on the Drawings and shall be approved by the Foundation for Cross Connection Control Research, University of Southern California. The backflow prevention units shall be tested in accordance with the requirements as specified in the manual of Cross Connection Control Recommended Practice as published by the Foundation for Cross Connection Control Research, University of Southern California and local codes. The testing of the backflow prevention unit shall be performed by authorized service-test personnel. The test shall be performed at no additional cost to the FCDMC.

The Contractor shall submit a shop drawing of the backflow prevention enclosure for approval prior to fabrication.

Cements, Cleaners, Primers and Joint Sealant Compounds:

Solvent cement for PVC solvent-weld pipe and fittings shall be "heavy-duty grey cement" as manufactured by "Oatey" or equal.

Solvent primer for PVC solvent weld pipes and fittings shall be "all purpose" primer (purple) for PVC and CPVC pipe fittings.

Installation methods of solvent cement and primer for PVC solvent-weld pipe and fittings shall be as prescribed by the manufacturer.

All threaded connections between metal to metal, PVC to metal and PVC to PVC shall be made using Teflon tape thread sealing compound. Thread sealing compound shall not be used on threaded connections between sprinkler head and nipple, bubbler and nipple, or emitter and riser.

Pressure Regulator:

The pressure regulating valve shall be as per called for on the drawings, either a non-adjustable factory preset or self-contained, single-seat, direct-acting, spring-loaded, diaphragm-actuated type. Adjustable valves shall be of all bronze construction, stainless steel body seat, composition seat discs, BUNA-N diaphragm with nylon insert and carbon steel-steel springs. Valve shall contain no screens or filter. The valve shall have replaceable seats and have renewable type disc and diaphragm. Plugs, diaphragm housing, and adjusting screw threads shall be sealed against leaks. Valves shall be provided with a means for adjusting the reduced pressure setting in the field.

The valve shall have 3/4" or 1" NH female swivel inlet and 3/4" or 1" NH male outlet as per plan.

Drip System Flush Plug:

The drip system flush plug shall be as detailed on the drawings.

The flush device shall be used for flushing of all emitter pipe or tubing downstream of the valve, and shall be placed downstream of the last emitter on every dead end run.

#### **440.4.1 OTHER MISCELLANEOUS MATERIALS, EQUIPMENT OR SPECIAL INSTALLATIONS**

Any other system components or equipment or special installation required to provide and install the complete and fully automated irrigation system as indicated in the Contract Documents, that is not addressed herein shall be as indicated in the Contract Documents or approved equal.

All other miscellaneous materials shall be as specified on the Drawings or shall be considered incidental to that which is specified

#### **440.5 SPRINKLER HEAD INSTALLATION AND ADJUSTMENT**

"Sprinkler heads" referred to in the MAG Specification shall include "bubblers" and "emitters" as indicated on the

Drawings and herein. Bubbler and emitter heads shall be of the types, sizes and installed in relation to finish grade as indicated on the drawings.

Emitters: shall be of the type that are non-compensating continuous flushing based on the pressure cascade principle using a series of flexible orifices. Emitters shall be as manufactured by Bowsmith or approved equal.

The cases of the emitter shall be made of durable black, heat resistant acetyl plastic material. It shall be resistant to temperature variation, ultraviolet radiation, smog (ozone), common liquid fertilizer and weed spray. The case shall

completely encompass the silicone diaphragm, protecting it from potentially harmful environmental factors.

The emitter shall be capable of continuous, clog free operation with 30 mesh (minimum filtration). The emitter shall be capable of being installed in any position and maintain its flow characteristics. The emitter shall be non-adjustable and the flow regime shall be maintained by a flexible orifice silicone diaphragm.

The emitter shall function with a system pressure range of 15 PSI minimum to 35 PSI maximum. The emitter flow variation shall not exceed 1.06 at 120 degrees F. or 1.07 at 150 degrees F. Emitter manufacturing variability shall not exceed 05.

Multi-outlet Emitter Assembly: The multi-outlet emitter assembly shall be of the type and construction as shown on the drawings and as specified under Item 2.11 with the exception that the emitter shall be capable of delivering the following quantities from each of the six (6) outlets of the emitter regardless of the number of outlets open:

<u>G.P.H.</u>	at	<u>P.S.I.</u>
1.0		20
1.14		25
1.34		30

The flexible distribution tube for use with multi-outlet emitters shall be a black vinyl blend suitable for use as emitter outlet tubing with the following physical characteristics:

I.D.	.160 inches
O.D	.220 inches
Wall thickness	.030 inches

The outside diameter tolerance of the distribution tubing shall be such as to maintain leak proof connections with the emitter.

The distribution tube shall be capable of being bent around a 7/8" mandrel without kinking.

The flexible distribution tubing shall be available in reel quantities or cut-to-length as required.

No emitter tube shall be longer than four feet (6').

Turf Irrigation Heads:

All Turf heads (Pop-up gear rotary or Pop-up spray) shall be as indicated on the Drawings.

Contractor shall be responsible to adjust turf head layout as well as adjust spray patterns and coverages as necessary to provide 100% complete coverage to all turf areas without over-throw or run-off onto any paved surfaces. Contractor shall provide a fully automatic and operational system to the satisfaction of the Owner.

#### **440.6 AUTOMATIC CONTROL SYSTEM INSTALLATION**

The controller(s) shall be Motorola Irrinet Field Unit, MIR5000, Scorpio ready, with enclosure cabinet as detailed. The controller shall be mounted and installed per the manufacturer's details inside the cabinet. The controller shall be equipped all necessary internal and external components and connections required to provide power and automatic operation of all valves. The Controller shall be capable of fully automatic operation of the system.

The controller(s) shall have the minimum number of stations as indicated on the Drawings.

The Controller shall be installed in a locking, stainless steel, vandal resistant enclosure cabinet as indicated on plans. Final location of automatic controller(s) shall be approved by the FCDMC Representative.

Controller manufacturer shall offer local authorized service for all components and electronics of the control equipment and make available an extended warranty package covering all parts and labor for annual budgetary purposes.

Provide installations and equipment as necessary and arrange for, coordinate and make all valve, wiring and electrical service power connections to the controller as indicated on the irrigation plan and notes.

Control wiring shall be U.L. approved for direct underground burial, controller shall have its own common wire to respective valves. Wire connections to remote control electric valves and splices of wire in the field, if allowed by the FCDMC's Representative, shall be made as shown on the details on the plans, using Pentite wire connectors and sealing cement. All connector joints shall be absolutely waterproof so that there is no chance for leakage of water and corrosion buildup on the joint.

Connections between the automatic controller and electric control valves shall be made with direct burial copper wire AWG-UF 600 volt. Pilot wires shall be a different color wire for each automatic controller. Common wires shall be white with a different color stripe for each automatic controller. Install in accordance with valve manufacturer's specifications and wire chart. In no case shall wire size be less than #14.

Wiring shall occupy the same trench and shall be installed along the same route as pressurized mainline wherever possible. Where wire is not adjacent to mainline, install wire inside Schedule 40 gray conduit.

Where more than one wire is placed in a trench, the wiring shall be taped together at intervals of 10 feet.

An expansion curl shall be provided within three (3) feet of each wire connection. Expansion curl shall be of sufficient length at each splice connection at each electric control, so that in case of repair, the valve bonnet or splice connector maybe brought to the surface without disconnection of the control wires. Control wires shall be laid loosely in trench without stress or stretching of control wire conductors. An 18" minimum length wire slack/loop shall be provided at all wire and pipe directional changes greater than 30 degrees.

