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**CONSTRUCTION SPECIFICATIONS**

**FOR**

**CONTRACT FCD 99-08  
OAK STREET STORM DRAIN, PHASE II  
PCN No. 027-03-32**



(Engineer's  
Seal)

Prepared By  
EEC/MKE

3501 N. 16<sup>th</sup> Street  
Phoenix, AZ 85016-6419

for

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY**

Recommended by: Edward A. Raleigh Date: 4/9/99  
Edward A. Raleigh, P.E.  
Manager Engineering Division

Issued for Public Bidding by: M.S. Ellegood Date: 4/13/99  
Michael S. Ellegood, P.E.  
Chief Engineer and General Manager

SUPPLEMENTARY TO MARICOPA ASSOCIATION OF GOVERNMENTS UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION EDITION OF 1998 AND REVISIONS AND SUPPLEMENTS THERETO.

NTP as of 6/16

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**ATTENTION**

**ALL PROSPECTIVE BIDDERS**

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

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

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

Please submit your bids accordingly.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CONTRACT FCD 99-08  
Oak Street Storm Drain, Phase II  
PCN 027-03-32

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(Area to left reserved  
for Engineer's Seal)

## FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

### INVITATION FOR BID

**BID OPENING DATE:** May 6, 1999 @ 2:00 p.m.

**LOCATION:** The project is located within the Cities of Phoenix and Scottsdale, 58<sup>th</sup> Street to Indian Bend Wash along Oak Street.

**PROPOSED WORK:** The proposed project includes storm drain pipe construction from 58<sup>th</sup> Street to east of Miller Road into the Indian Bend Wash along Oak Street; enlarging existing detention basin at 66<sup>th</sup> Street and Palm Lane; and construction of catch basins, connector pipes, inlet structures and manholes; and several utility relocations.

**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 May 6, 1999, and then publicly opened and read at 2801 West Durango Street, Phoenix, Arizona 85009. All bids are to be marked in accordance with Section 102.9 of the MAG Uniform Standard Specifications and addressed to the Chief Engineer and General Manager, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009. No bids will be received after the time specified for bid opening. All bids must be submitted on proposal forms furnished by the Flood Control District and included in the Proposal Pamphlet. The Board of Directors reserves the right to reject any and all bids and to waive any informality in any bid received.

**ELIGIBILITY OF CONTRACTOR:**

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

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

**PRE-BID CONFERENCE:**

A **MANDATORY PRE-BID CONFERENCE** will be held on April 27, 1999 at 2:00 p.m. in the Flood Control District New River/Harquahala Conference Room, 2801 West Durango Street, Phoenix, Arizona. All potential contractors and subcontractors are encouraged to attend, however, **all firms submitting a bid for this project are required to attend this pre-bid conference.** Be prepared at that time to submit in writing and discuss any questions and comments concerning this solicitation.

**Questions or items for clarification may be addressed to the Contracts Manager, in writing, at least five (5) 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 addendum, shall not be binding nor have any legal effect.

**CONTRACT TIME:**

All work on this Contract is to be completed within two hundred seventy (270) calendar days after date of Notice to Proceed.

**MBE/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, by 4:00 p.m. on the seventh calendar day after bid opening,

**For this contract, a goal of fifteen percent (15%) MBE/WBE is established for Minority/Women-Owned Business Enterprises.** Complete instructions and additional forms are available from the Flood Control District, Contracts Branch, telephone number 506-4433 or 506-4876. Failure to implement "good faith" efforts in accordance with the City of Phoenix-Maricopa County Consolidated Certification Program for DBE/MBE/WBE to the satisfaction of the District may result in rejection of the bid.

**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 \$40.00 by check, payable to the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. This payment will not be refunded. Mail orders for project documents must include an additional \$8.00 for first class U.S. postage and handling. The total \$48.00 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

QTY.	UNIT	DESCRIPTION
201	LF	108" RCP STORM DRAIN PIPE
1,000	LF	108" RCP/CIPP STORM DRAIN PIPE
270	LF	96" RCP STORM DRAIN PIPE
3,317	LF	96" RCP/CIPP STORM DRAIN PIPE
5	EA	SPECIAL JUNCTION STRUCTURES
3,290	LF	36"RGRCP/CIPP STORM DRAIN PIPE
120	LF	WATERLINE RELOCATION
1,165	LF	CONC. BOX CULVERT 11' X 6'

**BID**

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

Gentlemen:

The following Bid is made for the Oak Street Storm Drain, Phase II, Contract FCD 99-08, in the County of Maricopa, State of Arizona.

The following Bid is made on behalf of

---

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

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

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

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

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

The Undersigned further proposes to execute the Contract Agreement and furnish satisfactory Bonds and Sureties within ten (10) days of receipt of Notice of Bid acceptance, **TIME BEING OF THE ESSENCE**. The Undersigned further proposes to begin work as specified in the Contract attached hereto, and to complete the work within two hundred seventy (270) calendar days from the effective date specified in the Notice to Proceed, and maintain at all times a Payment and Performance Bond, approved by the Board of Directors, each in an amount equal to one hundred percent of the contract amount. This Bond shall serve not only to guarantee the completion of the work on the part of the Undersigned, but also to guarantee the excellence of both workmanship and material and the payment of all obligations incurred, said Bonds and Sureties to be in full force and effect until the work is finally accepted and the provisions of the Plans, Specifications, and Special Provisions fulfilled.

A bid bond in the amount and character named in the Invitation to Bid, and amounting to not less than ten (10) percent of the total bid, is enclosed. The bid bond is submitted as a guaranty of 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, 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 this Bid.

**OAK STREET STORM DRAIN  
 BID SCHEDULE**

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMOUNT
105-1	PARTNERING ALLOWANCE	L.S.	1	\$ 20,000.00	\$ 20,000.00
105-2	SRP RELOCATION	L.S.	1		
107-1	NPDES/SWPPP PERMITS	L.S.	1		
107-2	PUBLIC INVOLVEMENT/NOTIFICATION ALLOWANCE	L.S.	1	\$ 20,000.00	\$ 20,000.00
107-3	PROJECT SIGNS ALLOWANCE	L.S.	1	\$ 10,000.00	\$ 10,000.00
200-1	EXCAVATION (DETENTION BASIN)	L.S.	1		
202-1	MOBILIZATION	L.S.	1		
336-1	PAVEMENT REPLACEMENT M.A.G. DET. 200, TYPE A	S.Y.	2,121		
336-2	PAVEMENT REPLACEMENT M.A.G. DET. 200, TYPE B	S.Y.	52		
336-3	PAVEMENT REPLACEMENT C.O.S. DET. 2200, T-TOP	S.Y.	9,842		
340-1	REMOVE & REPLACE CURB & GUTTER M.A.G. DET. 220, TYPE A	L.F.	1,439		
340-2	REMOVE & REPLACE SIDEWALK M.A.G. DET. 230	S.F.	7,535		
340-3	REMOVE & REPLACE S/W RAMP,MAG DET. 234,TYPE D,MOD. 8" THICK	S.F.	38		
340-4	REMOVE & REPLACE S/W RAMP,MAG DET. 232,TYPE B,MOD. 8" THICK	S.F.	160		
340-5	REMOVE & REPLACE 30' WIDE D/W, MAG DET. 250, MOD. 8" THICK	S.F.	200		
350-1	REMOVE EXISTING CATCH BASIN	EA.	1		
401-1	TRAFFIC CONTROL DEVICES	L.S.	1		
401-2	OFF DUTY POLICE OFFICER - ALLOWANCE	HR	800		
401-3	REPLACE TRAFFIC SIGNAL LOOP DETECTOR	EA.	4		
405-1	REMOVE & REINSTALL SURVEY MARKERS M.A.G. DET. 120-1-A	EA.	1		
405-2	REMOVE & REINSTALL SURVEY MARKERS M.A.G. DET. 120-1-B	EA.	2		
420-1	REMOVE & REINSTALL CHAIN LINK FENCE (HEIGHT VARIES 3' - 8')	L.F.	1,045		
430-1	TREE, 36" BOX	EA.	<del>19</del>		

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**OAK STREET STORM DRAIN  
BID SCHEDULE**

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMOUNT
430-2	PLANT ESTABLISHMENT	L.S.	1		
430-3	DECOMPOSED GRANITE	S.F.	34,300		
440-1	IRRIGATION RESTORATION	L.S.	1		
440-2	1" PVC PIPE, CLASS 200	L.F.	1,600		
440-3	FLUSH CAPS	EA.	6		
440-4	PRESSURE REGULATOR W/WYE STRAINER (RAIN BIRD PSI-L30X)	EA.	2		
440-5	ELECTRIC VALVES W/VALVE BOX (RAIN BIRD DV-075)	EA.	2		
440-6	EMITTERS (MULTI-OUTLET) (BOWSMITH ML230 SERIES, OR EQUAL)	EA.	37		
505-1	SPECIAL JUNCTION STR. #1 STA. 161+95 SEE DETAIL SHEETS 47 & 48	L.S.	1		
505-2	SPECIAL JUNCTION STR.#2 STA. 163+25 SEE DETAIL SHEETS 49,50&51	L.S.	1		
505-3	SPECIAL JUNCTION STR.#3 STA 175+55 SEE DETAIL SHEETS 52&53	L.S.	1		
505-4	SPECIAL JUNCTION STR.#4 STA 176+00 SEE DETAIL SHEETS 54&55	L.S.	1		
505-5	SPECIAL JUNCTION STR.#5 STA 187+83.12 SEE DET SHEETS 56,57,58&59	L.S.	1		
505-6	SPECIAL INLET (18" AND 24" PIPES) (SEE DETAIL SHEET #33)	EA.	5		
505-7	SPECIAL INLET (66" PIPE) (SEE DETAIL SHEET #33)	EA.	1		
505-8	CONC. CATCH BASIN M-1,L=10', PHX DET. P1569-1	EA.	6		
505-9	CONC. CATCH BASIN, M-1,L=17', PHX DET. P1569-1	EA.	10		
505-10	CONC. CATCH BASIN M-2,L=17', PHX DET. P1569-1	EA.	2		
505-11	CONC. CATCH BASIN Q (TRIPLE), PHX DET. P1572	EA.	1		
505-12	CONC. CATCH BASIN N (TRIPLE), PHX DET. P1570 (W/CONC. APRON)	EA.	1		
505-13	CONC. CATCH BASIN N (SINGLE), PHX DET. P1570 (W/CONC. APRON)	EA.	1		
505-14	CONC. OUTLET WING WALL (A.D.O.T. DET. B-08.10, TYPE B)	L.S.	1		

**OAK STREET STORM DRAIN  
BID SCHEDULE**

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMOUNT
505-15	CONC. CATCH BASIN M-1, L=6', PHX DET. P1569-1	EA.	2		
510-1	REMOVE & REPLACE EXIST. MASONRY BOLLARD	EA.	1		
515-1	ACCESS BARRIER (3 HINGES) C.O.S. DET. 2562-1	EA.	2		
520-1	STEEL PIPE HANDRAIL, C.O.S. DET. 2508	L.F.	77		
610-1	WATERLINE REPLACEMENTS 6" M.A.G. DET. 403-3	EA.	4		
610-2	WATERLINE REPLACEMENTS 8" M.A.G. DET. 403-3	EA.	3		
610-3	WATERLINE REPLACEMENTS 12" M.A.G. DET. 403-3	EA.	2		
610-4	VERTICAL REALIGNMENT WATERLINE 8" C.O.S. DET. 2370	EA.	5		
610-5	WATERLINE PIPE SUPPORT, 24", M.A.G. DET. 403-1, TYPE A	EA.	3		
610-6	VERT. REALIGNMENT 18" WATERLINE CLASS 50 D.I.P. W/RES. JOINTS	L.F.	376		
610-7	REMOVE AND REPLACE FIRE HYDRANT, M.A.G. DET. 360	EA.	2		
610-8	WATERLINE PIPE SUPPORT, 20", M.A.G. DET. 403-1, TYPE A	EA.	1		
610-9	8" D.I.P. WATERLINE	L.F.	20		
615-1	SEWERLINE REPLACEMENT, 18", M.A.G. DET 403-3	EA.	1		
615-2	SEWERLINE REPLACEMENT, 8", M.A.G. DET. 403-3	EA.	3		
615-3	8" VCP SEWERLINE	L.F.	380		
615-4	8" SANITARY SEWER ENCASEMENT, M.A.G. DET. 404	EA.	1		
615-5	21" SEWERLINE REPLACEMENT, W/20" DUCTILE IRON SEWER PIPE	L.F.	52		
618-1	24" RGRCP STORM DRAIN PIPE	L.F.	30		
618-2	24" RGRCP/CIPP STORM DRAIN PIPE - No option	L.F.	210		
618-3	36" RGRCP/CIPP STORM DRAIN PIPE	L.F.	3,290		
618-4	42" RCP STORM DRAIN PIPE	L.F.	77		

**OAK STREET STORM DRAIN  
BID SCHEDULE**

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMOUNT
618-5	48" RCP STORM DRAIN PIPE	L.F.	45		
618-6	66" RCP STORM DRAIN PIPE	L.F.	43		
618-7	72" RCP STORM DRAIN PIPE	L.F.	75		
618-8	96" RCP STORM DRAIN PIPE	L.F.	270		
618-9	96" RCP/ <sup>102"</sup> CIPP STORM DRAIN PIPE	L.F.	3,317		
618-10	108" RCP STORM DRAIN PIPE	L.F.	201		
618-11	108" RCP/ <sup>114"</sup> CIPP STORM DRAIN PIPE	L.F.	1,000		
618-12	12" <sup>RGRCP</sup> RCP CATCH BASIN CONNECTOR PIPE	L.F.	17		
618-13	15" <sup>RGRCP</sup> RCP CATCH BASIN CONNECTOR PIPE	L.F.	8		
618-14	18" <sup>RGRCP</sup> RCP CATCH BASIN CONNECTOR PIPE	L.F.	588		
618-15	24" <sup>RGRCP</sup> RCP CATCH BASIN CONNECTOR PIPE	L.F.	156		
618-16	36" <sup>RGRCP</sup> RCP CATCH BASIN CONNECTOR PIPE	L.F.	8		
618-17	PIPE PLUG M.A.G. STD. DET. 427-12"	EA.	3		
618-18	PIPE PLUG M.A.G. STD. DET. 427-15"	EA.	1		
618-19	PIPE PLUG M.A.G. STD. DET. 427-18"	EA.	1		
618-20	PIPE PLUG M.A.G. STD. DET. 427-24"	EA.	1		
618-21	PIPE PLUG M.A.G. STD. DET. 427-42"	EA.	3		
618-22	PIPE PLUG M.A.G. STD. DET. 427-48"	EA.	4		
618-23	REMOVE PIPE PLUG 36"	EA.	1		
618-24	REMOVE PIPE PLUG 66"	EA.	1		
618-25	REMOVE PIPE PLUG 90"	EA.	1		
618-26	CONC. PIPE COLLAR M.A.G. STD. DET. 505 21" AND SMALLER	EA.	10		

**OAK STREET STORM DRAIN  
 BID SCHEDULE**

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMOUNT
618-27	CONC. PIPE COLLAR M.A.G. STD. DET. 505 24" AND LARGER	EA.	13		
618-28	12" DIA. RGRCP IRRIGATION PIPE, CLASS II	L.F.	25		
618-29	18" DIA. RGRCP IRRIGATION PIPE, CLASS III	L.F.	13		
618-30	24" DIA. RGRCP IRRIGATION PIPE, CLASS IV	L.F.	75		
618-31	18" X 900 PREFABRICATED BEND	EA.	1		
618-32	72" X 450 PREFABRICATED BEND	EA.	3		
618-33	18" X 450 PREFABRICATED BEND	EA.	2		
618-34	30" RCP STORM DRAIN PIPE	L.F.	2		
618-35	PIPE PLUG M.A.G. STD. DET. 427-8"	EA.	5		
618-36	53" X 83" ELLIPTICAL RCP STORM DRAIN PIPE	L.F.	27		
618-37	CONC. BOX CULVERT (2) - 8'X4'	L.F.	35		
618-38	CONC. BOX CULVERT (2) - 10'X4'	L.F.	602		
618-39	CONC. BOX CULVERT 10'X5'	L.F.	120		
618-40	CONC. BOX CULVERT 11'X6'	L.F.	1,165		
618-41	108" X 19.7550 PREFABRICATED BEND	EA.	2		
621-1	12" CMP STORM DRAIN PIPE	L.F.	62		
621-2	METAL END SECTION FOR 12" CMP	EA.	4		
625-1	STORM DRAIN MANHOLE M.A.G. DET. 522 & C.O.P. DET. P1520	EA.	10		
625-2	STORM DRAIN MANHOLE M.A.G. DET. 522 & C.O.P. DET. P1560	EA.	3		
625-3	STORM DRAIN MANHOLE M.A.G. DET. 522 & M.A.G. DET. 521	EA.	8		
625-4	STORM DRAIN MANHOLE M.A.G. DET. 522(SHALLOW) & M.A.G. DET. 520	EA.	3		
625-5	S. D. M.H. MAG DET.522(SHALLOW) & MAG DET. 523-2 ON PREFAB CBC	EA.	2		

**OAK STREET STORM DRAIN  
 BID SCHEDULE**

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMOUNT
625-6	SEWER MANHOLE, M.A.G. DET. 420 & 424	EA.	4		
630-1	8" WATERLINE STOP	EA.	1		
630-2	18" WATERLINE STOP	EA.	1		
630-3	8" VALVE W/B&C PER M.A.G. DET. 391-1, TYPE A	EA.	1		
630-4	8"X8" TS&V W/B&C PER M.A.G. DET. 391-1, TYPE A	EA.	1		
630-5	18" FLG'D BUTRFLY VALVE W/FH BYPASS ASSEMBLY PER C.O.S. DET 2361	EA.	1		
630-6	AIR RELEASE VALVE	EA.	2		
630-7	6" WATERLINE STOP (CONTINGENT ITEM)	EA.	4		
630-8	8" WATERLINE STOP (CONTINGENT ITEM)	EA.	8		
630-9	12" WATERLINE STOP (CONTINGENT ITEM)	EA.	2		
631-1	REPLACE EXIST. WATER SERVICE C.O.S. DET. 2330 (CONTINGENT ITEM)	EA.	42		
796-1	TURF SOD	S.F.	17,770		
797-1	GEOMAT	S.F.	3,990		
<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)

By: \_\_\_\_\_  
(Signature - Title) (Date)

\_\_\_\_\_  
(Telephone Number)

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

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

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

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

**IF BY A CORPORATION**

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

\_\_\_\_\_  
(Corporation Address)

\_\_\_\_\_  
(Printed Name - Title)

\_\_\_\_\_  
(Telephone Number)

By: \_\_\_\_\_  
(Signature) (Date)

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

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

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

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

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

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

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

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

**SUBCONTRACTOR LISTING**

As required in Section 102.6 of the Supplementary General Conditions, the following is a listing of Subcontractors and material suppliers (including any M/WBE 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 Oblige, 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 Contract FCD 99-08 Oak Street Storm Drain, Phase II.

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

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 199\_\_.

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

\_\_\_\_\_  
Principal

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

By: \_\_\_\_\_  
(Printed Name) (Signature)  
Title: \_\_\_\_\_

\_\_\_\_\_  
Surety Name  
By: \_\_\_\_\_  
Title: \_\_\_\_\_

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

ATTACH SURETY POWER OF ATTORNEY

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

STATE OF \_\_\_\_\_ }  
County of \_\_\_\_\_ }SS

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

That he/she is \_\_\_\_\_ of \_\_\_\_\_ bidding on Contract  
FCD \_\_\_\_\_ for \_\_\_\_\_, in the County of Maricopa, State of  
Arizona.

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

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

Subscribed and sworn to before me this \_\_\_ day of \_\_\_\_\_, 199\_\_

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

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

CERTIFICATION OF LICENSE

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

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

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

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

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

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

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

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

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
MINORITY/WOMEN-OWNED BUSINESS ENTERPRISE PROGRAM  
MBE/WBE ASSURANCES AFFIDAVIT**

**NOTE: FAILURE TO COMPLETE AND SUBMIT THIS AFFIDAVIT WITH THE BID PROPOSAL MAY BE CAUSE FOR REJECTION OF THE BID.**

The undersigned, fully cognizant of the Flood Control District of Maricopa County MBE/WBE Program requirements and of the goal established, hereby certifies that in the preparation of this bid,

\_\_\_\_\_ (the entity submitting the bid)

**(CHECK ONE)**

- Will meet the **established** goal for participation by Minority/Women-Owned Business Enterprises.
- Will provide the necessary documentation to Minority Business Office to establish that a good faith effort was made.

The first and second low bidders will specify their MBE/WBE participation on the Actual Participation affidavit or provide documentation of their good faith efforts not later than 4:00 p.m., the seventh calendar day following the bid opening. If participation is "None", the documentation shall provide bidder's good faith efforts to obtain the participation. This documentation will be reviewed by the MBO to determine whether in fact a comprehensive "good faith" effort has been implemented. The required affidavit shall be obtained by the apparent first and second low bidders from the Minority Business Office, 2901 West Durango Street, Phoenix, Arizona 85009, Telephone 506-8656, following the bid opening and verbal notification from the Procurement Officer of the Procurement Agency; a SAMPLE affidavit form for reference purposes follows.