All splices shall be made with Spears Dri-Splice, Pentite or Connector King connectors and sealant or approved equal. Use only one splice connector per splice.

All field splices shall be located in separate valve boxes with sufficient extra coiled wiring to allow the splice to be elevated a minimum of 3 feet above the finish grade of the valve box.

Field splices between the automatic controller and electrical control valves will not be allowed without prior approval of the Engineer.

All control wire under paving or structures shall be separately sleeved from water piping in schedule 40 PVC pipe sleeves. Size as required or as shown on the drawings.

#### **440.7 FLUSHING AND TESTING**

Testing shall be completed in accordance with MAG Section 440.7. The Contractor shall provide 72-hour (3 working days) prior notification to arrange for the presence of the FCDMC's Inspector and a representative of the City of Mesa Park's Department during all required testing.

Contractor shall test the backflow preventer. The Contractor shall be responsible to make any temporary system alterations and have all necessary equipment available to perform the required testing in accordance with the Contract Documents.

#### **440.7.1 MAINTENANCE PERIOD**

- A. Automated landscape irrigation system shall be maintained in accordance with the Contract Documents and MAG Section 440 for a period of 90 calendar days from the completion and acceptance date of all pre-maintenance inspection and irrigation punch list items of the project as determined by the FCDMC.
- B. A pre-maintenance inspection will be performed upon substantial completion of all landscape planting and irrigation work under this contract. The Contractor shall be present at the inspection and a punch list of items requiring remedial work shall be generated. Upon completion of the punch list items and approval by the FCDMC, the 90 day maintenance/establishment period will begin.

- C. Final Maintenance Inspection: At the end of the 90 day maintenance/establishment period a final inspection will be performed. If, after this inspection, the FCDMC agrees that all irrigation system and components are in satisfactory operating condition, written Notice of Acceptance will be given to the Contractor for irrigation installation and commencement of the 1 year warranty will start.
- D. The FCDMC staff and Contractor's representative will perform a bi-weekly inspection. Any items requiring replacement shall be replaced and all corrective work shall be completed prior to the next bi-weekly inspection meeting.

#### **440.7.2 WARRANTY**

In addition to manufacturer's guarantees or warranties, all work shall be warranted for one (1) year from the date of final acceptance against defects in material, equipment and workmanship by the Contractor. Warranty shall also cover repairs to any part of the premises resulting from leaks or other defects in materials. Submit written warranty prior to completion of punch list items and start of the 90 day maintenance/establishment Period .

#### **440.8 MEASUREMENT AND PAYMENT**

The Unit Cost Bid Items include the cost for all work to furnish and install the complete automatic landscape irrigation system as shown on the Contract Documents, that is not covered by other Bid Items.

The Contractor shall complete and provide unit cost prices for each of the items listed under Description in the Schedule of Bid Items Form. Each unit price shall include all incidental or contingency work, materials, equipment, services, labor, warranties, etc., required to provide and install each listed item complete, in place and operational as indicated or directed by the Contract Documents. Any items not listed on the Schedule of Bid Items are considered incidental to the items listed. No additional compensation beyond the Unit Cost Bid total amount will be permitted for failure to completely ascertain all aspects of the project. The unit prices will be used as a basis of adjustment to the Bid total amount only if the Owner requests the Contractor to add or delete landscape work from that which is indicated in the Contract Documents.

#### **ITEM 440-1 - RPA BACKFLOW PREVENTER WITH ENCLOSURE**

**ITEM 440-2 - 8" CLASS 200 PVC SLEEVE**

**ITEM 440-3 - 6" CLASS 200 PVC SLEEVE**

**ITEM 440-4 - 4" SCHEDULE 40 PVC SLEEVE**

**ITEM 440-5 - 2" SCHEDULE 40 PVC SLEEVE**

**ITEM 440-6 - 6" CLASS 200 PVC MAIN LINE**

**ITEM 440-7 - 6" ISOLATION GATE VALVE**

**ITEM 440-8 - 3" CLASS 200 PVC LATERAL**

**ITEM 440-9 - 2-1/2" CLASS 200 PVC LATERAL**

**ITEM 440-10 - 2" CLASS 200 PVC LATERAL**

**ITEM 440-11 - 1-1/2" CLASS 200 PVC LATERAL**

**ITEM 440-12 - 1-1/4" CLASS 200 PVC LATERAL**

**ITEM 440-13 - 1" CLASS 200 PVC LATERAL**

**ITEM 440-14 - 3/4" CLASS 200 PVC LATERAL**

**ITEM 440-15 - 1/2" CLASS 315 PVC DRIP LATERAL**

**ITEM 440-16 - 2" REMOTE CONTROL VALVE (TURF)**

**ITEM 440-17 - EMITTER VALVE ASSEMBLY**

**ITEM 440-18 - MASTER VALVE AND FLOW METER**

**ITEM 440-19 - HUNTER I-20 TURF HEAD**

**ITEM 440-20 - HUNTER I-40- TURF HEAD**

**ITEM 440-21 - MULTI OUTLET EMITTER**

**ITEM 440-22 - SINGLE OUTLET EMITTER**

**ITEM 440-23 - DRIP LATERAL FLUSH CAP OUTLET**

**ITEM 440-24 - MOTOROLA MIR5000 FIELD SATELLITE UNIT WITH ENCLOSURE**

**ITEM 440-25 - TRENCHING FOR POWER SERVICE CONNECTION**

**ITEM 440-26 - RESTORATION OF EXISTING IRRIGATION SYSTEM**

## ITEM 440-27 - CONTROL WIRE

### SECTION 505 CONCRETE STRUCTURES

Concrete Structures construction shall conform to Section 505 of the MAG Uniform Standard Specifications except as modified herein:

#### **505.1 Description**

Add the following:

The work under this section shall consist of furnishing all labor, materials and equipment for the construction of all cast-in-place and other concrete structures including the concrete box culverts, headwalls, wingwalls, aprons, spillways, and drop structures, as located and indicated on the plans.

Concrete shall conform to the requirements of Section 725 of the MAG Uniform Standard Specifications, and mix designs shall additionally meet the requirements of Chapter 5, Section 5.3 of ACI STANDARD 318-89. The Contractor shall submit mix designs and certifications of conformance with the above requirements for the written approval of the Engineer.

The use of Class F fly ash will be permitted in all concrete mixes, subject to approval of mix design by Engineer.

Transit Concrete mixes used on the project must carry current certification from ADOT or Arizona Rock Products Association.

The reinforcing steel shall conform to Section 727, Grade 60, of the MAG Uniform Standard Specifications.

The 3" PVC weep holes shall be installed as shown on the plans.

Shop Drawings shall be submitted for the following:

1. Product Data: Admixtures and patching materials.
2. Placement Drawing
3. Concrete, identifying location of each type of construction joint.
4. Reinforcing steel.
5. Plastic Type Water Stops: Details of splices to be used and method of securing water stop in the forms and supporting water stop so as to maintain proper orientation and location during concrete placement.

Do not backfill against walls until concrete has obtained 28-day compressive strength.

#### **Subsection 505.6 - Placing Concrete**

Add the following:

Place concrete in accordance with ACI 301-89. Prior to placing concrete, remove loose soil and water from excavation and subgrade and debris and foreign material from forms. Obtain Engineer's approval of subgrade before placing reinforcing steel. Check reinforcing steel for proper placement and correct discrepancies. Before depositing new concrete on old concrete, clean surface using sandblast or bush hammer or other mechanical means to obtain a 1/4-inch rough profile. Maximum vertical drop to final placement shall be 6 feet, when not guided with chutes or other devices to prevent segregation caused by impact with reinforcing. Do not use aluminum pipe or aluminum conveying devices.