\_\_\_\_\_  
Name of Firm

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

\_\_\_\_\_  
Title

STATE OF \_\_\_\_\_ )  
County of \_\_\_\_\_ )ss

Subscribed and sworn to before me this \_\_\_ day of \_\_\_\_\_, 199\_\_

\_\_\_\_\_  
Notary Public

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

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

Name of Contractor \_\_\_\_\_ Project/Contract Number 99-08 Total Amount of Contract \_\_\_\_\_

Contract M/WBE Goal: 15 %

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

Street No. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Minority/Women Owned Firm	Principal	Address	Type of Work	Dollar Amount	Percentage of Total Contract Amount
---------------------------	-----------	---------	--------------	---------------	-------------------------------------

			E		
			L		
			P		
			M		
			A		
			S		

TOTALS (Dollars/Percentage) \_\_\_\_\_

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

Signature \_\_\_\_\_

Title \_\_\_\_\_

STATE OF \_\_\_\_\_ }

}ss

County of \_\_\_\_\_ }

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

My commission Expires: \_\_\_\_\_

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

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

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

**General Contractor/Prime Consultant:** \_\_\_\_\_  
**Contact Person:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Telephone Number:** \_\_\_\_\_  
**Fax Number:** \_\_\_\_\_

**Project Description:** \_\_\_\_\_  
**Contract Number:** \_\_\_\_\_  
**For Pay Period of (indicate dates):** \_\_\_\_\_

**D/M/WBE Subcontractor/Subconsultant Name:** \_\_\_\_\_  
**Contact Person:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Telephone Number:** \_\_\_\_\_

**Type of Firm:** \_\_\_\_\_  
**Type of Work performed for this project:** \_\_\_\_\_

**Total D/M/WBE Subcontract Amount:** \$ \_\_\_\_\_

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

**Total paid to this Subcontractor to date:** \$ \_\_\_\_\_

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

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

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

## CONTRACT AGREEMENT

THIS AGREEMENT, made and entered into this \_\_\_ day of \_\_\_\_\_, 1999 by and between the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, hereinafter called the Owner, acting by and through its BOARD OF DIRECTORS, and \_\_\_\_\_, hereinafter called the Contractor.

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

ARTICLE I - SCOPE OF WORK: THE Contractor shall construct, and complete in a workmanlike and substantial manner and to the satisfaction of the Chief Engineer and General Manager, a project for the Flood Control District of Maricopa County, designated as **Contract FCD 99-08, Oak Street Storm Drain, Phase II** 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 two hundred seventy (270) 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 its obligations and make payments to its subcontractors and suppliers in accordance with A.R.S. Section 34-221.

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

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

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

ARTICLE VIII - MBE/WBE PROGRAM: The 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 Maricopa County Minority Business Program implemented January 1, 1992, is incorporated by reference.

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

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

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

By \_\_\_\_\_  
(Printed Name) (Signature)

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.

By: \_\_\_\_\_  
District, General Counsel Date

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

KNOW ALL MEN BY THESE PRESENTS:

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

WHEREAS, the Principal has entered into a certain written contract with the Flood Control District of Maricopa County, dated the \_\_\_\_\_ day of \_\_\_\_\_, 1999 for **Contract FCD 99-08, Oak Street Storm Drain, Phase II**, 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 \_\_\_\_\_, 1999

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

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Principal

By: \_\_\_\_\_  
Printed Name and Signature

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

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

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

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

**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 \_\_\_\_\_, 1999, for **Contract FCD 99-08, Oak Street Storm Drain, Phase II**, which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

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

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

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

Witness our hands this \_\_\_\_\_ day of \_\_\_\_\_, 1999.

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

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

\_\_\_\_\_  
Principal

By: \_\_\_\_\_  
Printed Name and Signature

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

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

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

ATTACH SURETY POWER OF ATTORNEY

## INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Flood Control District of Maricopa County, Maricopa County, the City of Phoenix, and the City of Scottsdale, 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 the Contractor's work or services. The Contractor's duty to defend, hold harmless and indemnify the District, its 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 in whole or in part by any act or omission by the Contractor, anyone the Contractor directly or indirectly employs, or anyone for whose acts the Contractor may be liable, regardless of whether it is caused in part by a party indemnified hereunder, including the District.

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.

## INSURANCE REQUIREMENTS

Without limiting any of its obligations or liabilities, the Contractor, at Contractor's own expense, shall purchase and maintain the hereafter stipulated minimum insurance with companies duly licensed, possessing a current A.M. Best, Inc. rating of B++6, or approved unlicensed to do business in the State of Arizona with policies and forms satisfactory to the County.

All insurance required herein shall be maintained in full force and effect until all work 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, 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 policies or any breach of the policy warranty shall not affect coverage afforded under the policies to protect the District.

The policies, except Workers' Compensation, shall contain a waiver of transfer rights of recovery (subrogation) against the District, its agents, representatives, directors, officers, and employees for any claims arising out of the Contractor's work or service.

The policies may provide coverage which contain 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 retentions and the District, at its option, may require the Contractor to secure the payment of such deductible 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 10 working days, certified copies of any or all of the above policies and/or endorsements. The District shall not be obligated, however, to review same or to advise the Contractor of any deficiencies in such policies and endorsements, and such receipt shall not relieve the Contractor from, or be deemed a waiver of the District's right to insist on, strict fulfillment of the Contractor's obligations under this Contract.

The insurance policies, except Workers' Compensation and Professional Liability, required by this Contract shall name the District, its agents, representatives, officers, directors, officials, and employees as Additional Insureds.

## Required Coverage

**General Liability.** The Contractor shall maintain Commercial General Liability insurance with a limit of not less than \$5,000,000 for each occurrence with a \$5,000,000 Products and Completed Operations Limit and \$5,000,000 General Aggregate Limit, and include coverage for bodily injury, broad form property damage, personal injury, products/completed operations and blanket contractual covering, including but not limited to, the liability assumed under the indemnification provisions of this Contract, which coverage will be at least as broad as the Insurance Service Office, Inc. Policy Form CG 000211093 or any replacements thereof. The coverage shall not exclude X, C, U.

Such policy shall contain a severability of interest provision, and shall not contain a sunset provision or commutation clause, nor any provision which would serve to limit third party action over claims.

The Commercial General liability additional insured endorsement will be at least as broad as the Insurance Service Office, Inc. Additional Insured, Form B, CG 20101093, or replacements thereof.

Any failure to comply with the reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the District.

If required by this contract, the Contractor subletting any part of the work awarded to the Contractor shall purchase and maintain, at all times during prosecution of the work 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 work or Contractor's operations under this contract. Coverage shall be on an occurrence basis with a limit not less than \$5,000,000 per occurrence, and the policy shall be issued by the same insurance company that issues the Contractor's Commercial General Liability insurance.

**Automobile Liability.** The Contractor shall maintain Commercial/Business Automobile Liability insurance with a combined single limit for bodily injury and property damage of not less than \$3,000,000 each occurrence with respect to the Contractor's any owned, hired, and non-owned vehicles assigned to or used in performance of the Contractor's work or services. Coverage will be at least as broad as coverage code 1, "any auto" (Insurance Services Office, Inc. Policy Form CA 00011293, or any replacements thereof). Such insurance shall include coverage for 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; and Employer's liability insurance of not less than \$500,000 for each accident, \$500,000 disease for each employee, and \$500,000 disease policy limit.

In case any work is subcontracted, the Contractor will require the subcontractor to provide Workers' Compensation and Employer's Liability 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 interests 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 becomes Contractor's control and/or responsibility, and continue without interruption during construction or 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.

If the Contract requires 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.

Required coverages may be modified by an amendment to the Contract documents.

### Certificates of Insurance

Prior to commencing work or services under this Contract, the Contractor shall furnish the District with Certificates of Insurance, or formal endorsements as required by the contract, issued by the Contractor's insurer(s), as evidence that policies providing the required coverages, conditions and limits required by this Contract are in full force and effect. Such certificates shall identify this Contract number and title. **The Certificate furnished on page 22 shall be used or, if a substitute certificate is used, it shall include all coverage and terms printed on the furnished Certificate.**

Subcontractor: The Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor.

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

Insurance evidenced by this Certificate shall not expire, be canceled, or materially changed without thirty (30) days prior written notice to the District. If a policy should expire during the life of the contract, a renewal Certificate must be sent to the District at least fifteen (15) days prior to the expiration date.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
 CERTIFICATE OF INSURANCE

CONTRACT FCD 99-08

PROJECT TITLE: Oak Street Storm Drain, Phase II

NAME AND ADDRESS OF INSURANCE AGENCY	INSURANCE COMPANIES AFFORDING COVERAGES	
	Company Letter	A
	Company Letter	B
	Company Letter	C
	Company Letter	D
	Company Letter	F
NAME AND ADDRESS OF INSURED	Company Letter	C
	Company Letter	E
	Company Letter	F
	Company Letter	

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

CO. LTR	TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE (MM/DD/YY)	EXPIRATION DATE (MM/DD/YY)	LIMITS	
	COMMERCIAL GENERAL <input checked="" type="checkbox"/> LIABILITY FORM <input checked="" type="checkbox"/> PREMISES OPERATIONS <input checked="" type="checkbox"/> CONTRACTUAL <input checked="" type="checkbox"/> BROAD FORM PROPERTY DAMAGE <input checked="" type="checkbox"/> EXPLOSION & COLLAPSE <input checked="" type="checkbox"/> PRODUCTS/COMPLETED OPERATIONS HAZARD <input checked="" type="checkbox"/> UNDERGROUND HAZARD <input checked="" type="checkbox"/> INDEPENDENT CONTRACTORS <input checked="" type="checkbox"/> PERSONAL INJURY				GENERAL AGGREGATE PRODUCTS/COMPLETED OPERATIONS BODILY INJURY AND PROPERTY DAMAGE PERSONAL INJURY EACH OCCURRENCE	5,000,000 5,000,000 5,000,000 5,000,000 5,000,000
	COMPREHENSIVE AUTO <input checked="" type="checkbox"/> LIABILITY & NON-OWNED				EACH OCCURRENCE	3,000,000
	<input type="checkbox"/> EXCESS LIABILITY				NECESSARY IF UNDERLYING NOT ABOVE MINIMUM	
	<input checked="" type="checkbox"/> WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY each accident	500,000
	<input type="checkbox"/> ENGINEERS PROFESSIONAL LIABILITY				EACH CLAIM AND ANNUAL AGGREGATE	
	<input checked="" type="checkbox"/> OTHER	In addition to the Flood Control District, add Maricopa County, the City of Phoenix and the City of Scottsdale as additional insured.				

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

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

**SUPPLEMENTARY GENERAL CONDITIONS**

**OAK STREET STORM DRAIN, PHASE II**

**FCD 99-08**

**OAK STREET STORM DRAIN, PHASE II**  
**58<sup>TH</sup> STREET TO INDIAN BEND WASH ALONG OAK STREET**  
**CONTRACT No. FCD 99-08**  
**PCN 027-03-32**

**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 Phoenix and/or City of Scottsdale, 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 Phoenix and/or Scottsdale Supplements to MAG, and (g) MAG Uniform Standard Specifications and Uniform Standard Details.

**Subsection 101.2 - Definitions and Terms:**

- (1) Change the definition of the phrase "Board of Supervisors" to being the Board of Directors acting under the authority of the laws of the State of Arizona and in their capacity of the Board of Directors of the Flood Control District of Maricopa County.
- (2) Change the definition of the phrase "Budget Project" to being a project financed by funds set aside in the annual budget or otherwise approved by the Flood Control District of Maricopa County Board of Directors.
- (3) Add to the definition of the phrase "Contract Documents," the phrase "Supplementary General Conditions."
- (4) Change the definition of the term "Engineer" to being the person appointed by the Flood Control District of Maricopa County Board of Directors to the office of Chief Engineer and General Manager of the Flood Control District of Maricopa County acting directly or through its authorized representative, the Chief of the Flood Control District of Maricopa County 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 Phoenix and City of Scottsdale. The project begins at 58<sup>th</sup> Street and Oak Street; follows eastward along Oak Street and daylight into the Indian Bend Wash as depicted on Sheet 2 of the plans. The project consists of varying diameter pipes to be installed along this alignment as noted on the plans. In addition, a detention basin along 66<sup>th</sup> Street and Palm Lane would be enlarged to detain the peak of the flood. The project also includes constructing catch basins, junction structures, manholes, future stub outs and inlet structures. 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.

SRP canal access and maintenance roads shall remain open at all times.

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.

(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 Phoenix and City of Scottsdale. The project begins at 58<sup>th</sup> Street and Oak Street; follows eastward along Oak Street and daylight into the Indian Bend Wash as depicted on Sheet 2 of the plans. The project consists of varying diameter pipes to be installed along this alignment as noted on the plans. In addition, a detention basin along 66<sup>th</sup> Street and Palm Lane would be enlarged to detain the peak of the flood. The project also includes constructing catch basins, junction structures, manholes, future stub outs and inlet structures. 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.

SRP canal access and maintenance roads shall remain open at all times.

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 all 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.

The fencing, when installed about the periphery of excavations and trenches, shall form an effective barrier against intrusion by the public into areas of construction. The Contractor, at all times when construction is not in progress, shall be responsible for maintaining the fencing in good repair, and upon notification by the Engineer, shall take immediate action to rectify any deficiency. Prior to the start of any excavating or trenching required for the execution of the proposed work, the Contractor shall submit to the Engineer for approval detailed plans showing types of materials and methods of fabrication for the protective fencing.

Night work will **not** be allowed on this project.

Contractor shall protect in place all and any major trees, cactuses, and other vegetation within the Papago Park area. Before starting construction within the Papago Park, Contractor shall notify City of Phoenix, Parks and Recreation Department at 262-4837 (Sarah J. Hall, Papago Park Manager). Contractor shall minimize the disturbance to the existing vegetation as much as possible. Contractor shall minimize the use of Temporary Construction Easement (TCE) as possible within the Papago Park area.

**The work adjacent to Tonalea Elementary School (Sta. 136+00 to Sta. 143+00) shall be scheduled in the summer months, between the dates of May 26, 1999 through August 16, 1999, when the school is not in session and school traffic is minimal.** If the Contractor is unable to finish the construction in front of the school by the above dates, the Contractor shall provide adequate traffic control measures to convey the school traffic including school bus and student drop-off facilities.

**Construction within Scottsdale Road intersection (Sta. 161+80 to Sta. 163+36) shall be scheduled during May through August 1999.** See Section 401 for detailed traffic restrictions at Scottsdale Road.

**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.

- (2) If the VECP is not accepted, the Owner shall notify the Contractor in writing, explaining the reasons for rejection.
  - (3) The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Owner.
  - (4) Any VECP may be accepted, in whole or in part, by the Owner's award of a change order to this contract, citing this subsection. The Owner may accept the VECP, even though an agreement on price reduction has not been reached, by issuing the Contractor a notice to proceed with the change. Until a notice to proceed is issued or a change order incorporates a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The Owner's decision to accept or reject all or any part of any VECP shall be final and not subject to disputes or otherwise subject to litigation.
- (F) **Cost Sharing.**
- (1) **Rates.** The Owner's share of savings is determined by subtracting the Owner's costs from instant contract savings and multiplying the result by 50 percent. The Contractor's share shall be the remaining 50 percent.
  - (2) **Payment.** Payment of any share due the Contractor for use of a VECP on this contract shall be authorized by a change order to this contract to accept the VECP, reduce the contract price or estimated cost by the amount of instant contract savings, and provide the Contractor's share of savings by adding the amount calculated to the contract price.
- (G) **Subcontracts.** The Contractor may include an appropriate value engineering clause in any subcontract. In computing any adjustment in this contract's price under paragraph (f) above, the Contractor's allowable development and implementation costs shall include any subcontractor's allowable development and implementation costs clearly resulting from a VECP accepted by the Owner under this contract, but shall exclude any value engineering incentive payments; provided that these payments shall not reduce the Owner's share of the savings resulting from the VECP.

**Subsection 105.1 - Authority of 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:

- A) 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.
- B) 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:

- 1) Mix design composition
- 2) Manufacturer's certification for all materials
- 3) Material data safety sheets
- 4) Preliminary work schedule
- 5) Preliminary traffic control plan
- 6) Shop drawings
- 7) Emergency telephone numbers
- 8) Signing authority letter
- 9) 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 105.5.4 - Cooperation with Army National Guard**

There are four storm water inlets to be constructed inside the security fence for the Army National Guard. This is the property located on the south side of Oak Street between 58<sup>th</sup> Street and 60<sup>th</sup> Street. Security is of the utmost importance to the National Guard. They would prefer that their security fence (chain link w/barbed wire) be left in place during trenching operations. The contractor will be allowed to make slight adjustments in the inlet locations in order to facilitate this request and can gain access to the National Guard's property by contacting Captain Harold Jones at 267-2649. This will allow the contractor to trench from either side of the fence.

No passable opening shall be left unattended by the contractor. Therefore, at the end of the days construction operations the portion of the trench under the fence shall be backfilled to provide security and preclude access to the Guard's property.

If it becomes necessary for the contractor to remove and reinstall the security fence, it shall be reinstalled in kind at the end of the days operations. Again, no passable opening shall be left unattended by the contractor.

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

<b><u>Name of Utility Company</u></b>	<b><u>Contact Person</u></b>	<b><u>Phone #</u></b>
Cox Communications	Angie Hardesty	659-7211
Salt River Project – Water	Robert Maurer	236-2962

Salt River Project – 69Kv (Electric)	William G. Phillips	236-8092
Salt River Project – 22Kv (Electric)	Vince Featherly	236-4768
Southwest Gas	Vivian Hunsaker	484-5277
U.S. West Communications (US West)	Robert O. Arrieta	630-5473
City of Phoenix – Water	Gerald Arakaki	261-8229
City of Scottsdale – Water	Larry Tritz	312-5631

**Salt River Project - Electrical Service:**

The entire project lies within the SRP electrical service area. OSHA and ASWC require a minimum ten-(10) feet clearance from the overhead lines.

For power pole bracing, contact the Power Company at least seven (7) days in advance. All fees for pole bracing are to be paid by the Contractor.

*Jim F. 236-0840*

The project includes relocating SRP's 22kv line running north south along Miller Road as shown on plan sheets provided by the SRP. The Contractor shall coordinate with SRP to have their representative shut-off the existing line. The Contractor shall notify SRP in writing at least three weeks in advance to schedule: 1) Power outage, 2) Pick-up of SRP furnished material, and 3) Schedule their inspections. The Contractor to excavate and install the duct pipe provided by SRP at depth shown on the plans. Once these ducts are placed at the elevations shown on the plans and inspected by the SRP inspector, the Contractor can backfill the trench as shown on SRP's plans up to the invert of the box culvert. The Contractor than provides 6" AB bedding and places the box culvert on top of the bedding. SRP crews will run the cables through the duct banks installed by the Contractor and connect new cables with the existing cables. The Contractor shall be paid for the labor, material and equipment cost for the excavation, installation of duct pipes and removal of existing cables.

Payment for equipment, labor and other material furnished by the Contractor to relocate the duct banks will be made per lump sum per bid item 105-2. There is no cost for conduits material because the material will be provided by SRP.

**ITEM 105-2 – SRP Relocation**

**Salt River Project - Irrigation:**

This project includes work on SRP irrigation pipe. The Consultant shall coordinate with SRP staff for shutting off the irrigation line. The Contractor shall notify the SRP Water District at 236-2962 (Robert Maurer) to coordinate the shut down of the irrigation line. Once the relocation is complete, the Contractor shall coordinate with SRP Water District to have their inspector approve the relocation.

**Southwest Gas Corporation (SWG)**

SWG pipes which cross trenches more than 3' wide must be supported in a manner where the supporting material does not damage the pipe or its protective wrapping. Please call SWG at 484-5256 to review and approve all proposed pipe support designs.

The project includes 4" high-pressure gas line along Scottsdale Road running north south, which needs to be protected in place during the construction. All other known conflicts have been relocated by the SWG before the start of construction.

**U. S. West Communications (USW)**

The project crosses major USW duct banks along Scottsdale Road running north-south, which needs to be protected in place during construction. The USW representative can be reached at above listed number. The copies of the plans showing the duct banks can be obtained from the USW representatives prior to construction.

Please see Special Provisions Section 601.0 regarding trenching and backfilling.

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

**Subsection 106.5 - 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.

**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 Scottsdale and/or Phoenix, Army National Guard 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 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.

**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 Scottsdale  
7447 E. Indian School Road  
Scottsdale, AZ 85254

City of Phoenix  
200 W. Washington  
Phoenix, AZ 85009

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 will 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.

**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:

1. Distributing a pre-construction information letter to all residents, business, schools, farm operations, etc. within an area bounded by **58<sup>th</sup> Street on west, Thomas Road on north, Miller Road on east and McDowell Road on the south side.**
2. 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.

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 **two (2)** project information signs, one at each end of the project 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 Phoenix-Goodyear Airport and major utilities, 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:

- A The Contractor shall protect-in-place all of the landscaping within the Eldorado Park. Any sprinkler heads or pipes damaged during the construction shall be replaced "in-kind".
- B The Contractor shall protect-in-place the foundation for the bleacher within the Coronado High School football ground. Any damage done to the foundation to the bleachers will be repaired by the Contractor at no cost to the owner.
- C The Contractor shall replace any additional fence removed beyond the limits shown on the plans with "in-kind" fence.
- D The Contractor shall not remove any vegetation, plants and/or trees within the Papago Park that is outside the rights-of-way.
- E The Contractor shall coordinate with Army National Guard to insure that their security is not adversely impacted by the construction. The Contractor to use a gate along 60<sup>th</sup> Street and south of

Oak Street for ingress-egress to National Guard Property.

- F Storm water runoff in the area generally flows to the south. Contractor is advised that the work will be subject to flows of water of varying amounts. Owner assumes no responsibility for notifying Contractor of any anticipated flows, nor for any damages incurred by Contractor to his equipment or to any of the Contractor's work as a result of any flows of water. Contractor shall take all necessary precautions to protect his work, equipment and personnel from flooding.
- G The Contractor shall take all necessary action to protect the public from the construction work area.
- H 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.

**Subsection 108.1 - Notice to Proceed:**

Delete Paragraph (A) and replace with the following:

- (A) Contractor shall commence work within seven (7) calendar days after the date of the Notice to Proceed and complete all work within **two hundred and seventy (270)** 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:

- Work in excess of regular working hours shall be defined as overtime. For overtime which becomes necessary, the Contractor shall make a written request to the Engineer at least eight (8) calendar days before the desired overtime.
- The request shall include the duration, dates, times, reason for overtime, and a statement of the consequences if overtime is not approved.

- The Contractor shall not schedule any overtime work which requires inspection, survey, or material testing without written permission from the Engineer two (2) working days before the proposed overtime work. The Engineer reserves the right to deny the requested overtime. If an overtime request is denied, the Engineer may extend the contract time at no additional cost to the District, including extended overhead costs.
- Overtime that is not requested and approved in accordance with the above procedure shall be defined as unscheduled overtime. All costs (including appropriate overtime) shall be paid by the Contractor by deduction from the contract.
- An emergency is defined as work required for a situation that is not within the Contractor's control. With the Engineer's approval, the Contractor will be permitted to work overtime without being responsible for paying the District's costs.
- Any proposed night work shall be done in accordance with all City of Scottsdale Ordinances. No night work shall be allowed in residential areas
- The Contractor shall submit a comprehensive plan at the Pre-Construction Meeting that details the steps and methods of noise reduction during night working hours. This plan shall address, but not be limited to, the following: back up alarms, equipment noise, scheduling of excessively noisy construction phases, and material delivery times. Spotters, in lieu of back-up alarms, may be required at night.
- Should Contractor elect to perform any work after regular working hours, on weekends, or legal holidays, with or without written approval of Engineer, any charges incurred by Owner for inspection of the work, surveys or tests of materials will be deducted from monies due or to become due to Contractor.

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

Add the following:

The actual cost per calendar day incurred by 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) Delete second and third paragraphs and replace with 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.

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



**SPECIAL PROVISIONS**

**OAK STREET STORM DRAIN, PHASE II**

**FCD 99-08**

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**OAK STREET STORM DRAIN, PHASE II**  
**58<sup>TH</sup> STREET TO INDIAN BEND WASH ALONG OAK STREET**  
**CONTRACT No. FCD 99-08**  
**PCN 027-03-32**  
**CONSTRUCTION SPECIAL PROVISIONS**

**SECTION 200 - BASIN EXCAVATION**

**Subsection 200.1 - Description**

Basin excavation shall consist of all work necessary to excavate the detention basin located at the Automall (66<sup>th</sup> Street - Station 8+37) to the lines and grades shown on the plans.

This work shall include the removal of existing riprap rock protection and excavation of a v-ditch low flow channel.

Instances not specifically addressed by this section shall be addressed according to MAG Standard Specification Section 215.

**Subsection 200.5 - Slopes**

Excavation slopes shall be finished in conformance with the lines and grades shown on the plans. Debris and loose material shall be removed. When completed, the average plane of the slopes shall conform to the slopes indicated on the plans and no point on the completed slopes shall vary from the designated plane by more than 6 inches measures at right angles to the slope.

Tops of excavation slopes and ends of excavations shall be rounded as shown on the plans and these quantities will not be included in the quantities of excavation to be paid for. This work will be considered as a part of the finishing of slopes and no additional compensation will be allowed therefore.

The Contractor will be responsible to protect all open excavations.

**Subsection 200.6 - Surplus Material**

Unless otherwise shown on the plans, specified in the special provisions, or approved by the Engineer, no surplus excavated material shall be disposed of within the right-of-way. Excess material shall be disposed of in accordance with MAG Specifications Section 205.6.

**Subsection 200.7 - Measurement**

Measurement for basin excavation shall be made on a lump sum basis.

**Subsection 200.8 - Payment**

Payment for basin excavation as described above, will be paid for at the lump sum contract bid price. Payment shall include full compensation for furnishing labor, materials, tools, equipment and incidentals, and for doing all the work associated with basin excavation including the excavation of a v-ditch low flow channel, removal of existing riprap protection and haul off and disposal of excavated material.

## **ITEM 200-1 - EXCAVATION (DETENTION BASIN)**

### **SECTION 201 - CLEARING AND GRUBBING**

Clearing and grubbing shall conform to Section 201 of the MAG Uniform Standard Specifications, except as modified herein.

#### **Subsection 201.5 - Payment**

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

### **SECTION 202 - MOBILIZATION**

#### **Subsection 202.1 - Description**

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

#### **Field Office**

This work shall consist of providing and maintaining a furnished Field Office for the exclusive use of, 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 toiler 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:

- (A) **Lighting** - Electric light, non-glare type luminaries to provide minimum illumination level at desk height level.
- (B) **Heating & Cooling** - Adequate electrically powered equipment to maintain an ambient air temperature of 72 degrees Fahrenheit plus or minus 8 degrees.
- (C) **Telephone** - a telephone with an outside line for the exclusive use of the Engineer. The Contractor will pay for the cost of the line and local calling charges. Long distance charges made on this line will be paid for by the District.
- (D) **Toilet** - a commode and wash sink in a separately enclosed room within the building or mobile trailer, properly ventilated and complying with applicable sanitary codes. The Contractor shall provide water service.
- (E) **Maintenance** - The Contractor shall maintain all facilities and furnished equipment in good working condition.

- (F) **Fire Extinguisher** - Two non-toxic, dry chemical, fire extinguishers meeting Underwriters Laboratories, Incorporated approval for Class A, Class B, and Class C fires with a minimum ratings of 2A: 20B: 10C.
- (G) **Electricity** - The Contractor shall provide electric power and pay for all electric services.
- (H) **Furnishings** - Two office desks with drawers, two office chairs (padded, swivel type), one drafting table (adjustable height 3 feet by 6 feet, one conference table, eight folding chairs, and one draftsman's stool.
- (I) **Fax, Printer, Copier** - The Contractor shall provide a 3 in 1 fax, printer and copier for the exclusive use of the Engineer.
- (J) **First Aid Kit.**
- (K) **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.

**Subsection 202.1 - Payment**

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

**ITEM 202-1 - MOBILIZATION**

**SECTION 206 - STRUCTURE EXCAVATION AND BACKFILL**

Structure excavation and backfill shall conform to Section 206 of the MAG Uniform Standards Specifications, except as modified herein.

**Subsection 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. All foundation excavations shall be inspected by the Engineer prior to placing the foundation material. Any loose or disturbed zones shall be removed and replaced with compacted fill or lean concrete.

The Geotechnical Report for the project is available from the District and may be used by the Contractor to develop plans for temporary construction slopes.

**Subsection 206.4 - Structural Backfill**

Add the following:

Compaction of structural backfill soils against embedded footings or walls shall be accomplished to a minimum 95 percent of the maximum ASTM D698 dry density.

Backfill behind subsurface walls designed to support utilities, pavement, channels, or other facilities should be compacted to density criteria provided in Section 211. Backfill should consist of granular soils, free of vegetation, debris, organic matter, clumps of clay greater than 6 inches, stones greater than 3 inches and excess moisture.

Backfill and compaction shall be accomplished using mechanical methods. Water jetting is not an acceptable means of compaction for this project and shall not be permitted.

Imported soil used for fill around culverts and under pavements (top 12 inches of trench backfill under pavement section) or headwalls should be granular and conform to the following requirements:

<u>Sieve Size</u>	<u>Percent Passing</u>
3"	100
No. 4	30 - 75
No. 30	10 - 40
No. 200	0 - 20

Plasticity Index  $\leq$  8.

#### **Subsection 206.5 - Payment**

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

### **SECTION 230 - MISCELLANEOUS RESTORATION**

This section describes the work that is necessary to restore areas impacted by construction to its pre-construction condition including the removal and restoration of all miscellaneous items and other unforeseen miscellaneous work not otherwise shown on the plans that may be necessary to complete the project construction. In general, this item will cover, but not be limited to, miscellaneous grubbing, removal and restoration of irrigation components, and restoration of constructed areas to pre-construction conditions.

#### **Subsection 230.1 - Description**

The Contractor shall be responsible to restore damaged areas as a result of construction to their original condition as shown on the plans as Miscellaneous Restoration. The Contractor shall restore all areas within the limits shown on the plans and any other areas or incidental items damaged in the opinion of the Engineer. Restoration shall include the replacement of existing grass areas with turf sod (except in Eldorado Park where turf replacement is a pay item); restoring and replacing all irrigation equipment including pipes, valves, sprinkler heads, and other irrigation appurtenances; and restoring all other incidental items and areas which are damaged during construction.

#### **Subsection 230.4 - Payment**

No payment will be made for MISCELLANEOUS RESTORATION as such, the cost thereof shall be included in the bid price for the construction and installation of the items for which said miscellaneous restoration is incidental or appurtenant.

## **SECTION 336 - PAVEMENT MATCHING AND SURFACING REPLACEMENT**

Asphalt concrete pavement replacement shall conform to Section 336 of the MAG Uniform Standard Specifications, except as modified herein.

### **Subsection 336.2.2 - Pavement to be Removed (Slurry Seal Coat)**

Add the following:

The street shall be seal coated after installation of permanent pavement replacement in accordance with Section 336.2.2. The seal shall be a slurry seal coat with a type II aggregate mix (MAG Section 715). The cost of the slurry seal coat shall be included in the cost of the permanent pavement replacement.

### **Subsection 336.2.4 - Permanent Pavement Replacement**

All asphaltic concrete pavement shall be placed using appropriate lay down equipment, which has been specifically designed for that purpose. The temperature of the asphaltic concrete shall be a minimum of 200 degrees Fahrenheit while being rolled.

Pavement replacement shall conform to Section 710 and shall consist of a minimum of two (2), 2-inch layers of 19.0 mm AC pavement over 8 inches of aggregate base course. A cationic emulsion shall be used between the layers at a rate of 0.07 gal per square yard. If the existing AC thickness is greater than four (4) inches, the existing thickness will be replaced, in kind.

Pavement replacement after station 124+00 will be a T-Top section per the City of Scottsdale standard detail 2200.

### **Subsection 336.5 - Payment**

Add the following:

Payment for asphalt concrete pavement replacement shall be made on the basis of price bid per square yard. No payment will be made for the slurry seal coat, as such; the cost thereof shall be included in the bid price for Pavement Replacement.

**ITEM 336-1 - PAVEMENT REPLACEMENT M.A.G. DET. 200, TYPE A**

**ITEM 336-2 - PAVEMENT REPLACEMENT M.A.G. DET. 200, TYPE B**

**ITEM 336-3 - PAVEMENT REPLACEMENT C.O.S. DET. 2200, T-TOP**

## **SECTION 340 - CONCRETE CURB, GUTTER, SIDEWALK, DRIVEWAY AND ALLEY ENTRANCE**

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

### **Subsection 340.1 - Description**

Add the following:

The work under this section shall also include all removal, in accordance with MAG Section 350, necessary to complete the installation of various types of concrete curb, gutter, sidewalk, driveways and alley intersections.

All driveways, alley entrances and sidewalk ramps constructed in the City of Scottsdale shall be a minimum of eight (8) inches thickness.

**Subsection 340.3 – Construction Methods:**

Is modified as follows:

Delete the last sentence of paragraph 10 and insert the following:

Joints shall be constructed at all radius points, driveways, alley entrances, and at adjoining structures with a maximum interval of fifty (50) feet between joints.

**Subsection 340.5 – Measurement**

Curb and gutter replacement will be measured by the linear foot to the limits shown on the plans. Sidewalk, driveway, and sidewalk ramp replacement will be measured by the square foot to the limits shown on the plans.

**Subsection 340.6 – Payment**

Payment for the items described in this section shall be made at the contract unit price per bid item. 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. The cost of removal, disposal and all other work and appurtenances necessary to install these items, not specifically discussed in this section, shall be considered incidental to the cost of the bid item.

**ITEM 340-1 - REMOVE & REPLACE CURB & GUTTER M.A.G. DET. 220**

**ITEM 340-2 – REMOVE & REPLACE SIDEWALK M.A.G. DET 230**

**ITEM 340-3 - REMOVE & REPLACE SIDEWALK RAMP, M.A.G. DET 234, TYPE D, MOD. 8” THICK**

**ITEM 340-4 - REMOVE & REPLACE SIDEWALK RAMP, M.A.G. DET. 232, TYPE B, MOD. 8” THICK**

**ITEM 340-5 - REMOVE & REPLACE 30’ WIDE DRIVEWAY, M.A.G. DET. 250, MOD. 8” THICK**

**SECTION 345 – ADJUSTING FRAMES, COVERS, VALVE BOXES AND WATER METER BOXES**

Adjustment of frames, covers, valve boxes and water meter boxes shall conform to Section 345 of the MAG Uniform Standard Specifications, except as modified herein.

**Subsection 345.5 - Payment**

No payment will be made for adjusting frames, covers, valve boxes and water meter boxes as such; the cost thereof shall be included in the bid price for the construction and installation of the items for which said adjustment is incidental or appurtenant.

**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.

**Subsection 350.3 – Miscellaneous Removal and Other Work**

Add the following:

- (I) Remove existing curb and gutter
- (J) Remove existing sidewalk
- (K) Remove existing storm drain pipes
- (L) Remove existing manholes
- (M) Remove existing headwalls

**Subsection 350.4 - Payment**

Unless otherwise provided for in the plans, no payment will be made for the removal and disposal of existing improvements as such; the cost thereof shall be included in the bid price for the construction and installation of the items for which said removal is incidental or appurtenant. The payment for the removal of existing storm drain pipes, manholes and headwalls will be included in the unit price bid for the installation of the storm drain culvert.

**ITEM 350-1 - REMOVE EXISTING CATCH BASIN**

**SECTION 401 – TRAFFIC CONTROL**

The work described by this section shall conform to MAG Section.401, City of Scottsdale Section 401, City of Phoenix Traffic Barricade Manual and the Manual of Uniform Traffic Control Devices, except as modified herein.

**Subsection 401.1 – Description**

The Contractor shall be responsible to provide all barricades, signs, lights, off-duty police officers, fences, security instruments, flagmen, and all other traffic control devices and personnel necessary to properly mark and control the construction area for the safe and efficient movement of traffic around, and through, the work site. The Contractor will be responsible to maintain all traffic control devices during construction and will be responsible for the removal of all traffic control devices upon completion of the work as accepted by the Engineer. The application of traffic control measures and traffic regulation in these specifications are intended to supplement and are not intended to delete any provisions of the City of Phoenix's or City of Scottsdale's Traffic Barricade Manuals, the Uniform Manual on Traffic Control Devices or any agency's Supplements to these Standard Specifications. All traffic control shall conform to these specifications and any requests from the Engineer.

The Contractor shall submit to the Engineer at the Pre-Construction meeting, for the Engineer's approval, a temporary traffic control plan and the use of temporary traffic control devices as described in subsection 401.5 of these specifications. Subsequent to approval, the traffic plan and all traffic control devices shall be installed prior to the start of any work. The Engineer's approval of the Contractor's traffic control method shall not relieve the Contractor of his responsibility to protect the work, the Contractor's personnel, nor the general public.

The Contractor shall provide and maintain all necessary signs and barricades to protect the work area for five (5) days beyond the concrete cure time or acceptance of the work by the Engineer, whichever period is greater.

**Subsection 401.2 – Traffic Control Devices**

Add the following:

All existing signs in conflict with the construction signs shall be removed, covered with plywood or relocated. Existing traffic signals shall be covered, relocated or disconnected any time that they are non-

functional or in conflict with construction signs. Sign mounting height shall be 7 feet where the measurement shall be from the bottom of the sign to the top of curb.

**Temporary traffic control devices** shall meet the following requirements:

- (A) All regulatory and warning signs shall have flags and lights displayed.
- (B) All Type II Barricades, Type III Barricades and vertical panels shall be equipped with steady burning lights.
- (C) All orange construction signs shall use high reflectivity sheeting and all other signs shall use standard reflective sheeting.
- (D) All signs to be used on the job during periods of darkness shall be reflectorized.

**Pavement marking for temporary lane striping** shall meet the following requirements:

- (A) Temporary lane striping shall be 4 inches wide by 10 feet in length.
- (B) Temporary lane striping shall be either temporary pavement marking tape or paint placed at 30-foot intervals, except as otherwise shown.
- (C) Temporary lane striping shall be removed by sandblasting or other approved means when the construction phase is complete if they are not covered by Asphaltic concrete.

#### **Subsection 401.3 – Flagmen or Pilot Cars**

Flagmen or pilot cars shall consist of providing sufficient flagmen, uniformed off-duty law enforcement officers or pilot cars to expedite the safe passage of traffic.

City of Scottsdale uniformed off-duty law enforcement officers shall be provided by the Contractor when construction activities occur within 300 feet of a signalized intersection. If Scottsdale officers are not available, law enforcement officers from other local agencies may be used in lieu thereof.

The officers shall be knowledgeable of City traffic control systems and their manual use. A key for the traffic control cabinet along with any special instructions shall be obtained from Field Services, 9191 E. San Salvador, Scottsdale. **Contact Norm Akin, Maintenance Manager, at 391-5620.**

#### **Subsection 401.4 – Traffic Control Measures**

Add the following:

Whenever construction operations create a condition hazardous to the public in the opinion of the Contractor or the Engineer, the Contractor shall furnish such flagmen and guards as necessary to provide adequate warning to the public of any dangerous conditions.

Safety devices, flagmen and guards, while on duty, shall conform to the applicable City, County and State requirements. The Contractor will be responsible to immediately inform the Engineer of hazardous conditions.

Should the Contractor appear to be neglectful or negligent in furnishing adequate warning and protection measures, the Engineer may direct attention to the existence of a hazard and the necessary warning and protective measures shall be furnished and installed by the Contractor without additional cost to the District. Should the Engineer determine inadequacy of warning and protective measures, such action of the Engineer shall not relieve the Contractor from any responsibility for public safety or abrogate his obligation to furnish any pay for those devices. The installation of any general illumination shall not relieve the Contractor of his responsibility for furnishing and maintaining any protective facility.

## Subsection 401.5 – General Traffic Regulations

Add the following:

Contractor shall comply with MAG Section 401.5 as supplemented by COS Section 401 and appended as follows:

**Delete COS reference to lane closures between the hours of 7 to 9 AM and 4 to 6 PM.** One lane of traffic in each direction must be provided at all times in the City of Scottsdale unless advance approval in writing is obtained from the City of Scottsdale Traffic Engineering Director.

The Contractor will develop routes for haul trucks on public streets, which will be submitted in writing through the City of Scottsdale Development Services for review and approval. The submittal shall include, but not be limited to, the proposed travel direction, turn movements, hours of use, street sweeping, watering and clean-up. Presently established truck routes must be used.

Approach speed limits and speed limits within the construction area shall be determined by the City of Scottsdale Traffic Engineering Department.

In addition to the traffic control required for the Contractor's daily operations, the following is also included as part of this item:

### A) Traffic Control General Requirements

- The Contractor shall compile as-built information for all existing pavement marking, signing, street lighting, traffic signal poles and heads, traffic signal conduits, traffic signal conductors, traffic signal loop detectors, and others. The Contractor shall submit a copy of these to the Engineer for review. The Engineer may request additional clarity or documentation on these items. The complete as-built package shall be approved by the Engineer two weeks prior to the start of any work.
- After construction and acceptance by the Engineer, the Contractor shall replace all signing, pavement marking, traffic signal poles and heads, traffic signal conduits, conductors, loop detectors, and other devices to the satisfaction of the Engineer.
- The Contractor shall provide necessary conductors, wiring, signal heads, and other temporary devices necessary for the continued operation of traffic signals during construction.
- Construction shall be staged and scheduled to minimize disruption to the neighborhoods, schools and businesses.
- The Contractor shall provide and maintain two variable message signs for project traffic control purposes for the duration of the project.

- (B) **Canal Access Road Requirements** – SRP canal access and maintenance roads shall remain open at all times.
- (C) **Other Project Coordination** - The Contractor shall be responsible to coordinate and schedule work to minimize disruption or conflicts with other projects in the project area.
- (D) **Sanitation Pick-up** - 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.
- (E) **Special Events** – The Contractor shall coordinate special events scheduled to take place during construction into the construction schedule.