Steps performed in preparation for placing concrete shall meet requirements and recommendations of ACI 304R-89 and ACI 301-89, except as modified herein. Ends of chutes, piping, hopper gates, and other points of concrete discharge throughout the conveying, hoisting, pumping, and placing system shall be designed and arranged for concrete to pass without becoming segregated. Do not use chutes longer than 50 feet. The minimum slopes of chutes shall be angled to allow concrete to readily flow without segregation. Conveyor belts shall be approved by Engineer; wiped clean with device which does not allow mortar to adhere to belt; and conveyor belts and chutes covered.

Provide standby pump, conveyor system, crane and concrete bucket, or other system onsite during placing, for adequate redundancy to ensure completion of concrete placement without cold joints in case of a primary placing equipment breakdown. Minimum pump hose (conduit) diameter shall be 4 inches. Replace pumping equipment and

hoses (conduits) that are not functioning properly.

Provide intermediate construction joints at maximum spacing of 30 feet. Should placement sequence result in cold joint, install water stop in joint.

Limit size of each placement to allow for strength gain and volume change caused by shrinkage.

Consolidate concrete with internal vibrators with minimum frequency of 8,000 cycles per minute and amplitude required to consolidate concrete in section being placed. Provide at least one standby vibrator in operable condition at placement site prior to placing concrete. Consolidation equipment and methods shall conform with the requirements of ACI 309R-87. Provide sufficient windows in forms or limit form height to allow for concrete placement through windows and for visual observation of concrete. Vibration consolidation shall not exceed a distance of 5 feet from point of placement. Vibrate concrete in vicinity of joints to obtain impervious concrete there.

When vibrating concrete, apply approved vibrator at points spaced not farther apart than vibrator's effective radius. Apply close enough to forms to vibrate surface effectively but not damage form surfaces. Vibrate until concrete becomes uniformly plastic. Vibrator must penetrate fresh placed concrete and into previous layer of fresh concrete below.

#### **Subsection 505.6.1 - Joints**

Add the following:

To new concrete wall horizontal construction joints, thoroughly clean and saturate joint with water. Cover horizontal wall surfaces with minimum 2 inches of grout, as specified in Section 776, and immediately place concrete. Limit concrete lift placed immediately on top of grout to 12 inches thick. Thoroughly vibrate to mix and consolidate grout and concrete together.

To old concrete (greater than 60 days old), mechanically roughen existing concrete surfaces to a clean, rough surface using a "Blastrac" by Wheelabrator-Frye, Inc.; or "Porta-Shotblast" by Nelco Manufacturing Corp, to remove existing concrete surface, and provide a minimum roughness profile of 1/4-inch. Saturate surface with water for 24 hours, cover with 2 inches of grout, and place grout as specified for new concrete.

Construction joints shall be constructed as straight joints and made either vertical or horizontal. Concrete placement shall commence after the joint preparation is complete.

For construction joints, prior to placement of abutting concrete, clean contact surface by removing laitance and spillage from reinforcing steel and dowels. Then roughen surface to a minimum of 1/4-inch amplitude by either sandblasting after the concrete has fully cured, water blasting after the concrete has partially cured, or if the concrete is green, cutting the fresh concrete with high pressure water and hand tools. Perform cleaning so as not to damage water stop, if one is present.

Join water stops at intersections to provide continuous seal. Center water stop on joint. Secure water stop in correct position to avoid displacement during concrete placement. Repair or replace damaged water stop. Place concrete and vibrate to obtain impervious concrete in the vicinity of all joints. For joints in slabs, make sure that the space beneath plastic water stop is completely filled with concrete. Also, during concrete placement, make a visual inspection of the entire water stop area. Limit concrete placement to elevation of water stop in first pass, vibrate the concrete under the water stop, lift the water stop to confirm full consolidation without voids, then place remaining concrete to full height of slab. Apply procedure to full length of plastic water stops.

Plastic water stops shall be installed in accordance with manufacturer's written instructions. Splice in accordance with the water stop manufacturer's written instructions using a thermostatically controlled heating iron. Butt splice unless specifically detailed otherwise. Allow at least 10 minutes before the new splice is pulled or strained in any way. Finished splices shall provide a cross section that is dense and free of porosity with tensile strength of not less than 80 percent of the unspliced materials. Wire looped plastic water stop may be substituted for plastic water stop.

#### **Subsection 505.8 - Curing**

Add the following:

Use one of the following methods as approved by Engineer.

Walls shall have only water curing procedures used. Method 1: Leave concrete forms in place and keep entire surfaces of forms and concrete wet for 10 days. Method 2: Continuously sprinkle with water 100 percent of exposed surfaces for 10 days starting immediately after removal of forms.

Slabs shall use one of the following methods: Method 1: Protect surface by water ponding for 10 days; Method 2: Cover with burlap or cotton mats and keep continuously wet for 10 days; Method 3: Cover with 1-inch layer of wet sand, earth, or sawdust, and keep continuously wet for 10 days; Method 4: Continuously sprinkle exposed surface for 10 days; or Method 5: Liquid-membrane forming compound method. Other agreed-upon methods that will keep moisture present and uniform at all times on surface of slabs. Do not use curing compounds.

#### **Subsection 505.9 - Finishing Concrete**

Add the following:

A heavy rake finish shall be applied to the floor of the inlet spillway structure prior to the sloping surface. The sloping surface of the spillway shall have a rough broom finish applied to the floor.

All exposed concrete structures shall be colored using a "light brown" admixture. The color shall conform to Davis Color "Flag Stone Brown #64" as manufactured by Davis Colors, or an approved equal, with respect to hue, value, and chroma. A test panel shall be made and the concrete color shall be submitted by the Contractor and approved by the Engineer and the City of Mesa prior to commencing work. The color shall be added at the rate of 2 pounds per 94-pound sack of cement. The cost of the coloring is incidental to the cost of the concrete.

Prior to starting patching work, obtain quantities of color-matched patching material and manufacturer's detailed instructions for use to provide a structural patch with finish to match adjacent surface. Develop patching techniques with epoxy manufacturer on mockup panel. Dress surface of patches that will remain exposed to view to match color and texture of adjacent surfaces. Patching of concrete shall provide a structurally sound surface finish, uniform in appearance or upgrade finish by other means until acceptable to Engineer.

For tops of walls, screed surfaces to true level planes. After initial water has been absorbed, float with wood float and trowel with steel trowel to smooth finish free from trowel marks.

Spray evaporation retardant onto surface of fresh flatwork concrete immediately after screeding to react with surface moisture. Reapply as needed to ensure a continuous moist surface until final finishing is completed.

#### **Subsection 505.9.6 - Finishing and Patching Surfaces**

Add the following new section:

When patching *defective* areas, remove *defective* concrete to a depth of sound concrete. Small shallow holes caused by air entrapment at surface of forms shall not be considered *defective* unless amount is greater than ½ inch in diameter or as stipulated by the Engineer. Obtain Engineer's approval of chipping work.

Cut out honeycombed and *defective* areas. Cut edges perpendicular to surface at least 1 inch deep. Do not feather edges. Soak area with water for 24 hours. Patch with nonshrink grout as specified in Section 776. Finish surfaces to match adjacent concrete. Keep patches damp for minimum 7 days or spray with curing compound to minimize shrinking.