- (F) **Special Sign Requirements** - The Contractor shall provide, erect and maintain advance notification, information, and directional access signs (for businesses, churches, hospitals, etc.) that may be required by the Engineer. The cost shall be included in the bid item for Traffic Control Devices.
- (G) **Bus Stops** – The Contractor shall maintain all existing bus stop locations on this project in a safe manner, or provide alternate bus stop locations as required by the Engineer.
- (H) **Flagging of Traffic** - No flagging of traffic will be permitted during the peak traffic hours of 6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 7:00 p.m. weekdays. If construction requires, intermittent flagging will be allowed from 8:30 a.m. to 4:00 p.m. to facilitate access for heavy construction equipment.
- (I) **Traffic Control Plan** - The Contractor shall submit a traffic control plan for approval, showing placement of all traffic control devices, including all conflicting signs to be covered/removed or relocated, or other features that may conflict with the placement of temporary signage. This plan shall be professionally drawn on a 24" x 36" reproducible medium, and shall be submitted to the Engineer at the Pre-Construction meeting.
- (J) **Safety Fencing Requirements for Trenches and Excavations** –
- The Contractor shall provide safety construction fencing around all open trenches and excavations during all non-working hours.
  - The Contractor shall provide for the safety and welfare of the general 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.
  - The fencing, when installed about the periphery of excavations and trenches, shall form an effective barrier against intrusion by the general public into areas of construction. The Contractor, at all times when construction is not in progress, shall be responsible for maintaining the fencing in good repair, and upon notification by the Engineer, shall take immediate action to rectify any deficiency. Prior to the start of any excavating or trenching required for the execution of the proposed work, the Contractor shall submit to the Engineer for approval detailed plans showing types of materials and methods of fabrication for the protective fencing.
- (K) **Sequence of Construction**
- The sequence of construction shall conform to the requirements of the Special Traffic Control Requirements.
  - The project shall follow a phasing plan approved by the Engineer. All lanes shall be maintained on a paved surface at all times during construction. This may be accomplished by using existing, new or temporary asphalt pavement. Trenches shall be completely backfilled and either paved with temporary asphalt pavement, or covered with metal plating as necessary to comply with this requirement and the “Special Traffic Regulations.”
  - Night work will not be allowed on this project.

- The right to direct the sequence of construction is a function vested solely with the Engineer. Prior to commencement of the work, the Contractor shall prepare and submit to the Engineer a written phasing plan and work schedule for the project. This plan and work schedule shall be submitted to the Engineer at the Pre-Construction Conference for review.
  - When approved, the phasing plan and work schedule shall not be changed without the written consent of the Engineer. Orderly procedure of all work to be performed under this contract shall be the full responsibility of the Contractor. The work schedule shall include the hours per day and the days per week that the Contractor plans to work on the project site.
- (L) **Local Access Requirements** - The Contractor shall maintain local access to all side streets, access roads, driveways, alleys and parking lots at all times and shall notify residents, as described in section (P) below, 72 hours in advance of any restrictions which will affect their access as described in. The Contractor shall restore the access as soon as possible. If the primary access cannot be restored in a timely manner, the Contractor shall provide an alternative which shall be predetermined with the residents prior to imposing any restrictions. Any local street restrictions imposed shall be such that local area traffic circulation is maintained.
- (M) **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 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, as described in Section (P) below, at least seven (7) days prior to imposing restrictions.
- (N) **School Access Requirements** - The Contractor shall provide clean and safe school zones, crosswalks, and walkways for students attending nearby schools during all hours of school use. This may require backfilling trenches, temporary pavement, shoring, plating, or pedestrian bridges with handrails across open trenches. In addition to school zones and crosswalks, the Contractor shall maintain accessibility to all school bus routes during all hours of school use. The Contractor shall notify the school principal(s) and the school Transportation Director, as described in section (P) below, at least seven (7) days prior to any restrictions, and shall restore access as soon as possible.
- (O) **Pedestrian Access Requirements** - The Contractor shall ensure that all sidewalks on this project remain open and safely usable 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 City.
- (P) **Residential, School and Business Areas on Oak Street Requirements**
- The Contractor shall communicate in writing by use of door hangers, and in person as necessary, with all residences, businesses, schools and other entities impacted by the proposed construction. Written communication shall be completed prior to construction, and during construction as refinements are made. The Contractor shall provide information on the planned traffic restrictions including timing, start dates and finish

dates by the areas restricted. This information shall be refined and made more specific, such as maps identifying temporary parking areas by date, excavation limits by date, truck routes, and other impacts to the neighborhood.

- Oak Street shall be allowed to be closed to “Local Traffic Only” where reasonable and necessary as mutually agreed upon by the Contractor and the Engineer.
- Driveways to individual residences shall not be blocked for more than three days.
- Parking areas for residences whose driveways are blocked shall be identified by the Contractor and communicated to the neighborhood by use of door hangers.
- The Contractor shall provide assistance to residents whose driveways are blocked by construction. This assistance will include carrying groceries, moving heavy objects from vehicle to home and home to vehicle, clearing paths, and other worked deemed necessary by the Engineer to compensate for the temporary inconvenience of construction within the neighborhood.

- **Coronado High School and Tonto Elementary School**

The Scottsdale Unified School District shall be contacted and coordinated with regarding school schedules and special events (contact Lyle Cunningham, 451-5060). Construction adjacent to the schools will not be permitted until two (2) weeks **after** a traffic plan and schedule have been submitted to the schools and have been approved by the Engineer and the schools.

- **Special Requirement at Tonalea Elementary School**

**The work adjacent to Tonalea Elementary School (Sta. 136+00 to Sta. 143+00) shall be scheduled between the dates of May 26 and August 16, 1999, when school is not in session.** If the Contractor is not able to finish the construction by above dates, the Contractor shall provide adequate traffic control measures to convey the school traffic including school buses and student drop-off facilities.

(Q) **Work Site Requirements**

- The Contractor’s work area shall be completely fenced and secured at the end of each work shift and it shall not extend more than 200 feet at the end of any work shift.
- The Contractor’s work area shall be secured such that neighborhood residents and others are not exposed to construction hazards.

(R) **68th Street and Miller Road Requirements**

- 68th Street and/or Miller Road may be closed for a weekend if approved in writing two weeks in advance by the Engineer.
- A minimum of two lanes, one lane in each direction, shall be provided for traffic on 68th Street and/or Miller Road other than the one allowed weekend closure.
- Weekends are defined as FRIDAY 10 PM to MONDAY 4 AM.
- At Miller Road, access to the east leg of the intersection shall be maintained.

(S) **Scottsdale Road Requirements(Sta. 161+80 to Sta. 163+36)**

- Scottsdale Road may not be completely closed to traffic at any time.
- Scottsdale Road may be restricted to one northbound lane and one southbound lane under the following conditions:
  1. The work is done during the summer months of June, July or August.
  2. The maximum length of time the road can be restricted to one lane in each direction is one 9-day period which shall consist of two (2) weekends with one (1) 5-day week in between.
  3. Weekends are defined as FRIDAY 10 PM to MONDAY 4 AM.
- If Scottsdale Road traffic is restricted other than on the above described 9-day period, a minimum of two lanes northbound and two lanes southbound shall be provided. Left turns onto Oak Street shall be prohibited.
- If Removal and replacement of the median islands, curbs and gutters, sidewalks, landscaping, special pavement marking and signing, traffic signal modifications, and other work will require extensive coordination with the City of Scottsdale and the detailed drawings proposed and provided by the Contractor shall be approved a minimum of two weeks prior to any scheduled construction.

(T) **Signalized Intersection Requirements**

- When left turns are prohibited at signalized intersections with left-turn arrow indications, the Contractor shall notify the Engineer and the **City Traffic Signal Shop (262-6021)** at least 72 hours in advance to make arrangements for arrow indications to be turned off during the prohibited times.
- The Contractor shall provide the Engineer and the Traffic Signal Shop a written schedule indicating days, times and specific locations where left turns will be prohibited.

(U) **Temporary Pavement**

- Temporary pavement shall be asphalt concrete, Type 19.0 mm, 2 inches thick. The temporary pavement shall be placed as required to maintain traffic on pavement at all times, or as directed by the Engineer.

(V) **Traffic Loop Detectors**

- Traffic signal loop detectors, which are damaged from pipe trenching operations shall be completely replaced from the Loop Leads in accordance with Figure 3.2-4 from the City of Scottsdale Design Standards and Policies Manual.
- Three (3) days prior to cutting any existing signal loop detectors, the Contractor shall contact the City of Scottsdale Traffic Maintenance Division at 312-5635.
- All loops are to be wire-in-duct type wire (Detect-a-Duct or approved equivalent, #14 stranded, inside ¼ inch PVC tubing).
- Loop Sealant shall be Griggs Epoxy, 3-M Loop Sealant, or approved equivalent.

### **Subsection 401.6 – Measurement**

Measurement of all traffic control devices as described herein, as required by Subsection 104.1 and as required for the project will be measured on a lump sum basis, except as modified by the following:

- There will be no direct measurement or payment for furnishing, installing, maintaining, or removing temporary asphalt pavement, subgrade preparation including earthwork, and installing temporary drainage facilities, the cost being considered incidental to the cost of the project.
- Uniformed off-duty law enforcement officers or pilot cars, with driver, will be measured by the hour for each individual, including vehicle and equipment, required to perform traffic control. When an officer is used less than 3 hours, a minimum of 3 hours will be charged. Anything over 3 hours will be measured by the hour.
- Traffic signal loop detectors are measured by each loop complete from the loop leadins.

### **Subsection 401.7 – Payment**

Payment for all traffic control devices and work, excluding the use of uniformed off-duty law enforcement officers as described above, will be paid for at the lump sum contract bid price. Payment shall include full compensation for furnishing labor, materials, tools, equipment and incidentals, and for doing all the work involved to provide traffic control for the project.

Payment for uniformed off-duty law enforcement officers will be made on the basis of the prices bid per hour and shall include full compensation for the work performed by the officers.

Payment for traffic loop detectors shall be made at the unit price bid per each, complete in place.

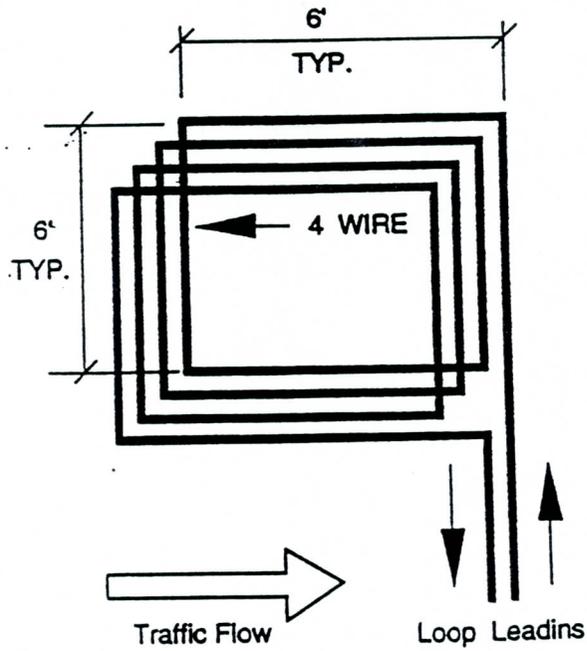
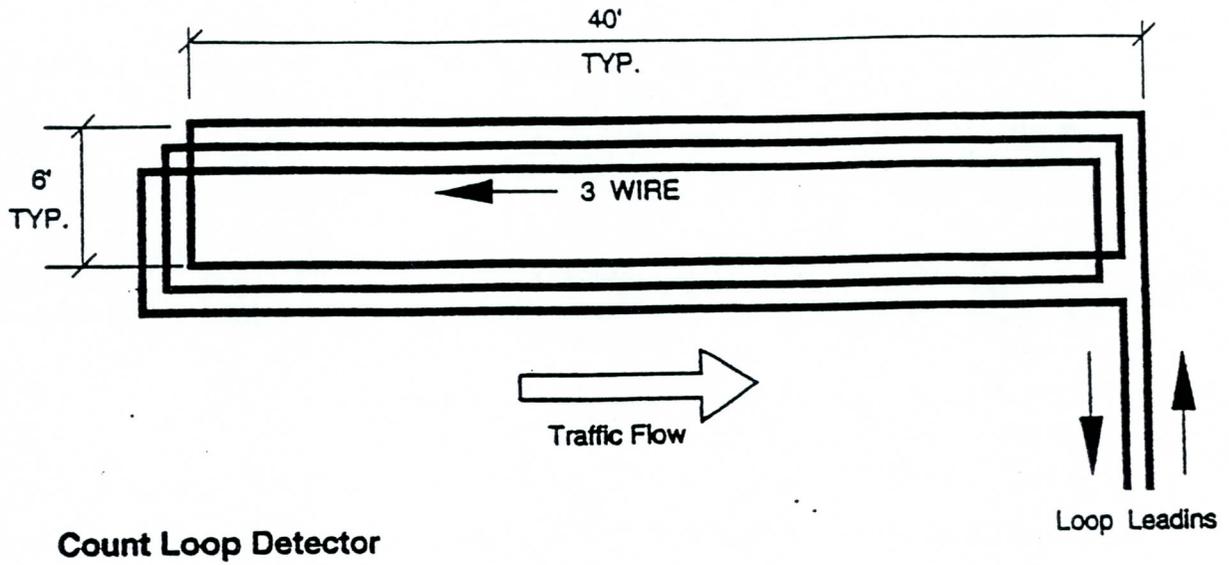
### **ITEM 401-1 – TRAFFIC CONTROL DEVICES**

### **ITEM 401-2 – OFF-DUTY POLICE OFFICER**

### **ITEM 401-3 – REPLACE TRAFFIC SIGNAL LOOP DETECTOR**

Note:  
Typical Intersection Loop Configuration  
Unless Otherwise Specified By STED  
(Not To Be Used For Vehicle Counting)

SEE A.D.O.T. T.S. 7-1 FOR INSTALLATION DETAILS  
(SAWCUT ALL CORNERS 1' X 1')



**FIGURE 3.2-4**  
Loop Detail

## **SECTION 405 – MONUMENTS**

Construction of survey markers shall conform to Section 405 of the MAG Uniform Standard Specifications, except as modified herein.

### **Subsection 405.3 – Construction**

Prior to removal of any existing survey marker or brass cap, the Contractor shall ensure that appropriate survey ties have been made and recorded by a Registered Land Surveyor for re-establishing the survey markers after construction has been completed.

### **Subsection 405.5 – Payment**

Payment for survey markers shall be at the contract unit price per each. Such payment shall be full compensation for removal, furnishing, and installing monuments, complete in place, including the cost of labor, a Registered Land Surveyor, and all other work not specifically covered that is incidental to the completion of the work.

No penalty shall be incurred for the reduction in the number of items described above as determined by the Engineer.

### **ITEM 405-1 – REMOVE & REINSTALL SURVEY MARKERS M.A.G. DET. 120-1-A**

### **ITEM 405-2 – REMOVE & REINSTALL SURVEY MARKERS M.A.G. DET. 120-1-B**

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

Chain Link fence construction shall conform to Section 420 of the MAG Uniform Standard Specifications except as modified herein.

### **Subsection 420.1 – Description**

The work shall consist of removing and reinstalling existing chain link fences and gates. The existing materials may be reused and replaced, in kind. If new fencing is used, it shall be the same height and appearance and shall conform with MAG Section 420, including submittal of shop drawings.

### **Subsection 420.4 – Measurement**

The removal and reinstallation of chain link fence and gates shall be measured along the bottom strand wire from center to center of end posts, including the length of gates

### **Subsection 420.5 - Payment**

The price bid and paid per linear foot for removal and reinstallation of chain link fence shall include full compensation for furnishing all labor, materials, tools, and equipment, and doing all the work involved in removing the fence, storing the fence materials, and reinstalling the fence and gates complete in place to its original location. No differential in price shall be paid for fence or gate height. The bid price shall cover all Fences, regardless of height.

### **ITEM 420-1 - REMOVE & REINSTALL CHAIN LINK FENCE (HEIGHT VARIES 3' - 8')**

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

The following replaces Section 430 of the MAG Uniform Standard Specifications.

### **Subsection 430.1 - Description**

This section shall govern the preparation and planting of landscape areas required in the Plans or Specifications. Materials shall be in accordance with Section 795.

Existing utilities and improvements not designated for removal shall be protected in place. Any damages will be repaired by the Contractor at no additional cost to the Owner.

### **Subsection 430.2 - General**

Furnish all labor, materials, equipment and incidental needs to install the landscape to the lines and details shown in the plans. This section includes provisions for supplying and/or installing trees, decomposed granite, soil amendments, landscape maintenance, and warranty and guarantee of the landscaping.

Applicable publications listed below form a part of this specification to the extent referenced:

- (A) ANA: Arizona Nursery Association Grower's Committee "Recommended Tree Specifications", latest edition.
- (B) AAN-ASNS: American Association of Nurserymen, Inc. "American Standard for Nursery Stock" - 1986 Edition.

Landscape work shall be completed by a single firm specializing in landscape and irrigation installation and maintenance.

Perform work in accordance with all applicable laws, codes and regulations required by authorities having jurisdiction over such work. Provide for all inspections and permits required by Federal, State and local authorities in furnishing, transporting and installing materials as shown or for completing the work identified herein.

Landscape or planting areas shall not be cultivated when they are so wet as to cause excessive compaction or so dry as to cause excessive dust or the formation of large clods.

Prior to any grading the areas shall be cleared and grubbed in accordance with Section 201, Clearing and Grubbing.

Finish grade for these areas shall not vary more than 1 inch from the specified grade and cross-section and shall be a smooth uniform surface, free of any abrupt grade changes or depressions. Unless otherwise specified, finish grade below adjacent paving shall be one (1) inch for granite areas.

All landscape and planting areas shall be treated with a pre-emergence control, such as Surflan or equal, applied in accordance with the manufacturer's recommendations.

### **Subsection 430.2.1 - Source Quality Control**

Ship landscape materials with Certificates Of Inspection required by governing authorities. Comply with regulations applicable to landscape materials.

Do not make substitutions: If specified material is not obtainable, submit proof of non-availability from five sources to Engineer, together with proposal for use of equivalent material, similar in appearance, ultimate height, shape, habit of growth and general soil requirements. Substitution of a larger size of the same species may be made by the Contractor with approval by the Engineer. However, any additional cost for these substitutions will be borne by the Contractor.

Before delivery, Certificates Of Compliance shall be submitted, certifying that materials meet the requirements specified. Certified copies of the reports for the following materials shall be submitted:

- (A) Transporting of Cacti and Landscape Plant Materials (from the Arizona Department of Agriculture).
- (B) Soil Amendments and Conditioners
- (C) Decomposed Granite

Certification shall indicate; supplier's name, address, telephone number, date of purchase, name and technical description of item purchased, and quantity of each item purchased.

#### **Subsection 430.2.2 - Samples and Tests**

The Engineer reserves the right to take and analyze samples of materials for conformity to specifications at any time. Contractor shall furnish samples upon request by the Engineer. Rejected materials shall be immediately removed from the site at the Contractor's expense. Cost of testing materials not meeting specifications shall be paid by the Contractor.

**Soils Test:** As soon as possible after all or portions of the site becomes available for landscaping, contract with a licensed soils lab to take a minimum of two (2) soil samples (0-1' depth) of the existing in-situ soil at approved locations for use in fertility analyses.

The soil analysis shall include all characteristics necessary to make fertility recommendations for landscape applications. Perform and include in the report a soil analysis showing parts per million (ppm) of Ca, Mg, Na, K, Fe, Zn, Mn, Cu, nitrate, nitrogen and phosphorus at the test locations. Also include levels of salinity, pH, sodium, and free lime and include recommendations for soil amendments to correct any nutrient deficiencies, eliminate conditions detrimental to plant growth and improve the soil fertility. Additionally, at least two (2) bioassay samples shall be taken from the landscape areas.

Provide the test results and recommendations to the Engineer for review. If, in the opinion of the Engineer, the testing warrants a change in the soil amendments, the Engineer will request a proposal for incorporating the additional amendments into the project. Changes to soil amendments from those shown in these contract documents will be covered by an adjustment in contract price for the affected items as approved by the Engineer.

**Planting Schedule:** Submit planting schedule, indicating dates for each type of landscape work during landscape installation. Correlate with specified maintenance periods to provide maintenance from date of substantial completion. Once accepted, revise dates only as approved in writing, after documentation of reasons for delay.

**Maintenance Schedule:** Submit proposed maintenance schedule for Engineer's approval.

**Maintenance Instructions:** Submit typewritten instructions recommending procedures to be established by the Owner for maintenance of landscape work for one full year. Submit prior to completion of the landscape installation.

#### **Subsection 430.2.3 - Herbicide / Pesticide Applicators**

All herbicide / pesticide applicators shall be properly licensed for application of non-restricted use chemicals with an A-20 license or an A-21 license with Pesticide Endorsement from the State Registrar of Contractors and Structural Pest Control Commission. All Landscape Contractors are required to furnish a copy of their application from the Registrar of Contractors which shall list the names of those employees approved as applicators by the Registrar of Contractors. Application of non-restricted use pesticides shall not take place until the Engineer receives a copy of the application.

### **Subsection 430.3 - Plant Establishment Guarantee and Maintenance**

Unless otherwise authorized, the Contractor shall maintain all landscape areas on a continuous basis as they are completed during the course of work and until completion of the 60 Day Plant Establishment and Maintenance Period. The Contractor shall provide adequate personnel to accomplish maintenance. Maintenance shall include keeping the landscape areas free of trash and debris on a weekly basis, control of weeds, fertilization as needed, and plant replacements made. Traffic control, if required during the maintenance period, shall be included in the cost of contract items.

Plants shall be kept in a healthy, growing condition by watering, pruning, spraying for insects or disease, and any other necessary operation of maintenance until accepted by the Engineer. Contractor will bear full responsibility for complete removal of weeds and grasses such as Bermuda, Johnson and nut grasses from the project site resulting from the landscape installation. Plants shall be inspected at least once per week and appropriate maintenance performed. Pruning and restaking is to include removal of any growth conflicting with vehicular or pedestrian movement.

Make replacements of dead or unhealthy plants for any reason during the 60 Day Plant Establishment and Maintenance Period, except for replacements resulting from the exclusions identified in PROJECT WARRANTY below. Plants damaged by frost shall be replaced during the maintenance period as directed by the Engineer; there shall be no limit to the replacements due to frost. Engineer shall approve replacement plants prior to planting.

The Contractor shall maintain the irrigation system and make any necessary repairs regardless of cause to assure a complete and operational system as originally designed and constructed. Repairs shall be made within 48 hours of detection.

Chemical mixing and method of application for weed control shall be done in the presence of the Engineer. Provide a schedule of maintenance activities to the Engineer prior to starting work. Provide the Engineer weekly reports summarizing maintenance activities completed by the Contractor, including person hours expended to complete the tasks.

The Plant Establishment and Maintenance Period shall not be considered within the allotted contract time.

Each day that the Engineer determines that work under the Plant Establishment and Maintenance Period is required and the Contractor is so advised, and the Contractor fails to accomplish the required work, the subject days will not be used to reduce the total number of calendar days specified.

The Contractor shall request a pre-maintenance inspection by the Engineer whenever completion of the planting and related work has been accomplished. Contractor shall notify Engineer within five days of inspection to arrange schedule. The Engineer, Contractor and such others as the Engineer shall direct, shall be present at the inspection. After this initial inspection, and subject to the approval of work, the Engineer will issue a written field notification to the Contractor setting the effective date for beginning of the 60 Day Plant Establishment and Maintenance Period. Work requiring corrective action in the judgment of the Engineer shall be performed within five days after the pre-maintenance inspection. Corrective work and materials replacement shall be in accordance with the drawings and specifications and shall be made by the Contractor at no cost to the Owner. When inspected work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by Engineer and found to be acceptable. Remove rejected plants and materials promptly from project site.

If the landscape areas are improperly maintained; if appreciable plant replacement is required (for whatever reason); if corrective work is required for the operation of the irrigation system; or if other corrective work is necessary; the 60 Day Plant Establishment and Maintenance Period shall be extended and the Contractor shall continue to maintain the entire site until accepted at no increased cost to the Owner.

At the end of the 60 Day Plant Establishment and Maintenance Period a final inspection will be performed. At the time of final maintenance inspection, the Contractor shall have all planting areas under this Contract free of weeds and neatly cultivated. All plants shall be alive and healthy, without signs of stress. If, after inspection, the Engineer is of the opinion that all work has been performed as per the drawings and specifications, all planting areas are weed free, and plant materials are in satisfactory growing condition, the Contractor will be given written Notice of Acceptance of the landscape installation.

Work requiring corrective action or replacement in the judgment of the Engineer shall be performed within 10 days after the final inspection. Corrective work and materials replacement shall be in accordance with the drawings and specifications, and shall be made by the Contractor at no cost to the Project. Maintain corrected work until reinspected by Engineer.

If the optimal planting period has passed without successful compliance with the landscape acceptance criteria, the Contractor shall be responsible for replanting, weeding, maintaining the landscaping and taking remedial actions as required to complete the deficient work during the following growing season, or until accepted by the Engineer. The Engineer shall be the sole judge of the remedial actions to be taken by the Contractor.

There shall be no separate measurement and payment for the 60 Day Plant Establishment and Maintenance Period. This cost shall be included in landscape bid items for: plant materials, irrigation, and inert materials, such as decomposed granite. Ten percent of each landscape bid item amount in addition to retention will be held for distribution during the maintenance period. Equal monthly payments will be authorized, based on inspection and subject to extensions, where the Contractor fails to comply with previously stated requirements. Payment may or may not be supplemental to final project payment.

#### **Subsection 430.4 - Project Warranty**

Warranty all plant material through the 60 Day Plant Establishment and Maintenance Period against defects including death and unsatisfactory growth, except for defects resulting from neglect by the Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Landscape Contractor's control.

Remove and replace plant material found to be dead or in unhealthy condition at any time during warranty period or as directed by the Owner/Engineer. Replace plant material which is in doubtful condition at end of warranty period unless, in opinion of Engineer, it is advisable to delay replacement. If replacement is delayed, another inspection will be conducted at an agreed-upon date to determine acceptance or rejection. Only one replacement (per tree) will be required during the warranty period, except for loss or replacements due to failure to comply with specified requirements.

Replacements made during the warranty period shall be made within 10 days of written notice from the Engineer according to the plans and specifications herein. The Engineer shall approve replacement material prior to planting.

#### **Subsection 430.5 - Job Conditions**

**Site Examination:** The prospective contractors are encouraged to examine the plans and visit the job site prior to bidding on this project, and to satisfy their concerns as to the magnitude of the work involved, to become aware of the existing conditions and to understand any restrictions to the completion of the proposed work. Failure to visit the site and become acquainted with the existing conditions shall in no way relieve the Contractor from any obligation with respect to the proposal submitted.

Water will be provided by the Owner through the existing backflow preventers for use in the landscape installation at no charge to the Contractor.

All planting areas shall be left free of construction debris and/or toxic material and subgraded to a level to permit landscape and irrigation construction. Trenches, foundation backfill or other filled excavations shall be compacted prior to the site being turned over to the landscape contractor. No soil preparation or planting shall begin before the site has been cleared and cleaned of debris. The Contractor will receive the site within 0.10' of grade necessary to complete the work herein. Commencement of work indicates acceptance of job site conditions. Cooperate and coordinate with other contractors and trades working in and adjacent to landscape areas.

Plants scheduled to remain which are damaged or destroyed shall be replaced with like-kind and size materials at the discretion of the Engineer. The Contractor shall be responsible for completely clearing and grubbing the damaged plants and replanting the like-kind materials as directed. The size of the placement plant shall be approved prior to installation.

Plants lost to frost during the plant establishment guarantee period shall be replaced at no additional cost to the project. There is no limit to the number of replacements due to frost damage. The Contractor shall be responsible for complete removal of undesirable species such as Bermuda, Johnson, and nut grasses resulting from the landscape installation, as appropriate.

#### **Subsection 430.5.1 - Utilities**

Determine location of underground utilities by using Blue Stake or similar approved method and perform work in a manner which will avoid possible damage. Hand excavate as required. Maintain stakes by others until removal is mutually agreed upon by parties concerned. Repair or replacement of damaged utilities shall be made as directed by the Engineer. The cost of repairs or replacement of utilities damaged by the actions of the Contractor shall be borne by the Contractor.

#### **Subsection 430.5.2 - Obstructions**

If rock, underground construction or other obstructions are encountered in excavation for planting, notify Engineer. New locations may be selected by Engineer or instructions may be issued to direct removal of obstruction to a depth of not less than 6" below required planting depth. Proceed with work only after approval of Engineer.

#### **Subsection 430.6 - Delivery, Storage and Handling**

**Packaged Materials:** Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored on site. Protect products/materials from weather or other conditions that would damage or impair the effectiveness of the product material.

**Plant Material:** Provide trees of quantity, size, genus and species shown and scheduled for landscape work and complying with recommendations and requirements of the above references. Provide healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practice and free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, or disfigurement.

Label each type of plant with a securely attached waterproof tag bearing legible designation of botanical and common name.

Measure plant material with branches or trunks in their normal position for conformance with requirements of the above references. Do not prune to obtain required sizes. Measure main body of tree for height and spread dimensions. Do not measure from branch or root tip-to-tip.

Engineer may inspect plant material either at place of growth or at site before planting, for compliance with requirements for genus, species, size, and quality. The Contractor shall notify the Engineer at least 48 hours in advance for inspection of the plant material at the offsite location. Prior to notification of the Engineer, the Contractor shall physically verify that the plant material meets the size specified. Travel to non-local nurseries, out of the metropolitan Phoenix area, when requested by the Contractor, will be paid for by the Contractor. Engineer retains right to further inspect plant material for size and condition of root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected plant material immediately from project site and replace with acceptable plants.

Plants shall be sound, healthy, well branched and densely foliated when in leaf. They shall have healthy, well-developed root systems and shall be free from evidence of physical damage or adverse conditions that would prevent thriving growth.

Plants shall not be pruned before delivery. Trees which have damaged or crooked leaders, or multiple leaders, unless specified, will be rejected. Trees with abrasions of the bark, sunscalds, disfiguring knots, or fresh cuts of limbs over 3/4" which have not completely callused, will be rejected. Do not bend or bind-tie plant material in such manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery. Provide adequate protection for root systems from drying winds and sun.

Deliver trees after preparations for planting have been completed, and plant immediately. If planting is delayed more than 6 hours after delivery, protect trees from weather and mechanical damage. Keep roots moist. Water as often as necessary.

#### **Subsection 430.7 - Preparing the Site for Landscaping**

All non-paved areas, as directed by the Engineer, shall be treated with a chemical control, such as Round-up or Equal, to control and kill weeds. After weed kill has been established to the satisfaction of the Engineer, these areas shall be cleared and grubbed.

Prior to landscape grading, areas designated shall be cleared and grubbed in accordance with Section 201, Clearing and Grubbing.

Remove or relocate trees, shrubs, grass, improvements or obstructions interfering with the installation of new construction. Removal includes digging out stumps and roots to a depth of 12 inches below existing or proposed grade, whichever is lower.

Fill depressions caused by clearing and grubbing operations with satisfactory soil material. Place fill in 6" loose depths and compact to adjacent ground densities.

Finish grade for landscape areas shall not vary more than 1 inch from specified grade and cross section and shall be a smooth, uniform surface, free of abrupt grade changes or depressions. Finished soil grade and adjacent paving shall be adjusted for surface materials. Granite areas shall be 3 inches below adjacent pavement.

#### **Subsection 430.8 - Execution of Planting**

Clearing and grading: All planting areas shall be free of construction debris and/or toxic materials and graded to permit landscape construction.

**Planting Seasons and Conditions:** Planting shall not be done when the soil is muddy or conditions are otherwise unsuitable for planting. The Engineer will be the sole judge of the acceptability of the site soil for planting.

Lay out individual tree locations and secure Engineer's acceptance before start of planting work. Make minor adjustments as may be requested.

Protect existing vegetation from damage during planting operations.

**Excavation:** Plant pits shall be dug to produce vertical sides and flat, uncompacted bottoms. If pits are dug with an auger and sides of pits are glazed, scarify the glazed surface. The size of the pits shall be as indicated on the project plans. Loosen hard subsoil in bottom of excavation.

**Drainage:** Test drainage of plant pits by filling with water twice in succession. Plant pits retaining water for more than 24 hours shall be brought to the attention of Engineer. Submit in writing a proposal to correct drainage situation to Engineer for approval before proceeding with work.

**Backfill Mix:** For backfill of trees, use 1 part soil conditioner to 4 parts of native soil excavated from the plant pits. To be acceptable the backfill shall have all stones greater than 2-inch diameter removed and shall be without balls, clumps or layers of individual materials. Prior to the backfilling of holes, the Contractor shall provide a sample of the backfill for the Engineer to review. This sample shall be used as reference material for the backfill as the project proceeds.

Submit certification of contents, quantity and source to the Engineer per Section 430.2.1 for approval.

**Setting and Backfilling for Trees:** Set plant material on undisturbed native soil, plumb and in center of pit with top of ball at an elevation necessary to accomplish finished landscape grade. Remove bottoms of wooden boxes before setting. After removing plant from container, scarify sides of root ball to eliminate root bound condition. Do not plant stock if root ball is cracked or broken before or during planting operation. When set, place additional backfill mix around plant and place fertilizer tablets. Work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill. Fertilizer tablets when specified shall be added approximately 6" below grade at the rate specified on the project plans.

Remove all nursery-type plant labels from plants.

**Watering:** All watering shall be done in a manner which will provide uniform coverage but which will not cause erosion or damage to the finished surface.

**Pruning:** Prune, thin out and shape trees in accordance with ASNS. Prune trees to retain required height and spread. Do not cut tree leaders, and remove only injured or dead branches from trees, if any. Plants should conform to the requirements of ANA after pruning.

**Stake All Trees Per Plans:** Set stakes vertically and space to avoid penetrating balls or root masses. Place tree ties for maximum support with top tie above scaffold branches and second tie midway to the ground level. Avoid "rigid" restraint of tree and allow for some trunk movement. Stakes to be set into native soil.

#### **Subsection 430.9 - Decomposed Granite Areas**

Decomposed granite shall be in accordance with Section 795. The Contractor shall confirm that a sufficient quantity if available so that the entire area will be of the same composition and appearance, and shall furnish a sample to the Engineer for approval as to color.

The Contractor shall stake out all areas to receive granite mulch. These areas shall be treated with a pre-emergent control, such as Surflan, prior to placement of the cover material. The areas on which the granite mulch is to be placed shall be graded according to the drawings prior to the placement of any granite. The ground shall be reasonably smooth and firm and all deleterious material and rocks larger than 1" in diameter shall be removed and disposed of. The mulch shall be placed over the entire planting

area as shown on the drawings including underneath all plant materials located within mulch areas. Mulch shall not be placed until after plant materials in the area have been planted and a pre-emergent herbicide applied.

After placing and grading the granite mulch, the Contractor shall water settle the granite with a light spray to remove fine materials from the surface. Immediately after watering, the Contractor shall roll the granite mulch with an appropriate device to an extent satisfactory to the Engineer. After compaction, a second application of pre-emergent herbicide shall be applied to all mulched areas in accordance with the manufacturer's printed instructions. The Engineer shall witness both applications of pre-emergent herbicide.

Care shall be taken in the placement of the mulch not to disturb or damage any plant material. The decomposed granite shall be a minimum of 2" thick at the completion of the procedure.

Where granite terminates at existing native soil or other landscape materials without the benefit of an adjacent curb or edging, progressively decrease (feather) the depth of the final 3' of the granite to meet the elevation of the existing natural grade. The feathered edge shall be neat in appearance as approved by the Engineer.

**Subsection 430.10 - Cleanup and Protection**

During Landscape Work, keep pavements clean and work areas in an orderly condition. Sweep, scrub or hose affected areas as directed by the Engineer to maintain a clean and neat work area.

Protect Landscape Work and Materials from damage due to landscape installation, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. The Contractor assumes all responsibility for the portion or portions of the site under construction and shall provide and maintain safety devices and protective equipment as required by State and local laws, codes and ordinances. Maintain protection during installation and maintenance periods as required. Treat, repair or replace Contractor-damaged work as directed by the Engineer at no cost to the Owner. Remove all debris, trash and excess materials generated by the landscape installation and properly dispose of same.

**430.11 Measurement and Payment**

Payment for the items described in this section shall be made at the contract unit price per bid item. Such payment shall be full compensation for furnishing and installing the item complete and in place including the cost of all materials, labor, equipment and planting of trees. The cost of all other work and appurtenances necessary to install these items, not specifically covered by bid items in this section, shall be considered incidental to the cost of the bid item.

Payment for trees will be made at the unit bid price per each tree as shown on the plans. Payment for plant establishment will be made on a lump sum basis. Payment for decomposed granite will be made at the unit bid price per square foot to the limits shown on the plans.

**ITEM 430-1 - TREE, 36" BOX**

**ITEM 430-2 - PLANT ESTABLISHMENT**

**ITEM 430-3 - DECOMPOSED GRANITE**

**SECTION 440 - SPINKLER IRRIGATION SYSTEM INSTALLATION**

The following replaces Section 440 of the MAG Uniform Standard Specifications.

### **Subsection 440.1 - General**

The Contractor shall furnish all labor, materials, tools, equipment, and services necessary for the execution and completion of the irrigation system work as indicated on the drawings and as described in these specifications and the General Conditions.

Due to the scale of the drawings, it is not possible to indicate all offsets, fittings and sleeves which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of the work and plan the work accordingly, furnishing such offsets, fittings and sleeves as may be required to meet such conditions. All work called for on the drawings by notes or details shall be furnished and installed whether or not specifically mentioned in the specifications.

The work of this Section generally includes provisions of an underground drip irrigation system including the following:

- (1) Trenching, stockpiling excavation material, and refilling trenches.
- (2) Abandonment, removal and reconfiguration of portions of the existing irrigation system.
- (3) Complete system (downstream of the existing mainline) including but not limited to piping, valves, fittings, emitters and final adjustments to insure complete coverage.
- (4) Reconnecting existing wiring.
- (5) Replacement of unsatisfactory materials.
- (6) Reprogramming the affected existing controller(s).
- (7) Clean-up, inspection and approval.
- (8) Coordination with the Engineer prior to construction and during system shut downs.
- (9) Re-establishing the remaining/reconfigured system as shown on the plans and described herein.
- (10) Tests: The system shall efficiently and uniformly irrigate all areas and perform, as required, by the plans and specifications.
- (11) Preparation of "as-built" redlines.

No irrigation work is to be performed until all areas are finished to proper grade and until soil preparation is completed, and has been approved by the Engineer.

### **Subsection 440.1.1 - Allowances for Work by the Water Services Department**

### **Subsection 440.1.2 - Allowances will not be included in the irrigation costs**

### **Subsection 440.2 - Reference**

Conform to the requirements of reference information listed below except where more stringent requirements are shown or specified in the Contract Documents.

- (1) American Society of Testing Materials (ASTM) - Specifications and Test Methods specifically referenced in this Section.
- (2) Underwriters Laboratories (UL) - UL Wires and Cables.

### **Subsection 440.3 -Quality Assurances**

Installer shall have had considerable experience and demonstrate ability in the installation of irrigation system(s) of specified type(s) in a neat, orderly and responsible manner in accordance with recognized standards of workmanship.

Work involving plumbing for installation of copper piping, backflow preventer(s), and related work shall be executed by licensed and bonded plumber(s). Secure a permit at least 48 hours prior to start of installation.

**Tolerances:** Specified depths of mains and laterals and pitch of pipes are minimums. Settlement of trenches is cause for removal of finish grade treatment, refilling, recompaction, and repair of finish grade treatment.

Coordinate work with other trades.

Until the end of the 60 Day Plant Establishment and maintenance Period, guarantee/warranty irrigation materials, equipment, and workmanship against defects. The Contractor shall replace any pavement damage resulting from the installation of the irrigation system and repair damage to grading, soil preparation, seeding, sodding, or planting at no additional cost to the Owner. Make repairs within three days following notification by the Engineer.

**Pre-Construction Conference:** Contractor shall schedule and conduct a conference to review in detail quality control and construction requirements for equipment, materials and systems used to perform the work. Conference shall be scheduled not less than 10 days prior to commencement of work. All parties required to be in attendance shall be notified no later than seven days prior to date of conference. Contractor shall notify qualified representatives of each party concerned with that portion of work to attend conference, including but not limited to Owner, Engineer and installer. Minutes of conference shall be recorded and distributed by Contractor to all parties in attendance within five days of conference.

As part of the pre-construction conference, the Contractor shall meet with the Engineer and other persons as appropriate to identify the process and schedule for completing the work. The Engineer will distribute "as-built" plans of the affected irrigation systems for use by the Contractor. A field review of the areas of work and equipment will be conducted as part of the conference. The Contractor shall identify in the field review the proposed approach to completing the work and indicate evidence of coordination with other work on the project. The Contractor will accept comments from the others on the proposed activities. Within three days of the meeting, the Contractor shall provide a written schedule of the proposed work for the Engineer to review. Once a strategy and schedule are agreed upon, amend the schedule only as approved by the Engineer.

### **Subsection 440.4 - Submittals**

#### **Subsection 440.4.1 - Shop drawings and product information**

Prepare and make submittals in accordance with conditions of the Contract, and as follows: A minimum of 10 days prior to beginning work on the irrigation system, the Contractor shall submit six copies of manufacturers literature including model number and description of materials listed below and any other items requested by the Engineer. Do not order materials until products are approved by the Engineer. Items to be submitted:

- (A) Pipe
- (B) Fittings and Solvents
- (C) Valve Boxes

- (D) Pressure Regulator / Wye Strainer
- (E) Automatic Valves
- (F) Emitters

All items shall be those specified and approved by the Engineer. Substitutions will not be allowed without approval.