To patch form tie holes, fill with Category I grout as specified in Section 776. Use only enough water to dry pack. Compact grout using steel hammer and steel tool to drive grout to high density. Cure grout with water. Make sure color of patch after curing matches color of adjacent concrete.

#### **Subsection 505.10 - Payment**

Payment for concrete structures shall be made on the basis of the price bid cubic yard of concrete. Payment shall be full compensation for all labor, materials, reinforcing steel (or welded wire fabric), access barriers, and grates, equipment, excavation and backfill, color admixture, protective coating, and all other items necessary and incidental to construct the structures complete in place according to the plans and these Special Provisions excluding the

flapgates.

**ITEM 505-1 - CONCRETE (CLASS "A", INCLUDING REINFORCING STEEL)**

Reinforced concrete box culverts will be paid on the basis of lineal feet of culvert constructed per the plans and these specifications. No additional payment will be made for grading or earthwork for the realignment of the grass channel at the northeast corner of the site; the cost thereof shall be included in the unit bid price for item 505-3, 8'x3' CONCRETE BOX CULVERT, to which such grading and earthwork shall be considered incidental and appurtenant.

**ITEM 505-2 - 10' x 3' CONCRETE BOX CULVERT (ADOT STD B-02.10)**

**ITEM 505-3 - 8' x 3' CONCRETE BOX CULVERT (ADOT STD B-02.10)**

**ITEM 505-4 - 2-8' x 4' CONCRETE BOX CULVERT (ADOT STD B-02.20)**

Headwalls and other concrete structures will be paid on a lump sum basis for each structure installed and shall include the cost of class B concrete filler. No additional payment will be made for the required turn downs and cut-off walls on concrete aprons, headwalls, and inlet/outlet wings as specified in the MAG Standard Details, ADOT Standard Details, and on these plans; the cost thereof shall be included in the unit bid price for the construction or installation of the concrete structure to which such items are incidental or appurtenant.

**ITEM 505-5 - CONCRETE HEADWALL (MAG STD 501-1)**

**ITEM 505-6 - 3' CONCRETE INLET WINGS (ADOT STD B-04.30)**

**ITEM 505-7 - 3' CONCRETE OUTLET WINGS (ADOT STD B-04.10)**

**ITEM 505-8 - 4' CONCRETE INLET WINGS (ADOT STD B-04.30)**

**ITEM 505-9 - 4' CONCRETE OUTLET W/ APRON (ADOT B-04.10, MODIFIED)**

**ITEM 505-10 - DOWNDRAIN SPILLWAY (SPECIAL DETAIL)**

**ITEM 505-11 - CONCRETE APRON (ADOT B-06.10, MODIFIED)**

**ITEM 505-12 - 30" CONCRETE COLLAR (MAG STD 505)**

**SECTION 515 STEEL STRUCTURES**

Steel Structures construction shall conform to Section 515 of the MAG Uniform Standard Specifications except as modified herein:

**515.1 Description**

Add the following:

Steel grates and trash racks shall be constructed according to the plans and these specifications. This section also covers construction of steel rail and post fence and gates.

Steel structures shall be painted in accordance with Subsection 515.5 and Section 530 of the MAG Standard Specifications using the color Desert Beige. Contractor shall submit Shop Drawings as indicated with finish and color samples for all fabricated items to the Engineer and the City of Mesa for review and approval. Shop Drawings shall also indicate methods of construction with finished dimensions and connection details.

**515.7 Payment:**

Add the following:

The unit price paid for each trash rack shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing, fabricating, delivering, erecting, prime coating and painting the steel work, complete in place, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

**ITEM 515 - TRASH RACK**

**SECTION 520 SAFETY RAIL**

Steel Structures construction shall conform to Section 520 of the MAG Uniform Standard Specifications except as modified herein:

**520.1 Description**

Add the following:

Steel safety rail shall be constructed according to the plans and these specifications.

Steel structures shall be painted in accordance with Subsection 515.5 and Section 530 of the MAG Standard Specifications using the color Desert Beige. Contractor shall submit Shop Drawings as indicated with finish and color samples for all fabricated items to the City of Mesa and the FCDMC Representative for review and approval prior to commencing work. Shop Drawings shall also indicate methods of construction with finished dimensions and connection details.

**520.5 Payment:**

Add the following:

The price paid per lineal foot for steel rail and post shall include full compensation for all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing, fabricating, delivering, erecting, prime coating and painting the steel work, complete in place, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

**ITEM 520 - SAFETY RAIL**

**SECTION 525 PNEUMATICALLY PLACED MORTAR**

Pneumatically placed mortar construction shall conform to Section 525 of the MAG Uniform Standard Specifications except as modified herein:

**525.1 Description**

Add the following:

The work under this section shall consist of furnishing all material and pneumatically placing, by means of suitable equipment and competent operators, either premixed portland cement and fine aggregate (dry mix process) or premixed concrete (wet mix process). Shotcrete shall be 6 inches thick with reinforcing placed in the center and shall be constructed with turn downs on all edges, and weep holes at 8' center as detailed on the plans. Reinforcing shall consist of 6 x 6 - W 10 x W 10 welded wire fabric.

**Subsection 525.9 - Finishing**

Add the following:

All pneumatically placed mortar shall be colored using a "light brown" admixture. The color shall conform to Davis Color "Flag Stone Brown #64" as manufactured by Davis Colors, or an approved equal, with respect to hue, value, and chroma. A test panel shall be made and the concrete color shall be submitted by the Contractor and approved by the Engineer and the City of Mesa prior to commencing work. The color shall be added at the rate of 2 pounds per 94-pound sack of cement. The cost of the coloring is incidental to the cost of the pneumatically placed mortar.

**525.12 Payment:**

Add the following:

Payment for pneumatically-placed mortar will be made at the unit price bid per square yard. Such payment shall be full compensation for all labor, materials, reinforcing steel (welded wire fabric), equipment, excavation and backfill, color admixture, 2" PVC and crushed rock necessary for weep holes, and all other items necessary and incidental to construction, complete in place according to the plans and these Special Provisions. No additional payment will be made for the turn-down portion of the shotcrete, the cost of which is considered incidental and appurtenant to the item for which it is necessary.

**ITEM 525 - SHOTCRETE**

**SECTION 601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**

Trench excavation, backfilling and compaction shall conform to Section 601 of the MAG Uniform Standard Specifications except as modified herein:

Add the following:

Prior to any excavations, contractor shall call Blue Stake at (602) 263-1100 so existing gas facilities may be accurately located. The contractor should hand dig carefully at these marked locations until the gas pipe has been found and exposed. Use care to avoid damaging or breaking a small electrical tracer wire (which is used for locating purposes) that may be buried with the pipe.

Once mechanical trenching is in progress, do not attempt to trench within two (2) feet of a gas pipe. This trenching

shall be done by hand in order to prevent any damage to the gas pipe. In the event that the contractor should "hook" or otherwise strain a gas pipe while excavating, a call should be placed to (602) 271-GASS ((602) 271-4277).

Even though there may not be any apparent damage, the strain may have damaged the wrap or a portion of the buried pipe or fittings at other locations causing a leak in the surrounding area. Also, if a steel facility is exposed and the pipe coating is found to be in need of repair, please have our office contacted so a crew can be dispatched to rewrap the pipe. This is a service provided by Southwest Gas at no cost to the contractor so that we can monitor our steel facilities and minimize the possibility of corrosion.

When the excavations are complete, all exposed gas pipes should be protected. If the trench is more than three (3) feet wide, the pipe must be supported in a manner where the supporting material does not damage the pipe or its protective wrapping. The contractor shall call Southwest Gas at (602) 484-5306 to review and approve all proposed pipe support designs.

Before backfilling, the natural gas facilities requires both six (6) inches of bedding and six (6) inches of shading with sand or material free of rocks and able to pass through a 3/8 inch screen in order to provide firm support under the facility and to prevent damage to the pipe or pipe coating from the backfilling operation. When backfilling, do not drop backfill directly on the exposed gas pipe. When compacting backfill, use extra care when directly over the gas pipe in order to avoid any damage.

#### **SECTION 610 WATER LINE CONSTRUCTION**

Water line construction shall conform to Section 610 of the MAG Uniform Standard Specifications except as modified herein:

##### **610.1 Description:**

Add the following:

The construction of all water lines shall conform to applicable standard specifications and details, except as otherwise required on the plans or as modified in the special provisions. The work under this Section includes water line relocations as shown on the plans.

The City of Mesa requires a written notice of five (5) working days to coordinate the necessary exercising and checking of valves prior to shutting off any water valves to tie-ins.

The Contractor shall review water maps (plats) with his Inspector listing the valves that need to be exercised and when they are to be shut off for any tie-ins on his project. Request shall be sent in time to allow the five (5) day time limit noted above. Further, the Contractor shall note that the City of Mesa Utilities Department conducts bacteria test from 8:00 a.m. to 3:00 p.m., Monday through Thursday, except holidays. The Contractor shall schedule all required bacteria testing within this time frame. There shall be no additional payment or allotment of time to the Contractor for this.

The City of Mesa fire department must be notified at least 24 hours in advance of any shut downs for waterlines serving as hydrants.

The Contractor is responsible for maintaining access to water valves within the construction area. Failure to do so may result in delays to a scheduled water shut down. Only personnel from the City of Mesa are permitted to operate water valves.

The Contractor shall provide all materials and labor necessary to complete all waterline work. The City of Mesa will not provide materials, labor, or equipment for work related to this project.

The Contractor shall be responsible for all waterline testing, disinfection and flushing including the cost of the water needed for flushing.

##### **Water System Shut Down**

Except where noted otherwise, the Contractor is responsible for protecting all waterlines in place and for maintaining

all waterlines in service for the duration of the project. The waterline may be shut down and the pressure relieved in segments for short periods during construction. The waterline may not be shut down before 7:30 a.m. and must be back in service by 3:00 p.m. If a fire emergency develops that will require the waterline to be placed back in service, the Contractor shall be responsible for backfilling or shoring the trench as necessary to allow re-pressurizing the waterline.

If the Contractor elects to temporarily shut down a water main for a period of time which exceeds eight hours, the Contractor shall provide a temporary bypass waterline at no additional cost which is approved by the City of Mesa.

When a shut down is necessary that will take a water user out of service, those residents and businesses must be notified by door hanger a minimum of 48 hours prior to shut down. The hanger should state the hours that the water will be turned off.

#### Waterline Replacement

In the event of ACP or plastic waterlines crossing of the mainline storm drain construction or laterals which are greater than 24-inch diameter, the Contractor shall replace the waterline with DIP in accordance with Section 610 of the MAG Standard Specifications; as modified herein.

The Contractor shall arrange to have the line shut down in order to perform this work. The Contractor shall notify the City at least 72 hours prior to the need to shut down any waterlines.

The Contractor shall bear the cost of flushing the lines.

Except for 2-inch and smaller waterlines, materials for waterline replacement shall be ductile iron, in accordance with Subsection 610.3 of the MAG Standard Specifications.

The replaced waterlines shall be visually inspected for leaks under line pressure prior to backfilling.

#### Waterline Realignment

In the event of an unforeseen conflict with an existing waterline not detailed on the plans or as directed by the Engineer, the Contractor shall vertically and/or horizontally realign the waterline in accordance with MAG Standard Detail 370.

The waterline realignment shall include, but not be limited to, excavation, backfill, compaction, pipe fittings, offsets, couplings, sleeves, blocking, joint restraints and hardware. The realigned waterline shall be tested per Subsection 610.14 of the MAG Standard Specifications prior to backfilling.

The Contractor shall coordinate with the City of Mesa to obtain permission to have the line shut down in order to perform this work. The Contractor shall notify the City at least 72 hours in advance of the need for a shutdown.

Materials for waterline realignment shall be ductile iron, in accordance with Section 750 of the MAG Standard Specifications.

#### WATER METERS:

Water meter will be furnished by the City of Mesa. However, the Contractor is responsible to call City of Mesa at 480-644-2257 at least 30 days in advance to request the meter. The Contractor will be responsible for payment and installation of the meter. Reimbursement for the meter shall be included in the unit bid price for Item 610-5, 4" WATER METER.

#### **610.18 Measurement and Payment**

Add the following:

Payment for waterline realignment, replacements and supports shall be made at the contract unit price bid per each location and size of pipe. Such payment shall be full compensation for furnishing and installing the item complete and in place including the cost of all materials, labor, and equipment. Payment will include all trenching, bedding backfill, and other items incidental to the relocation, realignment or support of the waterlines.

Payment for realignment of the existing 16-inch waterline shall be made at the unit price bid per each location in conformance with MAG Standard Specification 610.18. No separate payment will be made to remove the existing 16-inch pipe. The cost of that work shall be included in the unit price bid for the realigned pipe.

**ITEM 610-1 - VERT. REALIGNMENT OF 16" WATER MAIN - CL. 50 D.I.P. W/ RES. JOINTS**

**ITEM 610-2 - REALIGN 8" PVC STORM DRAIN**

Payment for new waterlines shall be made at the unit price bid per linear foot, rounded to the nearest foot, for each size and type of pipe and shall be compensation in full for furnishing and installing the type of pipe as specified and as shown on the plans including removal of obstructions, excavation, bedding, backfilling, compacting, testing, joint materials, joining, collars, lateral connections complete in place (i.e. wyes, tees, and crosses), and field closures.

**ITEM 610-3 - 16" x 4" TAPPING SLEEVE, VALVE, BOX AND COVER**

**ITEM 610-4 - 4" DIP WATER LINE**

Payment for purchase and installation of water meters shall be made at the unit bid price per each location. Such payment shall be full compensation for furnishing and installing the item complete and in place including the cost of all materials, labor, and equipment. Payment will include all trenching, bedding backfill, and other items incidental to construction and installation of the water meter.

**ITEM 610-5 - 4" WATER METER**

#### **SECTION 615 SEWER LINE CONSTRUCTION**

Sewer line construction shall conform to Section 615 of the MAG Uniform Standard Specifications except as modified herein:

##### **615.1 Description:**

Add the following:

This section shall include the replacement of existing High Density Polyethylene (HDPE) sewers with Class 50 Ductile Iron Pipe per Section 750.2 of the MAG Standard Specifications, and shall include concrete encasement of existing sewers.

##### Lining for Ductile Iron Sewer Pipe

All ductile iron sewer pipe shall be lined with Protecto-401, or approved equal.

##### Sewer Line Encasement

Sewer line encasement, where required, shall be done in accordance with MAG Standard Detail 404.

##### Temporary Sewer Rerouting

Sewer replacements will require temporary rerouting (pumping) of sewage flows. The Contractor shall provide primary pumps and backup pumps; both capable of pumping the entire flow. A plan of the temporary rerouting of sewage flows shall be submitted and approved prior to any sewer line replacement. The plan shall be submitted to Burt Williams (Telephone: 480-644-2784) At the City of Mesa.