#### **Subsection 440.4.2 - Record Drawings**

At onset of irrigation installation secure reproducible copies of original irrigation design from Engineer. Make blue-line or black-line prints as required. The Contractor shall maintain an accurate set of as-built plans on site. At the end of each day work accomplished shall be updated on the as-built plans by a qualified draftsman. A print of record plan(s) shall be available at project site. Indicate zoning changes on weekly as-built drawings. Indicate non-pressure piping changes on as-builts. Upon completion of project, submit for review, prior to final acceptance, final set of as-built blueprints. The Contractor shall dimension from two permanent points of reference, building corners, sidewalk, or road intersections, etc., the location of the following:

- (A) Connection to existing waterlines
- (B) Routing of tree lateral lines (dimension at a minimum of 100 feet along routing)
- (C) Drip irrigation control valves
- (D) Drip line flush caps
- (E) Other related equipment as directed by the Engineer

The above mentioned equipment and stock shall be turned over to the Owner at the conclusion of the project. Before final inspection, evidence that the Owner has received this material must be shown to the Engineer.

The Contractor shall also indicate any non-pressure pipe routing changes on the as-built drawings.

Before the final inspection, the Contractor shall deliver to the Engineer one copy of the as-built plans to review. Delivery of this set of plans does not relieve the Contractor of the responsibility of furnishing required information that may be requested by the Engineer. The Contractor shall make corrections noted and submit final as-built plans to the Engineer for approval and acceptance. The Engineer will not certify payment requests or make final payment if as-built plans are not current or complete.

#### **Subsection 440.4.3 - Controller Charts**

As-Built drawings shall be approved by the Engineer before controller charts are prepared. The chart shall show the area controlled by the automatic controller and shall be the maximum size which will fit inside the controller door and still be legible. Identify the area of coverage of each remote control valve, using a distinctively different color, drawing over the entire area of coverage. Following review of the charts by the Engineer, they shall be hermetically sealed between two layers of 20 mm thick plastic sheets. These charts shall be completed and approved prior to final inspection of the irrigation system.

#### **Subsection 440.4.4 - Operation and Maintenance Manuals**

Submit three operation and maintenance manuals to the Engineer for review prior to final acceptance. The manuals should include the complete technical description of materials and products used, guarantee statement and complete operating and maintenance instructions on all major equipment. Contractor to provide a demonstration to maintenance personnel, with Engineer present, of how to adjust and maintain

all drip irrigation control valves and recommended controller programs, as established by the Contractor. Contractor also to review recommended watering rates for new plant materials.

#### **Subsection 440.4.5 - Equipment to be Furnished**

All materials to be new and bear the appropriate National Association seal of approval for example, NSF, UL, etc. Similar units shall be procured from the same manufacturer and internal parts shall be common and interchangeable. Parts listing and source replacement will be furnished to the Engineer.

Equipment to be furnished:

- (A) 1. Two sets of special tools required for removing, disassembling and adjusting each type of valve supplied to the project.

Extra stock to be furnished:

- (A) 1. 10 emitters of each type used.

#### **Subsection 440.5 - Delivery, Storage and Handling**

Deliver, unload, store and handle materials, packaging, bundling and products in dry, weatherproof, waterproof condition in manner to prevent damage, breakage, deterioration, intrusion, ignition and vandalism. Deliver in original unopened packaging containers prominently displaying manufacturer name, volume, quantity, contents, instructions and conformance to Federal, State and local law. Remove and replace cracked, broken or contaminated items or elements prematurely exposed to moisture, inclement weather, temperature extremes, fire or jobsite damage.

Exercise care in handling, loading and storing of PVC pipe. All PVC pipe shall be transported in a vehicle which allows length of pipe to lie flat so as not to subject it to undue bending or concentrated external loads. All sections of pipe that have been dented or damaged shall be discarded, and, if installed, shall be replaced with new piping.

#### **Subsection 440.6 - Permits**

All permits for installation or construction of the work included under this Section, which are required by legally constituted authorities having jurisdiction, shall be obtained by the Contractor, each at the proper time. The Contractor shall also arrange for and pay all costs in connection with any inspections and examinations required by these authorities.

#### **Subsection 440.7 - Job Site Conditions**

Potable water will be supplied to install the irrigation system work described herein at no charge to the Contractor through the existing backflow prevention device(s). Location of controller(s) will be provided by Engineer after award of contract.

#### **Subsection 440.7.1 - Protection of Property**

Preserve and protect all plants, monuments, structures and paved areas from damage due to work of the Section. In the event damage does occur, all damage to inanimate items shall be completely repaired or replaced to satisfaction of Engineer, and all injury to living plants shall be repaired by Engineer unless other arrangements have been agreed to by the Engineer. All costs of such repair shall be charged to and paid by Contractor.

Protect buildings, walks, walls and other property from damage. Flare and barricade open ditches. Damage caused to asphalt, concrete or other building materials surfaces shall be repaired or replaced at no cost to Owner. Restore disturbed areas to original condition.

### **Subsection 440.7.2 - Protection and Repair of Underground Lines**

Request proper utility company to stake exact location (including depth) of all underground electric, gas or telephone lines. Take whatever precautions are necessary to protect these underground lines from damage, and, in the event damage does occur, all damage shall be repaired by Contractor. All costs of such repairs shall be paid by Contractor unless other arrangements have been made.

Request Owner, in writing, to locate all private utilities (i.e., electrical service to outside lighting) before proceeding with excavation. If, after such request and necessary staking, private utilities which were not staked are encountered and damaged by Installer, they shall be repaired by Owner at no cost to Installer. If Contractor damages staked or located utilities, they shall be repaired by Contractor unless other arrangements have been made.

### **Subsection 440.8 - Construction Methods**

Examine areas and conditions under which work of this section is to be performed. Do not proceed with work until unsatisfactory conditions have been corrected.

Demolition and grading operations, with the exception of final grading, shall be completed and approved by Engineer before staking or installation of any irrigation system begins.

### **Subsection 440.8.1 - Restoration and Repairs of Existing System to Remain**

Modifications shall be completed in such a manner that no more than two irrigation cycles are missed for each control zone on the project during any two week period, with a maximum of three total missed cycles for any single zone; the Engineer may adjust the frequency and timing of the system interruptions to beneficially accommodate project construction. Several mobilizations may be required to complete the modifications, based on construction sequencing of the project features. If directed, the Contractor shall make temporary or "bypass" connections of water or electrical controls to facilitate the maintenance and sustained health of plants within or outside of the immediate work areas, but scheduled to remain.

Installed pipe will be tested per the requirements herein.

If in the opinion of the Engineer, the progress of the work is such that the viability of the plants to remain is jeopardized or other situations occur that may create safety or hazardous conditions, the Engineer reserves the right to suspend the modifications until satisfied that the work can be completed and the hazard eliminated. Hand watering may be necessary to maintain the plant material in a healthy, thriving condition as directed by the Engineer. Do not resume work until directed by the Engineer.

Once the work of an area is substantially complete, request a review by the Engineer and other representatives as deemed necessary. At the review, the Contractor will be requested to demonstrate each component's operation. Automatic controllers which have been affected by construction shall have their programs reset to pre-project settings. The affected controllers shall have been operating in the pre-project settings for three days before the review. Remote control valves will be manually operated from the controller unit and shall be separately operated through the automatic program until approved by the Engineer. At the time of the review, the Contractor shall have completed redlines of "as-builts" of the irrigation system modifications on a blue line of the design plans for review by the Engineer. Make corrections/additions to the as-builts as directed.

### **Subsection 440.8.2 - Backflow Preventer**

Utilize existing equipment. If existing equipment is not functional, contact Engineer for further direction.

### **Subsection 440.8.3 - Staking**

Mark with powdered lime, routing of tree lateral line and stake locations of various components and emitters. Unless otherwise specified, the drip irrigation system layout shall be considered schematic. Preliminary adjustments to conform to actual site conditions shall be accomplished during staking. Should changes be required, the Contractor shall obtain approval of the Engineer prior to actual work being performed. Utility connections, both water and electrical, shall be as shown on the plans or as designated by the utility concerned.

### **Subsection 440.8.4 - Trench Excavation**

Trenches and other excavations shall be sized to accommodate the irrigation system components. Additional space shall be provided to assure proper installation and access for inspection. Unless otherwise specified, the minimum depth of cover over pipelines and conduits shall be as follows:

- (A) Waterlines continuously pressurized - 18 inches
- (B) Lateral tree lines - 12 inches

The bottom of the trenches shall be true to grade and free of protruding stones, roots or other matter which would prevent proper bedding of pipe or other facilities. Where ledge rock, hard pan, or boulders are encountered, the trench bottom shall be undercut and filled with sand or fine grained material approved by the Engineer.

#### **Clearances:**

- (A) Piping 3" and larger, minimum trench width of 12 inches.
- (B) Piping smaller than 3", minimum trench width of 7 inches.
- (C) Provide not less than 6 inches of clearance between each line, and not less than 12 inches of clearance between lines of other trades, to permit service or replacement without disturbing the other line.

Grading and Stockpiling of trenched materials shall comply with Section 601.2.8.

### **Subsection 440.8.5 - Sleeving**

Existing sleeves under pavement may be utilized. If existing equipment is not functional, contact Engineer for further direction.

### **Subsection 440.8.6 - Piping**

Provide pipe, schedule and size as shown on the drawings and per Section 757. Existing 2" PVC main line shall remain and be re-used.

**PVC Pipe:** Snake pipe in trench as much as possible to allow for expansion and contraction. Do not install pipe when air temperature is below 40 degrees F. Provide a firm, uniform bearing for the entire length of each pipe line to prevent uneven settlement. Installation of pipe shall be installed in accordance with ASAE Standard: ASAE 376. Pipe shall be clean prior to installation and shall be maintained in that condition during installation. When pipe laying is not in progress, or at end of each day, the open ends of the pipe shall be closed by approved means.

Sand bedding or fine grained material shall be provided where ledge rock, hard pan, or boulders are encountered. Compact bedding material to provide a minimum depth of bed between pipe and rock of 4 inches.

Identify all pipe with the following indelible markings: manufacturer's name, nominal pipe size, schedule of class, pressure rating psi, NSF (National Sanitation Foundation) seal of approval, and date of extrusion.

Solvent welded joints shall be made in accordance with ASTM D-2855, and the type of solvent and primer recommended by the pipe manufacturer shall be used. Primer and solvent shall be applied to the pipe ends in such a manner that no material is deposited on the interior surface or forced into the interior of the pipe during insertion. Excess solvent on the exterior of the joint shall be wiped clean immediately after assembly. The pipeline shall not be exposed to water for at least 12 hours after the last solvent welded joint has been made. Schedule 80 pipe shall be used for threaded joints. Field threading shall be accomplished in the same manner as specified for steel pipe, except that a plug will be installed in the bore of the pipe prior to threading to prevent distortion. Solvent will not be used on threaded pipe. Threaded joints shall be hand tightened with final tightening as necessary to prevent leaks with a strap wrench.

The pipe shall be protected from damage during assembly. All vises shall have padded jaws and only strap wrenches will be used. Any plastic pipe which has been nicked, scarred, or otherwise damaged shall be removed and replaced. Care shall be exercised so that stress on a previously made joint is avoided.

Emitter distribution tubing shall be installed per plans.

#### **Subsection 440.8.7 - Wiring / Power Supply and Source**

Utilize existing wiring to existing electric valves, which shall be replaced with new electric valves. If existing equipment is not functional, contact Engineer for further direction.

#### **Subsection 440.8.8 - Valve Boxes and Valve Assemblies**

Valves and Related Accessories shall be installed as shown on the plans, or as specified and shall meet the requirements of MAG Section 757. They shall be installed in a normal upright position unless otherwise recommended by the manufacturer, and shall be readily accessible for operation, maintenance and replacement. The equipment shall be set at a sufficient depth to provide clearance between the valve box cover and the valve handle, cap, or key for operation of the system.

**Valve Boxes:** Install one valve box for each type of valve installed as shown on the plans, or specified unless directed otherwise by the Engineer. Install gravel sump after compaction of all trenches. Place final portion of gravel inside valve box after valve box is backfilled and compacted.

Set valve boxes ½ inch above finish grade.

The valve boxes shall be branded with the controller letter and station number of the contained valve. The letter and number size shall be no smaller than 1 inch and no greater in size than 1½ inches. Depth of branding shall not be more than 1/8 inch into the valve box lid. All labeling shall be neat and legible.

#### **Subsection 440.8.9 - Emitters**

Emitters shall be installed as detailed.

#### **Subsection 440.8.10 - Flushing End Caps**

Install flushing end caps per plan at all dead ends of emitter laterals.

#### **Subsection 440.8.11 - Controller System**

Utilize existing controller(s). If existing equipment is not functional, contact Engineer for further direction.

#### **Subsection 440.8.12 - Bedding, Backfilling and Compaction**

Do not begin backfilling operations until required system tests have been completed. Pipe shall be bedded in at least 4 inches of finely graded sand to provide a firm, uniform bearing. After laying, the pipe shall be surrounded with additional finely grained sand to at least 4 inches over the top of the pipe. Water jetting of trenches will not be permitted within 15 feet of any concrete flatwork or asphalt paving.

Trench backfill, sufficient to anchor the pipes, may be deposited before pipeline pressure testing, except that joints shall remain exposed until satisfactory completion of testing.

Trenches and excavations shall be backfilled with clean material from excavations. Remove organic material as well as rocks larger than one inch in diameter. Material not suitable for backfill shall be hauled away. Contractor shall be responsible for providing suitable backfill if excavated material is unacceptable or not sufficient to meet backfill, compaction and final grade requirements. Do not leave trenches open for a period of more than 48 hours. Open excavations shall be protected in accordance with OSHA regulations. Place acceptable backfill material in lifts, the height of which shall not exceed that which can be effectively compacted, depending on the type of equipment and methods used. Trenches and excavations shall be backfilled so that the specified thickness of topsoil is restored to the upper part of the trench. Compaction shall be in accordance with Section 301. Water settling of the trenches will not be permitted unless approved by the Engineer. Trenches shall be finish graded prior to walk through of system by Engineer.

#### **Subsection 440.8.13 - General**

New materials used in the work to restore and connect to existing system components to remain shall match as closely as possible the performance characteristics of the existing adjacent materials. In case of a conflict between the material requirements, the requirements for new materials specified herein shall prevail.

#### **Subsection 440.8.14 - Cleaning**

Maintain continuous cleaning operations throughout the duration of the work. Dispose of off-site at no additional cost to the Owner, all trash or debris generated by installation of the irrigation system.

#### **Subsection 440.9 - Flushing and Testing**

After completion and prior to the installation of any drip emitters or terminal fittings, the entire pipeline system shall be thoroughly flushed to remove all foreign material. Maintain flushing for five minutes through furthest valves. After flushing, the following tests shall be conducted in the sequence listed below. All equipment, materials, and labor necessary to perform the tests shall be furnished by the Contractor and all tests shall be conducted in the presence of the Engineer. Arrange for presence of Engineer 48 hours in advance of testing. Supply force pump and all other test equipment.

**Pipeline Pressure Test:** A water test shall be performed on all pressure mains. Pressure mains shall be tested with all control valves installed and in the closed position. The constant test pressure and duration of the test shall be for 2 hours at 40 PSI over the designated static pressure or 120 PSI, whichever is greater. Any leaks which occur during the test period will be repaired immediately following the test. The pressure mains will then be retested until accepted by the Engineer. Before final acceptance, pressure supply line shall remain under pressure for a period of 48 hours.

**Operational Tests:** The Contractor shall adjust or replace any type of irrigation heads or equipment to ensure proper distribution of water through the course of the 60 Day Plant Establishment and Maintenance Period.

#### **Subsection 440.10 - Pre-maintenance and Final Maintenance Inspections**

Arrange for a Pre-Maintenance walk-through with the Engineer, when the entire system is operational. Arrange for Engineer's presence 48 hours in advance of walk-through. Operate each zone in its entirety, additionally, open all valve boxes and expose items covered, if directed. During walk-through, expose all drip emitters under operations for observation by Engineer to demonstrate that they are performing and installed as designed, prior to placing of all mulch material. Schedule separate walk-through if necessary. Generate a list of items to be corrected and make adjustments, "fine tuning" the entire system by regulating valves and setting pressure regulators at proper and similar pressure to provide optimum and efficient coverage. Areas which do not conform to designated operation requirements due to unauthorized changes or poor installation practices shall be immediately corrected at no additional cost to the Owner.

The maintenance period will not begin unless authorized by the Engineer. All accessories, charts, record drawings and equipment, as required, will be provided to the Owner.

Arrange for a Final Maintenance Inspection at the end of the 60 Day Plant Establishment and Maintenance Period. Arrange for Engineer's presence 48 hours in advance of walk-through. Show evidence to Engineer that Owner has received all accessories, charts, record drawings, and equipment as required before Final walk-through is scheduled. Operate each zone in its entirety for Engineer at time of walk-through to insure correction of all incomplete items. Items deemed not acceptable by the Engineer shall be reworked to complete satisfaction. If after request to Engineer for walk-through for Final Maintenance Inspection of irrigation system, Engineer finds items during walk-through which have not been properly adjusted, reworked or replaced as indicated on list of incomplete items from previous walk-through, Contractor shall be charged for all subsequent walk-through. Funds will be withheld from final payment and/or retainage to Contractor, in amount equal to additional time and expenses required by Engineer to conduct and document further walk-throughs as deemed necessary to insure compliance with Contract Documents.

#### **Subsection 440.11 - Warranty/Guarantee**

Manufacturer shall warrant materials against defects for a period of one year from date of Substantial Completion. Installer(s) shall guaranty workmanship through the 60 Day Plant Establishment and Maintenance Period. Settling of backfilled trenches which may occur during guaranty period shall be repaired at no expense to Owner, including complete restoration of damaged property. Expenses due to vandalism before substantial completion shall be borne by Contractor. Owner will not maintain planting areas until after 60 Day Plant Establishment and Maintenance Period.

#### **Subsection 440.12 - Measurement and Payment**

Payment for the items described in this section shall be made at the contract unit price per bid item. 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. The cost of all other work and appurtenances necessary to install these items, not specifically covered by bid items in this section, shall be considered incidental to the cost of the bid item.

Irrigation restoration will be bid on a lump sum basis. Maintenance of the irrigation system and connection to existing system, will be included in the lump sum payment. 1-inch irrigation piping will be made at the unit bid price per linear foot. Flush caps, pressure regulators with strainers, electric valves and emitters will all be made at the unit bid price per each item.

**ITEM 440-1 - IRRIGATION RESTORATION**

**ITEM 440-2 - 1" PVC PIPE, CLASS 200**

**ITEM 440-3 - FLUSH CAPS**

**ITEM 440-4 - PRESSURE REGULATOR W/WYE STRAINER (RAIN BIRD PSI-L30X)**

**ITEM 440-5 - ELECTRIC VALVES (RAIN BIRD DV-075)**

**ITEM 440-6 - EMITTERS (MULTI-OUTLET) (BOWSMITH ML230 SERIES, OR EQUAL)**

**SECTION 505 - CONCRETE STRUCTURES**

Concrete structures shall conform to Section 505 of the MAG Uniform Standard Specifications, except as modified herein.

**Subsection 505.1 - Description**

Add the following:

The Contractor shall submit mix designs and certifications in conformance with Section 725 of the MAG Standard Specifications for the written approval of the Engineer. All concrete structures shall have a minimum compressive strength of Class "A" concrete unless otherwise specified.

**Junction Structures**

Five (5) special junction structures shall be constructed on the storm drain in accordance with the plans at:

Station 161+95

Station 163+25

Station 175+55

Station 176+00

Station 187+83

**Special Inlet structures**

Five (5) special inlet structures shall be constructed along the Oak Street storm drain alignment in accordance with the plans at:

Station 73+60

Station 75+74

Station 80+10

Station 82+70

Station 83+60

And one (1) special inlet structure along the 66<sup>th</sup> Street storm drain alignment in accordance with the plans at:

Station 8+20 (66<sup>th</sup> St.)

**Catch Basins**

The Contractor shall construct catch basins to the dimensions and at the stations shown on the plans. Catch basins shall have a minimum horizontal clearance of six (6) inches between all other facilities and the nearest surface to the catch basin. If the clearance cannot be maintained, the contractor shall install expanded polystyrene form material of a minimum of 2-inch thickness between the pipe and the catch basin.

All removal and replacement of curbs, gutters and sidewalks shall be completed as necessary to construct the catch basins in accordance with Section 350. The Contractor has the option to sawcut the existing curbs, gutters and sidewalks for the removal, or the preferred alternative to remove the curbs, gutters and sidewalks to the closest existing joint, within four (4) feet. All removal and replacement of existing facilities will be incidental to the construction of the catch basins.

Concrete collars which modify standard catch basins as required on the plans shall be considered incidental to the construction of the catch basins.

**Concrete Outlet Wingwall (ADOT Det. B-08.10, Type B)**

The Contractor shall construct a concrete outlet Wingwall & Headwall in accordance with Arizona Department of Transportation Standard Detail B-08.10, Type B, Length as shown on plans. This detail is for a cast-in-place box culvert. Since the box culvert is a pre-cast structure, the end section shall have exposed reinforcing steel to bond with the cast-in-place headwall. Contractor shall submit shop drawings for this connection and obtain approval from the Engineer, in advance of constructing the outlet wingwall.