##### Sewage Flow Rates - Southern Avenue

The Contractor shall be responsible for making arrangements to accommodate the peak flow in the Southern Avenue sewer. The Contractor shall coordinate with the City of Mesa to determine the peak flow and the necessary method of bypassing the flow. No additional payment shall be made for pumping or other items related to this work, the cost thereof shall be included in the unit bid price for the construction or installation of the sewer line replacement to which such items are incidental or appurtenant.

##### **615.13 Measurement and Payment:**

Payment for replacement of the existing 21-inch HDPE sewer line with 20-inch Class 50 Ductile Iron Pipe shall be made at the unit price bid per each location. Such payment shall be full compensation for furnishing and installing the item complete and in place including the cost of all materials, labor, and equipment. Payment will include all trenching, bedding backfill, and other items incidental to the replacement or support of the sewer lines. No separate payment will be made to remove the existing 21-inch pipe, the cost thereof being included in the unit price bid for

the pipe replacement.

**ITEM 615 - 21" HDPE SEWER LINE REPLACEMENT W/ 20" D.I.P.**

**SECTION 618 STORM DRAIN CONSTRUCTION**

Storm drain construction shall conform to Section 618 of the MAG Uniform Standard Specifications except as modified herein:

**618.1 Description:**

Add the following:

This section covers concrete pipe line or high density polyethylene (HDPE) pipe line construction used for the conveyance of storm drainage in the basin low-flow system, or in streets, easements, and alley right of ways, under low hydrostatic heads. The Contractor has the option of using either concrete pipe or HDPE pipe for all pipes within the basin. All installed pipes shall be the same material.

**618.2 Materials**

Add the following:

Concrete pipe, specials, joints, gaskets, and testing shall be according to Section 735 and 765 of the MAG Standard Specifications and as specified below.

Location Per plans

Type Reinforced Concrete Pipe, MAG 735 (ASTM C 76)  
Class III  
Diameter 24 inch  
Joints Rubber Gasket, MAG 765 (ASTM C 361)

Location Per plans

Type Reinforced Concrete Pipe, MAG 735 (ASTM C 76)  
Class III  
Diameter 30 inch  
Joints Rubber Gasket, MAG 765 (ASTM C 361)

High Density Polyethylene (HDPE) pipe, specials, joints, gaskets, and testing shall be according to Section 738 of the MAG Standard Specifications and as specified below.

Location Per plans

Type High Density Polyethylene Pipe, MAG 738 (ASTM F-894)  
Class 40  
Diameter 24 inch  
Joints Bell and Spigot Elastomeric Gasket, MAG 738 (ASTM F-477)

Location Per plans

Type High Density Polyethylene Pipe, MAG 738 (ASTM F-894)  
Class 40  
Diameter 30 inch  
Joints Bell and Spigot Elastomeric Gasket, MAG 738 (ASTM F-477)

**618.6 Payment**

Add the following:

Payment will be paid at the unit price bid per linear foot, rounded to the nearest foot, for each size and type of pipe and shall be compensation in full for furnishing and installing the type of pipe as specified and as shown on the plans including removal of obstructions, excavation, bedding, backfilling, compacting, testing, joint materials, joining, collars, lateral connections complete in place (i.e. wyes, tees, and crosses), and field closures.

**ITEM 618-1 - 24" STORM DRAIN PIPE**

**ITEM 618-2 - 30" STORM DRAIN PIPE**

Payment for pipe connection to concrete box culverts will be paid at the unit price bid each. Such payment shall be compensation in full for connection complete in place, as called for on the plans and/or on the standard details, and shall include all costs of excavation, removal of obstructions, shoring and bracing, bedding, backfilling, compaction, and all work not specifically covered in other pay items.

**ITEM 618-3 - DRAIN PIPE CONNECTION TO CONCRETE BOX CULVERT**

**SECTION 625 MANHOLE CONSTRUCTION AND DROP SEWER CONNECTIONS**

Manhole construction shall conform to Section 625 of the MAG Uniform Standard Specifications except as modified herein:

**625.1 Description:**

Add the following:

Sewer Manholes: Construction shall consist of furnishing all materials and constructing manholes complete in place, as detailed, including foundation walls, cast iron steps, manhole frames, covers, and any incidentals thereto, at locations shown on the plans. The manhole cover shall say "City of Mesa Storm Sewer". The standard MAG Detail 520 and 522 shall be modified to eliminate steps inside the manhole shaft. The manhole shaft shall be modified to 5' in diameter instead of 4' as shown in MAG Detail 520 and 522.

**625.5 Payment:**

Add the following:

Payment will be made at the unit price bid per each manhole, and shall be compensation in full for furnishing and installing manhole, complete, with formed invert, concrete foundation, ladder rungs, cast iron frame and cover, excavation and backfill, paving cut replacement in excess of the applicable pay widths authorized in Section 336, and any incidentals thereto, in conformance with the plans and specifications.

**ITEM 625 - MANHOLE (MAG STD DET. 520 & 522)**

**SECTION 792 DUST PALLIATIVE**

Replace Section 792 of the MAG Standard Specifications with the following:

**792.1 General:**

Dust palliatives shall consist of various chemical dust suppressants which work by binding together lighter soil particles. Since the establishment of grades will not normally be required prior to the application of this palliative, neither the District or the City of Mesa will assume any responsibility for the maintenance of this work. The Contractor will, however, be responsible for obtaining satisfactory results within the limits of the materials and the requirements of these specifications.

Sufficient grading shall be done prior to treatment to provide reasonable drainage.

The material to be used as the dust palliative shall be an acrylic copolymer type or other alternative as approved by the Engineer. All materials must meet the environmental requirements of Section 792.3 and must be approved by the Engineer prior to their use.

**792.2 Type of Materials and Application Rates:**

Emulsions shall be miscible with water in all proportions as noted in Table 792-1. The dilution ratio will vary based upon the local soil and weather conditions. The ratios shall be proposed by the Contractor and agreed upon by the Engineer.

The rate of application noted in Table 792-1 shall be for the treatment, method and use specified by the Contracting Agency, or as directed by the Engineer. To compensate for local conditions, the Contractor may adjust the application rate within the ranges specified.

Products specifically formulated as tackifiers which prevent wind-blown erosion shall not be acceptable as dust palliatives for vehicular traffic, but may be used for their intended purposes.

TABLE 792-1				
DUST PALLIATIVE DILUTION RATIOS AND APPLICATION RATES				
Product Type	Use/Treatment (1)	Dilution Ratio (2)		Application Rate (3) (gal/sy) [l/m <sup>2</sup> ]
		Range	Typical	
Acrylic Copolymer	Topical - Road or Parking Lot	20:1 to 4:1	9:1	0.20 to 0.10 [0.91 to 0.45]
	Topical - Road Shoulder	20:1 to 4:1	15:1	0.16 to 0.09 [0.72 to 0.41]
	Surface Course (per inch [25mm] of depth)	20:1 to 4:1	9:1	0.10 to 0.06 [0.45 to 0.29]
Other	As approved by the Engineer			

1. Topical application rates shown are to obtain ½ [12] to 1-inch [25mm] penetration. Higher rates should be used if greater penetration is anticipated.
2. The dilution ratio (water product) is variable and shall be appropriate for the local soil and weather conditions, as proposed by the Contractor and agreed upon by the Engineer.
3. Application rate of undiluted concentrate.

(A) Acrylic Copolymer Types:

The material shall be a white or clear emulsion that can penetrate, saturate and bond together treated soils to create a hard, dust-free and water resistant surface. The material shall have the following properties in its undiluted state:

Specification Designation	ASTM Test Method	Requirements
Composition	--	Acrylics, acrylates & acerates
pH	E 70	4.0 - 9.5
Residue (active solids content), %	D 244	40 min.
Flash Point		None
Absolute Viscosity (Brookfield), cP, 77°F [25°C]	--	1500 max.
Specific Gravity, 60/60 °F [15.5 °C]	D 1298	1.00 - 1.15

(B) Other Types:

Other types of dust palliative may be approved for use by the Engineer. Test methods, requirements, dilution ratios and application rates shall be as specified by the manufacturer.

**792.3 Environmental Criteria:**

Products shall not contain or emit chlorinated fluorocarbons (CFS's Freon's ) and shall not contain or emit volatile organic compounds (VOC's) that exceed Federal, State or Local air quality limitations.

Products and their degradation products shall not be composed of elements, compounds, mixtures or produce runoffs with the characteristics identified under ARS 36-2822 of the Arizona Hazardous Waste Management Act, emit or off-gas during placement, use or degradation of any hazardous air pollutant listed under Section 112 of the Federal Clean Air Act [42 U.S.C. § 7412], be a hazardous chemical substance or mixture pursuant to Section 7 of the Federal Toxic Substances Control Act [15 U.S.C. § 2606], be designated by rule an extremely hazardous chemical substance

pursuant to the Arizona Environmental Quality Act, produce runoffs that contain concentrations exceeding the parameters designated in Section 2.18 'Table 5' of the NPDES Multi-Sector General Permit for Industrial Activities, be prohibited for use by the Arizona Department of Environmental Quality, the Environmental Protection Agency, or any applicable law, rule or regulation.

Products or their components and degradation products shall be tested and certified by the manufacturer not to be substances or composed of substances known to be, or reasonably anticipated to be carcinogenic or toxic by the U.S. Department of Health and Human Services.

Products must have Hazardous Materials Identification System (HMIS) ratings equal to or less than the following for each category: H=1; F=1; R=1; PPE=X.

UNITED STATES OF AMERICA  
DEPARTMENT OF ENERGY  
WESTERN AREA POWER ADMINISTRATION

Rogers-Coolidge 230-kV Transmission Line

SW¼ of Section 26, NW¼ of Section 35,  
Township 1 North, Range 7 East, G&SRM,  
Maricopa County, Arizona

LICENSE AGREEMENT

THIS LICENSE AGREEMENT, made this *29* day of *November*, 1999, between City of Mesa, P.O. Box 1466, Mesa, Arizona 85211-1466, (LICENSEE), whether one or more, and the UNITED STATES OF AMERICA, Department of Energy, Western Area Power Administration, (Western), represented by the officer executing this agreement, pursuant to the Reclamation Act, Act of June 17, 1902, 32 Stat. 388, and acts amendatory thereof and supplementary thereto, and the Department of Energy Organization Act, Act of August 4, 1977, 91 Stat. 565.

WITNESSETH:

Western concurs in the Parkwood Ranch Detention Basin, related access roads, and landscaping (FACILITIES), proposed by the LICENSEE will not interfere with the operation and maintenance of Western's Rogers-Coolidge 230-kV Transmission Line, if constructed in the manner and at the locations shown on Exhibits "A," through "K," attached hereto and made a part hereof.

In consideration of Western's concurrence, the LICENSEE agrees to the following:

- (a) This license does not grant any right, privilege, or interest in the land. The LICENSEE is responsible for obtaining any necessary land rights from the underlying landowner.
- (b) This license is only valid provided the FACILITIES are constructed, operated and maintained in conformance with the attached drawings and/or exhibits. Any relocations, changes, or upgrades require additional concurrence by Western. LICENSEE agrees to alter or relocate its FACILITIES, at no cost to Western, to accommodate future or modifications of Western's facilities, including but not limited to, upgrades of the transmission line.
- (c) LICENSEE shall notify Western at least 10 days prior to commencing installation of the FACILITIES to permit **INSPECTION BY WESTERN.**

(d) To abide by and comply with all applicable Federal, State, and local laws and building and safety codes.

(e) LICENSEE agrees to indemnify and hold harmless Western, its employees, or agents, from any loss or damage, and from any liability on account of personal injury, death, or property damage arising out of LICENSEE'S, its agents', contractors', or subcontractors' use of the land covered by this License Agreement.

(f) This agreement shall be binding on the successors or assigns of LICENSEE and Western; however, it shall not be assigned by LICENSEE without prior written consent of Western.

(g) That no temporary or permanent structures, other than the FACILITIES covered in this License Agreement, shall be placed within Western's easement area.

(h) LICENSEE shall not excavate within twenty (20) feet of any Western transmission line structure.

(i) Trees or vegetation which will exceed fifteen (15) feet in height at maturity shall not be located within the easement area.

(j) Any fencing that is constructed across Western's right-of-way must have a 16-foot, dual-lock gate installed at each end of the right-of-way. Metal fencing must be properly grounded.

(k) Access along the right-of-way and to Western's structures (towers) must not be impeded.

(l) Long-term or storage parking (i.e., recreational vehicle parking) shall not be permitted.

(m) No appreciable change shall be made to the character of existing topography.

City of Mesa

THE UNITED STATES OF AMERICA  
DEPARTMENT OF ENERGY  
Western Area Power Administration

By C. K. Luster  
(Signature)

J. Tyler Carlson  
Regional Manager

CHARLES K. LUSTER  
Print Name

CITY MANAGER  
Title



# SOIL LEGEND

SAMPLE DESIGNATION	DESCRIPTION	
AS	Auger Sample-	A grab sample taken directly from auger flights.
BS	Large Bulk Sample-	A grab sample taken directly from auger flights.
S	Spoon Sample-	Standard Penetration Test (ASTM D-1586) Driving a 2.0 inch outside diameter split spoon sampler into undisturbed soil for three successive 6-inch increments by means of a 140 lb. weight free falling through a distance of 30 inches. The cumulative number of blows for the final 12 inches of penetration is the Standard Penetration Resistance (N).
RS	Ring Sample-	Driving a 3.0 inch outside diameter spoon equipped with a series of 2.42 inch diameter, 1 inch long brass rings, into undisturbed soil for one 12 inch increment by the same means of the Spoon Sample. The blows required for the 12 inches of penetration are recorded.
LS	Liner Sample-	Standard Penetration Test driving a 2.0 inch outside diameter split spoon equipped with two 3 inch long, 3/8 inch inside diameter brass liners, separated by a 1 inch long spacer, into undisturbed soil by the same means of the spoon sample.
ST	Shelby Tube-	A 2.0 inch outside diameter thin-walled tube continuously pushed into undisturbed soil by a rapid motion, without impact or twisting (ASTM D-1587).
-	Continuous Penetration Resistance-	Driving a 2.0 inch outside diameter "Bullnose Penetrometer" continuously into undisturbed soil by the same means of the spoon sample. The blows for each successive 12 inch increment are recorded.