**Subsection 505.10 - Payment**

Payment for the items described in this section shall be made at the contract unit price per bid item. 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. The cost of all other work and appurtenances necessary to install these items, not specifically discussed in this section, shall be considered incidental to the cost of the bid item.

Junction Structures - Payment for the special junction structures will be made on a lump sum basis per structure, five (5) total.

Inlet Structures and Catch Basins - Payment for inlet structures and catch basins will be made at the contract bid price for each item. Modified type 'N' catch basins shall include the cost of the concrete apron.

Concrete Headwalls and Wingwalls - Payment for all concrete headwalls and wingwalls shall be made on a lump sum basis for the construction of all structures indicated on the plans.

**ITEM 505-1 - SPECIAL JUNCTION STRUCTURE STATION 161+95**

**ITEM 505-2 - SPECIAL JUNCTION STRUCTURE STATION 163+25**

**ITEM 505-3 - SPECIAL JUNCTION STRUCTURE STATION 175+55**

**ITEM 505-4 - SPECIAL JUNCTION STRUCTURE STATION 176+00**

**ITEM 505-5 - SPECIAL JUNCTION STRUCTURE STATION 187+83**

**ITEM 505-6 - SPECIAL INLETS (18"-24" PIPES)**

**ITEM 505-7 - SPECIAL INLETS (66" PIPES)**

**ITEM 505-8 - CONCRETE CATCH BASIN M-1, L=10', PHX. DET. P1569-1**

- ITEM 505-9 - CONCRETE CATCH BASIN M-1, L=17', PHX. DET. P1569-1
- ITEM 505-10 - CONCRETE CATCH BASIN M-2, L=17', PHX. DET. P1569-1
- ITEM 505-11 - CONCRETE CATCH BASIN TYPE Q (TRIPLE), PHX. DET. P1572
- ITEM 505-12 - CONCRETE CATCH BASIN WITH APRON, MODIFIED TYPE N (TRIPLE), PHX. DET. P1570
- ITEM 505-13 - CONCRETE CATCH BASIN WITH APRON, MODIFIED TYPE N (SINGLE), PHX. DET. P1570
- ITEM 505-14 - CONCRETE OUTLET WING WALL (ADOT DET. B-08.10, TYPE B)
- ITEM 505-15 - CONCRETE CATCH BASIN M-1, L=6', PHX. DET. P 1569-1

### **SECTION 510 - CONCRETE BLOCK MASONRY**

Concrete block masonry shall conform to Section 510 of the MAG Uniform Standard Specifications, except as modified here.

#### **Existing Masonry Bollard**

One of the existing masonry bollards at the Automall Basin will have to be removed and replaced in order to trench for the new 66 inch storm drain. When reconstructing the bollard, the Contractor shall match the masonry block in the existing bollards and rebuild the bollard, in kind, to match existing.

#### **Subsection 510.6 - Payment**

Payment to remove and replace the existing masonry bollard shall be made for the lump sum price for each as indicated on the bid schedule and shall include all work necessary to remove and replace the bollard, in kind.

### **ITEM 510-1 - REMOVE & REPLACE EXISTING MASONRY BOLLARD**

### **SECTION 515 - STEEL STRUCTURES**

Steel structures shall conform to Section 515 of the MAG Uniform Standard Specifications, except as modified herein.

#### **Subsection 515.7 - Payment**

Payment for Steel Access Barriers shall be made at the lump sum price for each as indicated on the bid schedule.

### **ITEM 515-1 - ACCESS BARRIER (3 HINGES) C.O.S. DET. 2562-1**

### **SECTION 520 - STEEL AND ALUMINUM HANDRAILS**

Steel pipe handrails shall conform to Section 520 of MAG Uniform Standard Specifications.

### **ITEM 520-1 - STEEL PIPE HANDRAIL, C.O.S. DET. 2508**

### **SECTION 601 - TRENCH EXCAVATION, BACKFILLING AND COMPACTION**

Trench excavation, backfilling and compaction shall be in accordance with MAG Uniform Standard Specification 601, except as modified herein.

### **Subsection 601.2 - Excavation**

The following is added to each of the subsections of 601.2:

#### **Subsection 601.2.2 Trench Widths**

Add the following:

The outside width of box culverts will be synonymous with the outside diameter of pipe culverts as used in Section 601.

#### **Subsection 601.2.4 - Fine Grading**

Add the following:

A six-inch thick leveling course of aggregate base material, Section 702, will be used under all storm drains for this project to establish the profile fine grading as shown by the trench details on the plans.

The trench bottom width shall be uniform and free from any surface irregularities. Cementitious earth which is expected to be encountered throughout the full length of the project may cause surface irregularities and prevent a smooth surface at the bottom of the trench. If the trench invert is irregular, in the opinion of the Engineer, the Contractor shall over excavate and prepare the trench according to section 601.2.5 at no expense to the District.

The Contractor may opt to excavate a trench having a cross-section with a rounded bottom rather than a flat bottom. If this option is chosen, the trench cross-section must maintain the minimum 12 inches between the outside wall of the pipe and the trench wall to the pipe springline.

#### **Subsection 601.3 - Protection of Existing Utilities**

Add the following:

The Contractor shall be responsible for bracing all power poles located within 10 feet of the top of the trench.

#### **Subsection 601.4 - Foundation, Bedding, Backfilling and Compaction**

Add the following:

The foundation, bedding, backfill and compaction for trenches shall be accomplished per the details provided on the plans. The following is added to each of the subsections of 601.4:

##### **Subsection 601.4.1 - Foundation**

Add the following:

A six-inch thick leveling course, consisting of aggregate base material, Section 702, shall be used under all storm drains as described in subsection 601.2.4 and shown on the plans.

##### **Subsection 601.4.2 - Bedding**

Add the following:

Bedding shall be defined from the foundation to the area 1 foot above the top of the storm drain.

Bedding shall be placed with a maximum lift thickness of eight (8) inches.

The Contractor is discouraged from using water consolidation techniques to attain the necessary compaction for bedding material. However, the Contractor may determine that compaction of the bedding material, particularly under the haunches of the storm drain, is best attained using water consolidation. In

such case, the Contractor may use water consolidation, but the Engineer may prohibit the use of water consolidation if it is evident that the trench walls are unstable due to sloughing. The District shall not be responsible for additional costs that the Contractor may incur because of the use of water consolidation.

The bedding material for this project will be as shown on the plans, or according to MAG Specifications if not specifically called out on the plans or specified herein.

Bell holes shall be excavated with a minimum clearance of two inches to prevent point loading of the laid pipe and to provide full length, continuous support of the pipe barrel. Cable holes should also be excavated to prevent movement of the pipe when removing the pipe sling.

No pea gravel will be allowed to be used as bedding material.

**Subsection 601.4.3 - Backfill**

Backfill shall be defined as the area 1-foot above the top of the storm drain. Backfill material shall be placed with a maximum lift thickness of twelve (12) inches. The Contractor shall excavate holes in the compacted bedding and backfill material at the location and to the depths designated by the Engineer for testing purposes. These holes shall be of such size as to allow the required density testing to be performed in a safe manner as determined by the Engineer. This shall include shoring or any other trench wall support measures required by OSHA.

**Subsection 601.4.4 - Compaction Densities**

Replace Table 601-2 with the following:

**MINIMUM DENSITY REQUIRED**

<b>Compaction Type</b>	<b>From Surface to 2' Below Surface</b>	<b>From 2' Below Surface to 1' Above Top of Pipe</b>	<b>From 1' Above Top of Pipe to Bottom of Trench</b>
I	100% granular 95% for non-granular	95%	95%
II	85%	85%	95%

All soil densities shall be determined by ASTM D-698, soil compaction using standard effort.

**Subsection 601.6 - Measurement and Payment**

No separate measurement or payment shall be made for excavation; falsework; backfilling; nor the compaction around the storm drain, irrigation and connector pipes, relocated utilities, or utilities protected in place. The cost thereof shall be included in the price bid for construction or installation of the storm drain, connector pipe or any such work where the provisions of this section are incidental or appurtenant.

No separate payment will be made for excavation, removal and disposal according to Section 350 of these specifications. Payment for pavement replacement will be made in accordance with Section 336 of these specifications.

**SECTION 610 - WATERLINE CONSTRUCTION AND RELOCATION**

Except as modified herein, waterline construction shall conform to Section 610 of the MAG Uniform Standard Specifications and the City of Phoenix or City of Scottsdale (whichever applies) supplements to the MAG Specifications.

### **Subsection 610.1 - General**

Add the following:

The Cities of Phoenix and Scottsdale require a minimum of 72 hours written notice prior to shut downs on waterlines. City fire departments 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 Phoenix or City of Scottsdale are permitted to operate water valves.

The Contractor shall provide all materials and labor necessary to complete all waterline work. The Cities of Phoenix and Scottsdale 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 Phoenix or the City of Scottsdale, depending upon the location.

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 the 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 over the mainline storm drain construction or laterals which are greater than 24" 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 Cities 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 back filling.

### **Waterline Realignment**

In the event of an unforeseen conflict between storm drain construction and 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 C.O.S. Standard Detail 2370 in the City of Scottsdale or MAG Standard Detail 370 in the City of Phoenix.

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 and Subsection 610.14 of the COS Supplemental Standard Specification prior to backfilling.

The Contractor shall coordinate with the City of Phoenix or the City of Scottsdale to obtain permission to have the line shut down in order to perform this work. The Contractor shall notify the Cities 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.

#### **Subsection 610.18 - Measurement and Payment**

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 new waterlines and realignment of the existing 18" waterline shall be made at the unit price bid per linear foot in conformance with MAG Standard Specification 610.18. No separate payment will be made to remove the existing 18" pipe. The cost of that work shall be included in the unit price bid for the realigned pipe.

**ITEM 610-1 - WATERLINE REPLACEMENTS - 6-INCH - MAG DETAIL 403-3**

**ITEM 610-2 - WATERLINE REPLACEMENTS - 8-INCH - MAG DETAIL 403-3**

**ITEM 610-3 - WATERLINE REPLACEMENTS - 12-INCH - MAG DETAIL 403-3**

**ITEM 610-4 - VERTICAL REALIGNMENT WATERLINE - 8-INCH - COS DET. 2370**

**ITEM 610-5 - PIPE SUPPORT - MAG DETAIL 403-1, TYPE A**

**ITEM 610-6 - VERTICAL REALIGNMENT 18" WATERLINE - CLASS 50 D.I.P  
W/RES. JOINTS**

**ITEM 610-7 - REMOVE AND REPLACE FIRE HYDRANT - MAG DETAIL 360**

**ITEM 610-8 - 8" D.I.P. WATERLINE**

#### **SECTION 615 – SEWER LINE CONSTRUCTION**

Sewer line construction shall conform to Section 615 of the MAG Uniform Standard Specifications, except as modified herein.

#### **Subsection 615.1 - Description**

Add the following:

This section shall include the replacement of existing VCP sewers with Ductile Iron Pipe 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 Chuck Hill (Telephone: 312-5881) at the City of Scottsdale.

Sewage Flow Rates

*312-5650  
312-5631 309-0165 cell*

- Miller Road Sewer (21" VCP)

The peak flow in the Miller Road sewer is approximately 3,600 gpm. The Contractor may divert all flow into the 24" relief sewer at Miller Road and Earll Drive, which would reduce the peak flow to approximately 1,400 gpm.

- Scottsdale Road Sewer (18" VCP)

The peak flow in the Scottsdale Road Sewer is approximately 1400 gpm.

**Subsection 615.13 – Measurement and Payment**

Payment for sewer line replacement, and sewer line encasement shall be made at the contract unit price indicated in the bid schedule. Such payment shall be full compensation for all labor, equipment and materials furnished to complete this work, including temporary rerouting of sewage flows. The cost of all other work and items not specifically covered by other pay items in this section will be incidental to the cost of the bid items.

Payment for vitrified clay pipe shall be made at the contract unit price bid per linear foot. Such payment shall be full compensation for all labor, equipment and materials furnished to complete this work.

**ITEM 615-1 - SEWER LINE REPLACEMENT, 18" M.A.G. DET. 403-3**

**ITEM 615-2 - SEWER LINE REPLACEMENT, 8" M.A.G. DET. 403-3**

**ITEM 615-3 - 8" VCP SEWER LINE**

**ITEM 615-4 - 8" SANITARY SEWER ENCASEMENT, M.A.G. DET. 404**

**ITEM 615-5 - 21" 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.

**Subsection 618.1 - Description**

Add the following:

This section describes the work necessary to install Reinforced Concrete Box Culverts (RCB) as shown on the plans for the conveyance of storm drainage in streets, easements and alley right-of-ways. RCBs shall be installed in accordance with ASTM C789, Precast Reinforced Concrete Box Sections for Culverts, Storm Drains and Sewers except as otherwise modified by MAG 618, Storm Drain Construction or modifications described herein.

The RGRCP and/or RCP included in this section at the following stations can be bid as cast-in-place concrete pipe (CIPP):

<u>Station</u>	<u>Pipe Size</u>	<u>Length</u>
73+80 to 75+90	24" RGRCP	210'
75+90 to 108+80	36" RGRCP	3290
125+98 to 135+65	96" RCP	967'
137+50 to 161+00	96" RCP	2350'
164+00 to 174+00	108" RCP	1000'

The Contractor has an option to either select RGRCP/RCP or cast-in-place pipe. There is no value engineering allowed for these bid items. At the pre-construction meeting, the Contractor shall inform the District of his selected option.

If the Contractor chooses the CIPP option, lateral pipe connections shall be constructed in accordance with C.O.P detail P-1576.

**The Contractor will have to abide by the same restrictions/guidelines as described in Section 401 of this Special Provision and Sections 104.1 and 107.10 of Supplementary General Conditions with either RGRCP or CIPP option.**

Special Requirements (See Section 401 for more details):

**Tonalea Elementary School**

The work adjacent to Tonalea Elementary School shall be scheduled in the summer months, between the dates of May 26, 1999, and August 16, 1999, when school is not in session.

**Scottsdale Road Intersection**

Scottsdale Road may be restricted to one northbound lane and one southbound lane under the following conditions:

- The work is done during the summer months of June, July or August.
- The maximum length of time the road can be restricted to one lane in each direction is one 9-day period which shall consist of two (2) weekends with one (1) 5-day week in between.
- Weekends are defined as FRIDAY 10 PM to MONDAY 4 AM.

**Subsection 618.2 - Materials**

Add the following:

- (D) **Reinforced Concrete Box Culverts** - All box culvert joints shall be water tight and installed with either a mastic joint or a suitable gasket. The seal shall be of preformed butyl rubber material and shall meet the requirements of AASHTO M-198.

**Subsection 618.3 - Construction Methods:**

Add the following:

**SRP Irrigation Crossing at Scottsdale Road**

The reconstruction and vertical realignment of the 24" Salt River Project (SRP) irrigation pipe in Scottsdale Road shall be done in accordance with the SRP license and specifications.

A copy of the SRP license is available at the District for the Contractor's review. A copy of the license and specifications will be given to the Contractor at the pre-construction meeting.

### **Excavation - Reinforced Concrete Box Culverts**

Excavation for RCB shall conform to MAG Section 601 with the following modifications:

**Trench Width:** Maximum trench widths shall conform to Table 601-1 or section MAG 601, where O.D. refers to the outside width of the span of the RCB. In multiple culvert sections, O.D. shall include the annular spacing between the parallel RCBs.

**Trench Grade -** For all RCB, the Contractor shall excavate for and provide an initial granular bedding of at least six (6) inches thick to serve as a leveling course for the RCB as described by Section 601 of these specifications.

### **Backfill - Reinforced Concrete Box Culverts**

Backfill of the annular space between parallel RCB shall be completed using a 1-sack controlled low strength material (CLSM) per MAG 728. The CLSM shall be installed for the full height of the RCBs. Payment will be made in accordance with the backfill provisions described in Section 601 of these specifications.

### **Align and grade - Reinforced Concrete Box Culverts**

Strict adherence is required for the prescribed alignment and grade as shown on the plans. Variation from the prescribed alignment and grade shall not exceed 0.10 foot and the rate of departure from, or return to established grade or alignment, shall be no more than 1 inch in 10 feet of pipe line. Vertical alignment deviations from the plans that require realignment, in the opinion of the Engineer, will be completed at the Contractor's expense.

### **Submittals**

Prior to the manufacturing of the pipe for any curvilinear sections, prefabricated bends, or special sections, the Contractor shall submit material and layout drawings to the Engineer. Submittals shall show layout, stationing, laying length, D-load or gauge thickness, detailed fabrication drawings, and any other pertinent data for the main line.

Additionally, a list of main line culverts and connector pipes shall be submitted to the Engineer which contains the following information:

- (A) Inside diameter
- (B) D-Load rating
- (C) Station for mainline or station where connector pipe joins mainline
- (D) Number of sections of pipe and laying length of sections

**D-Load Requirements**

**Mainline Storm Drain**

<b>From Station</b>	<b>To Station</b>	<b>Pipe Size Inside Diameter</b>	<b>D-Load min</b>
73+80	75+90	24"	1000
75+90	80+10	36"	1000
80+10	87+00	36"	1750
87+00	96+20	36"	1000
96+20	98+80	36"	1250
98+80	103+80	36"	1000
103+80	106+00	36"	1000
106+00	108+80	36"	1500
125+98	131+00	96"	1300
131+00	156+20	96"	1000
156+20	161+95	96"	1300
161+95	163+25	10' x 5'	16' max*
163+25	165+25	108"	1200
165+25	171+62	108"	900
171+62	175+50	108"	800
175+50	176+00	(2) 8' x 4'	9' max*
176+00	178+25	11' x 6'	6' max*
178+25	187+83	11' x 6'	4' max*
187+83	193+98	(2) 10' x 4'	6' max*
8+80 (66 <sup>th</sup> St)	8+90 (66 <sup>th</sup> St)	66"	800
8+53 (66 <sup>th</sup> St)	8+80(66 <sup>th</sup> St)	53"x83"(ellip)	850
8+20 (66 <sup>th</sup> St)	8+53 (66 <sup>th</sup> St)	66"	800

\* These maximum fill heights shall be used to determine the design requirements in accordance with ASTM C789.

## D-Load Requirements

### Connector Pipes

Station	Pipe Size	D-Load min
73+60	24"	1500
75+90	18"	1250
80+10	18"	1000
82+85	18"	1250
83+60	24"	1500
93+10	24"	1000
95+60	18"	1250
135+40	18"	1250
135+74	18"	1250
136+60	18"	1250
137+30	18"	1500
141+85	18"	1250
143+13	18"	1500
147+39	18"	1250
149+48	36"	1250
150+17	18"	1250
156+21	24"	1500
156+36	24"	1250
157+34	18"	1350
161+68	(2) 24"	1500
162+56	72"	1300
LT 166+22	18"	1350
RT 166+22	18"	1250
167+74	12"	1250
168+46	18"	1250
171+55	18"	1250
173+95	18"	1250
175+54	18"	1250
175+54.25	18"	1000
175+87	24"	1250
175+87	30"	1000
175+91	18"	1250
175+96	18"	1250
175+87	42"	1100
176+31	15"	1250
179+00	18"	1500
180+48	12"	1700
187+50	48"	1000

**Subsection 618.5 - Measurement**

Measurement for the storm drain culverts and irrigation pipes shall be by the linear foot/culvert size for the completed item in place, within the limits shown on the plans.

Measurements for reducers, bends, plugs, permanent pipe supports, and concrete pipe collars shall be by each for the completed item in place within the limits, as shown on the plans.

Measurement will be made for each permanent pipe support constructed for the various sizes encountered and shall conform to the MAG Standard Details, ADOT Standard Details, and to the details provided in the plans. Such pipe supports shall be erected at the locations as shown on the plans and at locations determined by the Engineer.

No separate measurement or payment shall be made for utility lines, which will need to be supported in place for the installation of the storm drain.

No separate measurement or payment shall be made for falsework.

**Subsection 618.6 - Payment**

Payment for storm drain pipes, culverts and connector pipes construction and irrigation pipes shall be made at the unit price bid per linear feet, and shall be full compensation for furnishing and installing the pipes and lateral connections complete in place (i.e. wyes, tees, and crosses), as specified, including excavation, removal of obstruction, related falsework, cost of labor, backfilling, compaction, sheeting and bracing, testing, manhole and valve adjustments, utility line supports, and all incidental work not specifically covered in other pay items.