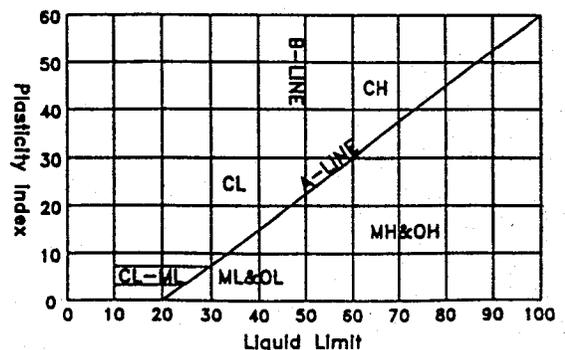
CONSISTENCY			RELATIVE DENSITY	
Clays & Silts	Blows/Foot *	Strength †	Sands & Gravels	Blows/Foot *
Very Soft	0-2	0-0.25	Very Loose	0-4
Soft	2-4	0.25-0.5	Loose	5-10
Firm	5-8	0.5-1.0	Medium Dense	11-30
Stiff	9-15	1-2	Dense	31-50
Very Stiff	16-30	2-4	Very Dense	> 50
Hard	> 30	> 4		

\* Number of blows of a 140 lb hammer free falling 30 inches to drive a 2 inch O.D. split spoon sampler (ASTM D-1586)  
 † Unconfined compressive strength in tons/sq ft. Read from a pocket penetrometer.

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
Coarse Grained Soils  More than 50% of material is larger than #200 sieve size	Gravel and Gravelly Soils	Clean Gravels		GW	Well Graded Gravels
		50% Coarse Fraction is > #4 Sieve Size		GP	Poorly Graded Gravels
		w/ Fines		GM	Silty Gravels
	Sand and Sandy Soils	Clean Sands		SW	Well Graded Sands
		50% Coarse Fraction is < #4 Sieve Size		SP	Poorly Graded Sands
		w/ Fines		SM	Silty Sand
		Sands		SC	Clayey Sand
Fine Grained Soils  More than 50% of material is smaller than #200 sieve size	Silt and Clays			ML	Inorganic Silts, Low P.I.
	Liquid Limit is less than 50%			CL	Inorganic Clays, Low P.I.
	Silt and Clays			OL	Organic Silts, High P.I.
	Liquid Limit is greater than 50%			MH	Inorganic Silts, High P.I.
	Silt and Clays			CH	Inorganic Clays, High P.I.
	Liquid Limit is greater than 50%			OH	Organic Clays, High P.I.
Highly Organic Soils				PT	Peat and Humus, Highly Organic

MATERIAL SIZE	PARTICLE SIZE			
	Lower Limit		Upper Limit	
	mm	Sieve Size †	mm	Sieve Size †
<u>Sands</u>				
Fine	.075	#200	0.42	#40
Medium	0.42	#40	2.00	#10
Coarse	2.00	#10	4.76	#4
<u>Gravels</u>				
Fine	4.76	#4	191	3/4" o
Coarse	191	3/4" o	762	3" o
Cobbles	762	3" o	304.8	12" o
Boulders	304.8	12" o	914.4	36" o

† U.S. Standard      ° Clear Square Openings



Depth (feet)  
0  
5  
10  
15  
20  
25  
30

**Graphic Log**

Rig Type: CME-55  
 Boring Type: Hollow Stem Auger  
 Surface Elevation: N/A

Visual Classification

0 - 3.5: Medium Dense Brown CLAYEY SAND (SC-Dry)

3.5 - 12.0: Medium Dense Light Brown CLAYEY SAND (SC-Dry)

12.0 - 17.0: Medium Dense Brown WELL GRADED SAND (SW-Dry)

17.0 - 21.0: Very Dense Brown CLAYEY SAND (SC-Dry) with Moderate Calcareous Cementation

21.0 - End of Boring

Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
RS-1	2.0	8.5	98.9	
S-2	6.0	--	--	
S-3	11.0	--	--	
S-4	16.0	--	--	
S-5	21.0	--	--	85/12

Boring Date: 3-8-99  
 Field Engineer/Technician: M. Polsky  
 Driller: R. Wood  
 Contractor: Heber Mining

Water Level		
Depth	Hour	Date
Dry		

**SPEEDIE AND ASSOCIATES**

Log of Test Boring Number: B- 1

Parkwood Basin  
 NEC Crismon Rd. & Southern Ave.  
 Mesa, Arizona

Project No.: 990194SA

Depth (feet)  
0  
5  
10  
15  
20  
25  
30

Graphic Log

Rig Type: CME-55  
Boring Type: Hollow Stem Auger  
Surface Elevation: N/A

Visual Classification

Medium Dense to Very Dense Brown CLAYEY SAND (SC-Dry) with Weak to Strong Calcareous Cementation

8.0  
Very Dense Light Brown WELL GRADED SAND (SW-Dry) with Trace Silt

13.0  
Very Dense Light Brown SILTY SAND (SM-Dry) with Trace Gravel and Moderate Calcareous Cementation

20.0  
End of Boring

Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
S-1	2.5	--	--	
BS-2	4.5	--	--	
RS-3	4.8			50/4"
RS-4	9.5	3.1	103.3	60/12"
S-5	15.3	--	--	50/4"
S-6	21.0	--	--	57/12"

Boring Date: 3-8-99  
Field Engineer/Technician: M. Polsky  
Driller: R. Wood  
Contractor: Heber Mining

Water Level		
Depth	Hour	Date
Dry		

**SPEEDIE AND ASSOCIATES**

Log of Test Boring Number: B-2

Parkwood Basin

NEC Crismon Rd. & Southern Ave.

Mesa, Arizona

Project No.: 990194SA

Depth (feet)  
 0  
 5  
 10  
 15  
 20  
 25  
 30

Graphic Log

Rig Type: CME-55  
 Boring Type: Hollow Stem Auger  
 Surface Elevation: N/A

Visual Classification

Medium Dense to Very Dense Brown  
 SILTY SAND (SM-Dry) with Trace  
 Gravel



End of Boring 20.0

Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
RS-1	2.0	6.2	92.8	
S-2	6.0	--	--	
S-3	11.0	--	--	
S-4	16.0	--	--	86/12"
S-5	20.0	--	--	50/6"

Boring Date: 3-8-99  
 Field Engineer/Technician: M. Polsky  
 Driller: R. Wood  
 Contractor: Heber Mining

Water Level

Depth	Hour	Date
Dry		

**SPEEDIE AND ASSOCIATES**  
 Log of Test Boring Number: B- 3  
 Parkwood Basin  
 NEC Crismon Rd. & Southern Ave.  
 Mesa, Arizona  
 Project No.: 990194SA

Depth (feet)

Graphic Log

Rig Type: CME-55  
 Boring Type: Hollow Stem Auger  
 Surface Elevation: N/A

Visual Classification

0 Dense Brown SILTY SAND (SM-Dry)

5 with Trace Gravel

10 Very Dense Brown SILTY SAND (SM-Dry)

13.5

15 Hard Brown SANDY SILT (ML-Dry) with Moderate Calcareous Cementation

17.0

20 Very Dense Light Brown SILTY SAND (SM-Dry) with Trace Gravel and Moderate Calcareous Cementation

21.0

End of Boring

Sample Number	Depth of Sample	Natural Water Content (%)	In-place Dry Density (P.C.F.)	Penetration Resistance Blows per Foot
RS-1	2.0	--	--	
RS-2	5.5	3.3	114.9	
S-3	11.0	--	--	51/12"
S-4	16.0	--	--	50/6"
S-5	21.0	--	--	82/12"

Boring Date: 3-8-99  
 Field Engineer/Technician: M. Polsky  
 Driller: R. Wood  
 Contractor: Heber Mining

Water Level		
Depth	Hour	Date
Dry		

**SPEEDIE AND ASSOCIATES**

Log of Test Boring Number: B- 4

Parkwood Basin

NEC Crismon Rd. & Southern Ave.

Mesa, Arizona

Project No.: 990194SA