**ITEM 618-1 - 24" RGRCP STORM DRAIN PIPE**

**ITEM 618-2 - 24" RGRCP/CIPP STORM DRAIN PIPE**

**ITEM 618-3 - 36" RGRCP/CIPP STORM DRAIN PIPE**

**ITEM 618-4 - 42" RCP STORM DRAIN PIPE**

**ITEM 618-5 - 48" RCP STORM DRAIN PIPE**

**ITEM 618-6 - 66" RCP STORM DRAIN PIPE**

**ITEM 618-7 - 72" RCP STORM DRAIN PIPE**

**ITEM 618-8 - 96" RCP STORM DRAIN PIPE**

**ITEM 618-9 - 96" RCP STORM DRAIN PIPE/CIPP PIPE**

**ITEM 618-10 - 108" RCP STORM DRAIN PIPE**

**ITEM 618-11 - 108" RCP STORM DRAIN PIPE/CIPP PIPE**

**ITEM 618-12 - 12" RCP CATCH BASIN CONNECTOR PIPE**

**ITEM 618-13 - 15" RCP CATCH BASIN CONNECTOR PIPE**

**ITEM 618-14 - 18" RCP CATCH BASIN CONNECTOR PIPE**

**ITEM 618-15 - 24" RCP CATCH BASIN CONNECTOR PIPE**

**ITEM 618-16 - 36" RCP CATCH BASIN CONNECTOR PIPE**

**ITEM 618-17- PIPE PLUG M.A.G. STD. DET. 427 - 12"**

- ITEM 618-18 - PIPE PLUG M.A.G. STD. DET. 427 - 15"
- ITEM 618-19 - PIPE PLUG M.A.G. STD. DET. 427 - 18"
- ITEM 618-20 - PIPE PLUG M.A.G. STD. DET. 427 - 24"
- ITEM 618-21 - PIPE PLUG M.A.G. STD. DET. 427 - 42"
- ITEM 618-22 - PIPE PLUG M.A.G. STD. DET. 427 - 48"
- ITEM 618-23 - REMOVE PIPE PLUG 36"
- ITEM 618-24 - REMOVE PIPE PLUG 66"
- ITEM 618-25 - REMOVE PIPE PLUG 90"
- ITEM 618-26 - CONCRETE PIPE COLLAR M.A.G. STD. DET. 505 (21" AND SMALLER)
- ITEM 618-27 - CONCRETE PIPE COLLAR M.A.G. STD. DET. 505 - (24" AND LARGER)
- ITEM 618-28 - 12" DIAMETER RGRCP IRRIGATION PIPE, CLASS II
- ITEM 618-29 - 18" DIAMETER RGRCP IRRIGATION PIPE, CLASS III
- ITEM 618-30 - 24" DIAMETER RGRCP IRRIGATION PIPE, CLASS IV
- ITEM 618-31 - 18" X 90° PREFABRICATED BEND
- ITEM 618-32 - 72" X 45° PREFABRICATED BEND
- ITEM 618-33 - 18" X 45° PREFABRICATED BEND
- ITEM 618-34 - 30" RCP STORM DRAIN PIPE
- ITEM 618-35 - PIPE PLUG M.A.G. STD. DET. 427-8"
- ITEM 618-36 - 53" X 83" ELLIPTICAL RCP STORM DRAIN PIPE
- ITEM 618-37 - CONC. BOX CULVERT (2)- 8' X 4'
- ITEM 618-38 - CONC. BOX CULVERT (2)-10' X 4'
- ITEM 618-39 - CONC. BOX CULVERT 10' X 5'
- ITEM 618-40 - CONC. BOX CULVERT 11' X 6'
- ITEM 618-41 - 108"X19.755° PREFABRICATED BEND

**SECTION 620 – CAST-IN-PLACE CONCRETE PIPE**

Add the following:

**Subsection 620.1 General:**

This specification covers cast-in-place non-reinforced concrete pipe intended for use as storm sewers. The abbreviated title is CIPP. The CIPP is a designated allowable storm drain pipe material at the following locations:

Stations:	RGRCP Pipe Size	CIPP Pipe Size	Length
73+80 to 75+90	24"	30"	210'
75+90 to 108+80	36"	42"	3290'
125+98 to 135+65	96"	102"	967'
137+50 to 161+00	96"	102"	2350'
164+00 to 174+00	108"	114"	1000'

When designated as an allowable storm drain pipe material in the project specifications, this designation is no warranty, expressed or implied, that conditions will be suitable for the use of CIPP. Any costs incurred and/or time require to provide suitable conditions or to substitute an alternate pipe acceptable to the Engineer, in whole or part, shall be the responsibility of the Contractor.

**The Contractor will have to abide by the same restrictions/guidelines as described in Section 401 of this Special Provision and Sections 104.1 and 107.10 of Supplementary General Conditions with either RGRCP or CIPP option.**

Special Requirements (See Section 401 for more details):

**Tonalea Elementary School**

The work adjacent to Tonalea Elementary School shall be scheduled in the summer months, between the dates of May 26, 1999, and August 16, 1999, when school is not in session.

**Scottsdale Road Intersection**

Scottsdale Road may be restricted to one northbound lane and one southbound lane under the following conditions:

- The work is done during the summer months of June, July or August.
- The maximum length of time the road can be restricted to one lane in each direction is one 9-day period which shall consist of two (2) weekends with one (1) 5-day week in between.
- Weekends are defined as FRIDAY 10 PM to MONDAY 4 AM.

**Subsection 620.2 Materials:**

**620.2.4** Concrete shall be Class AA in accordance with Section 725. Test cylinders shall be prepared and tested as per Section 725. The pipe represented by unsatisfactory strength tests on cylinders shall be further tested either by coring or by load testing at the Engineer's option as specified in Section 620.4. Any pipe failing these tests shall be replaced or repaired at the option of the Engineer, at the Contractor's expense.

**Subsection 620.3 Construction Methods:**

**620.3.1 Excavation**

All unstable strata or lenses of loose sand, silt, or other noncohesive soils, below the contact line of the concrete pipe and trench form, shall be stabilized by approved methods or over-excavated and refilled in accordance following method:

Over-excavation and refill – When this method is adopted for stabilization, the trench shall be over-excavated to such depths and widths as required, refilled with selected cohesive soils, and compacted by

acceptable methods to a density that will provide stability for the trench form. When expansive clays are encountered they will be thoroughly moistened by ponding, to completely expand the soil, and the moisture maintained until the concrete is placed. The Contractor may substitute reinforced concrete pipe for CIPP in these unsuitable areas. There will be no additional payments for this substitution.

In areas where the soils are too hard for efficient trenching or where additional moisture adds to the trench stability, trench excavation may be simplified by prior wetting.

Care should be taken to insure that at the time of concrete placement there is adequate moisture in the trench form so that water is not drawn from the freshly placed concrete. If the trench is too dry, all soil in contact with the concrete should be moistened. However, the trench form must be free of water and mud at the time of concrete placement.

### **620.3.2 Placement**

The concrete shall be vibrated, rammed, tamped, or worked with suitable compacting equipment until thoroughly consolidated. Under no circumstances will the Contractor be allowed to continue the pipe installation if the vibrators of the cast-in-place machine are inoperable. Portable vibrators or "stingers", shall only be used to supplement internal vibrators on the machine and not as a sole source to consolidate and distribute the concrete mix.

The interior finish surface of the pipe shall be equivalent to or better than a wood float finish. All extraneous concrete shall be removed from the interior surface. The Contractor shall make provisions for removing sloughed material, debris, foreign objects, or any material from trench before and during the concrete placement such that buildup of material does not occur ahead of the machine. In addition, small transverse trenches shall be dug across trench bottom, at distance not to exceed 25 linear feet, to receive soil built up and pushed ahead of the slipform.

It is essential that concrete placement be done in a smooth and steady manner with as few starts and stops as is possible. The Contractor shall schedule materials and operate the pipe machine at speeds and in a manner that will achieve this.

The Contractor shall provide an anchoring system for pull of the machine in a manner, which will provide the least probability of causing deviations in grade and/or alignment. Adjustments to or modifications in anchoring system, when required in the opinion of the Engineer shall be made at no additional cost to the project.

#### Lateral Pipe Connections:

Lateral pipe connections shall be constructed in accordance with City Of Phoenix Standard Detail P-1576.

#### Construction Joints:

When pipe placement stops in excess of ninety (90) minutes, a construction joint shall be formed. The ends of the pipe that are to be butt contact shall be left in rough condition with a slope between 20 and 45 degrees. Number 4 reinforcing bars shall be embedded 12 inches in the previous pour and 12 inches into the next pour and shall be placed 12 inches on center for pipe 42 inches in diameter or less and shall be placed 18 inches on center for pipe diameters in excess of 42 inches.

#### Pipe Dimensions and Tolerances:

For pipe exceeding 24 inches inside diameter the minimum wall thickness shall be 1/12 of the inside diameter, plus 1 inch. The pipe diameter shall be increased by 6" from the recommended equivalent reinforce concrete pipe as shown on Subsection 620.1.

**Subsection 620.3.3 Curing and Backfilling:**

Final backfilling and compaction shall not be started until concrete has developed a compressive strength of at least 3000 psi. The pipe shall be checked for grade, alignment and thickness prior to backfilling.

A humid atmosphere within the pipe, as evidenced by condensation on the interior of the surface, shall be maintained for at least seven (7) days following placement, except for a maximum period of 24 hours allowed for removing forms and making repairs.

**Subsection 620.3.4 Repairs:**

Immediately after removal of the forms, the inside of pipeline will be inspected for required repairs and conformance with all dimensional requirements including alignment and grade. The Engineer shall be the sole judge as to the repairability of deficiencies. The Engineer shall require removal and replacement of those sections of pipeline which he/she judges to be non-repairable or which are not within required dimensional tolerance, including alignment and grade.

When concrete placement is done by a methods requiring the use of metal inner forms, the Contractor shall schedule his work force, by extended, staggered or multiple shifts, as required, to provide for removal of forms within 4 to 6 hours of placement of concrete and start of repairing, patching and finishing of pipeline to conform with specifications requirements.

When concrete placement is done by a methods using pneumatically inflated inner liner, the Contractor shall schedule his work force, by extended, staggered or multiple shifts, as required, to provide for removal of the pneumatic inner liner within 12 hours of placement of concrete and start of repairing, patching and finishing of pipeline to conform with specifications requirements.

All rock pockets, non-longitudinal cracks or indentations shall be cleaned out, moistened and filled with 1:2 cement grout or approved epoxy material except where, in the opinion of the Engineer, the width and/or length of the crack may indicate a structural deficiency, repairs shall be made as required for longitudinal cracks.

At the discretion of the Engineer, longitudinal cracks exceeding 0.01 inches in width and 12 inches in length may be cause for rejection and removal and replacement of that portion of the pipe. Subject to the approval of the Engineer, cracks may be repaired using a pressure applied epoxy compound capable of providing structural correction to the area in addition to sealing the void. A longitudinal crack shall be defined as one which has the general direction of a 30 degree angle or less with the alignment of the pipe.

Irrespective of concrete placement method, all repairs, patches and finishing shall be completed within 24 hours of concrete placement.

The Contractor, prior to start of concrete placement on project shall submit a written schedule of his proposed work activities and work time schedules for the Engineer's review and approval. No time schedule requiring overtime by the Engineer's staff is authorized without specific written approval of the Engineer.

**Subsection 620.4 Methods of Tests:**

Random tests shall be made of the wall thickness at the top, bottom and sides, approximately every 100 feet, on a daily basis by probes through fresh concrete or small holes drilled though the concrete. Holes shall be properly and permanently closed and sealed, flush with the inside surface of the pipe, after measurements are made, in accordance with the requirements of the fifth paragraph of MAG Subsection 620.3.4.

Test cylinders shall be taken for each 50 cubic yards of concrete used, but not less than one sample for each day's work, nor less than one sample for each section of pipe placed in a continuous operation.

**Subsection 620.6 Payment:**

Payment will be made at the contract unit price bid per linear foot to the nearest foot for each size of pipe as specified in bid item 618-2, 618-3, 618-9, and 618-11. The payment shall include full compensation for furnishing and installing the cast-in-place concrete pipe and lateral connections complete in place (i.e. wyes, tees, and crosses), as specified, including excavation, removal of obstruction, related falsework, cost of labor and equipment, backfilling, compacting, sheeting and bracing, testing, repairing, manhole and valve adjustments, utility line supports, and all other related items.

**SECTION 621 - CORRUGATED METAL PIPE AND ARCHES**

Corrugated metal pipe shall conform to Section 621 of the MAG Standard Specifications, except as modified herein.

**Subjection 621.2 - Materials**

Add the following:

Corrugated Metal Pipes shall have 2 2/3" x 1/2" corrugations and shall have a 14 gauge thickness.

**Subsection 621.5 - Measurement**

Measurements for metal end sections for corrugated metal pipe shall be by each for the completed item in place within the limits, as shown on the plans.

**Subsection 621.6 - Payment**

Payment of metal end sections will be made at the contract unit price bid per each and shall be compensation in full for furnishing and installing the metal end sections.

**ITEM 621-1 - 12" CMP STORM DRAIN PIPE**

**ITEM 621-2 - METAL END SECTION FOR 12" CMP**

**SECTION 625 - MANHOLE CONSTRUCTION AND DROP SEWER CONNECTIONS**

Manhole construction shall conform to Section 625 of the MAG Standard Specifications, except as modified herein.

**Subsection 625.1 - Description**

Manhole construction shall include special manholes at Station 183+10 and 187+65 which are to be constructed over a prefabricated vertical stub in the 11' x 6' CBC. Contractor shall provide shop drawings of the CBC w/ 48" vertical stub.

**Subsection 625.5 - Payment**

Add the following:

Payment for the special manholes (bid Item 625-5) shall include the cost of the vertical stub in the CBC.

ITEM 625-1 - STORM DRAIN MANHOLE M.A.G. DET. 522 & C.O.P. DET. P1520

ITEM 625-2 - STORM DRAIN MANHOLE M.A.G. DET. 522 & C.O.P. DET. P1560

ITEM 625-3 - STORM DRAIN MANHOLE M.A.G. DET. 522 & M.A.G. DET. 521

ITEM 625-4 - STORM DRAIN MANHOLE M.A.G. DET. 522 (SHALLOW) & M.A.G. DET. 520

ITEM 625-5 - STORM DRAIN MANHOLE M.A.G. DET. 522 (SHALLOW) & M.A.G. DET. 523-2 ON PREFAB VERT. STUB

ITEM 625-6 - SEWER MANHOLE, M.A.G. DET. 420 & 424

**SECTION 630 - TAPPING SLEEVES, VALVES AND VALVE BOXES ON WATERLINES**

Except as modified herein, tapping sleeves, valves and valve boxes on waterlines shall conform to Section 630 of the MAG Uniform Standard Specifications and the City of Phoenix or City of Scottsdale (whichever applies) Supplements to the MAG Uniform Standard Specifications.

**Subsection 630.1 - Description**

Add the following:

The work under this section shall include Line Stop Valves (waterline stops) where shown on the plans, or as directed by the Engineer. Waterline stop installations are intended to provide temporary isolation of sections of existing waterlines (usually asbestos cement pipe, or ACP) that must be removed or realigned to accommodate new storm drain construction. The Waterline Stops are to be used to minimize or prevent disruption of water service in the vicinity of the removal or realignment work. Actual Line Stop fittings, equipment and installation, including pipeline tapping, line stop plug installation and removal shall be performed by Koppl Company, Inc., or an approved equal with at least ten years of demonstrated expertise in Line Stop installation. Upon removal of the Line Stop line plug, and installation of the blind flange on the Line Stop tapping sleeve, a sensing wire or other suitable location system/device shall be installed so that the buried Line Stop tapping sleeve can be relocated at a future date if needed.

**Subsection 630.2 - General**

Add the following:

Tapping sleeves, valves and valve boxes shall conform to this section as well as the City of Scottsdale Supplemental Specifications, or the City of Phoenix Supplemental Specifications, whichever applies.

**Subsection 630.9 - Payment**

Add the following:

Payment for each Waterline Stop on the bid schedule shall include all labor, materials and equipment needed to implement the line stop, and remove and restore the area when the line stoppage is no longer required. This shall include, but is not necessarily limited to: excavation, shoring, existing waterline exposure and pipe support, fittings, pipe tapping, testing, line stop insertion and removal, barricading and/or temporary surface plating, backfilling and compaction, pavement replacement and surface restoration and cleanup; all as required to provide a safe and effective Waterline Stop installation.

Payment for the flanged butterfly valve (Item 630-5) shall include all labor, materials and equipment to install the valve and the fire hydrant bypass assembly complete in place. This shall include all valves, valve boxes, waterlines and the fire hydrant.

### **SECTION 631 - WATER TAPS AND METER SERVICE CONNECTIONS**

This section is provided as a contingency item for existing, non-copper water services that are required to be replaced with new copper pipe or where the water services are in conflict with the construction of the storm drain. Water taps and meter service connections shall conform to Section 625 of the MAG Uniform Standard Specification and City of Scottsdale Supplements to the MAG Specifications, except as noted herein.

#### **Subsection 631.1 - Description**

The Contractor will be required to replace existing water services along the length of the project that are not currently copper pipe. The Contractor shall coordinate the disruption of service with customers and the City as described in Section 610 of these specifications. When required to be replaced, the service line shall be replaced for its entire length from the water main to the water meter.

#### **Subsection 631.2 - Materials**

Replace Subsection 631.2 with the following:

All tubing and fittings shall be copper pipe and shall conform to MAG Standard Specifications 754.

All fittings, pipe and tubing for copper pipe shall be as noted on standard details.

#### **Subsection 631.9 - Measurement**

Measurements for water service replacement will be made per incidence of service replacement.

#### **Subsection 631.10 - Payment**

Payment for water service taps and meter service connections shall be made at the unit price bid per each service replacement. Payment shall be full compensation for furnishing, installing and testing water taps, copper tubing, fittings, corporation stops, curb stops, and other appurtenances complete and in place including excavation, removal of obstruction, related falsework, cost of labor and equipment, backfilling, compaction, and all incidental work not specifically covered in other pay items.

No penalty shall be incurred for the reduction in the number of items described above as determined by the Engineer.

### **ITEM 631-1 – REPLACE EXIST. WATER SERVICE, C.O.S. DET. 2330 (CONTINGENT ITEM)**

### **SECTION 795 - LANDSCAPE MATERIAL**

The following replaces Section 795 of the MAG Uniform Standard Specifications.

#### **Subsection 795.1 - General**

Material used for landscaping purposes shall be in conformance with this Section.

The common and scientific names of plants shall conform to the approved names in American Joint Committee on Horticultural Nomenclature's "Standardized Plant Names." For identification and inspection, durable, legible labels, bearing the plant's name in water-resistant ink, shall be attached to all nursery stock delivered to the project site.

### **Subsection 795.2 - Soil Fertilizing Material**

Fertilizing material shall comply with the applicable requirements of the State Agricultural Code. All fertilizing material shall be packaged, first grade, commercial quality products identified as to source, type of material, weight and manufacturer's guaranteed analysis. It shall not contain toxic ingredients or fillers in quantities harmful to human life, animals or plants. It shall be delivered in unopened containers and shall have the chemical analysis as specified in the plans or specifications. Material which has become caked or otherwise damaged shall not be used. Plant tablets shall be Agriform 21 gram, 20-10-5 fertilizer tablets or approved equivalent.

### **Subsection 795.3 - Organic Soil Conditioner**

In general, soil conditioner shall consist of a ground or processed wood product derived from redwood, ground or shredded fir, redwood or ponderosa bark. It shall have a nitrogen content of 1%, a pH not exceeding 7.5, and organic matter not less than 85%. The carbon to nitrogen ratio shall be 30:1. Its gradation shall be such that at least 85% passes the 1/4-inch screen. In addition, it shall be treated with a non-toxic agent so as to be hygroscopic.

### **Subsection 795.4 - Herbicides and Pesticides**

Contact herbicides and pesticides used must comply with all applicable Federal and State laws and be registered with the U.S. Environmental Protection Agency. Contact herbicides shall be quick acting and permit planting within 7-10 days of their use.

Pre-emergent herbicides shall be either 40.4 percent oryzlin and 59.6 percent inert ingredients, or 75% dimethyl tetrachloroterephthalate and 25% inert ingredients or approved equal and shall be applied in accordance with the manufacturer's instructions.

### **Subsection 795.5 - Plants**

#### **Subsection 795.5.1 - General**

All landscape stock shall be grown in nurseries approved by the State Department of Agriculture. They shall have a growth habit normal to the species. Stock shall be sound, healthy, and vigorous; free from disease, insect pests, sun scald, windburn, excessive bark abrasions and other objectionable disfigurements. They shall have normal, well-developed branch systems and vigorous, fibrous root systems which are neither root nor pot-bound and are free of kinked or girdling roots.

All stock shall have been grown in pots, cans, tubs, or boxes for a minimum of three months and a maximum of one year. They shall have sufficient roots to hold earth together after removal from the containers. This earth shall be free from noxious weeds including Bermuda grass. Plants shall have been grown under climatic conditions similar to those in the locality of the project.

Stock shall be inspected and approved by the Engineer at the Contractor's storage site prior to delivery to the project, or at a location agreed upon by the Engineer.

#### **Subsection 795.5.2 - Trees**

Trees shall be of the specified height, spread and caliper and shall stand erect without support. The height shall be measured from the root crown to the last division of the terminal leader with the branches in a normal position and the caliper shall be measured 12 inches above the crown roots.

### **Subsection 795.6 - Miscellaneous Material**

**Tree Stakes:** Unless otherwise specified, tree stakes shall be 2 x 2 inch redwood posts, free of knots and reasonably straight, and of sufficient length to properly support the tree.

**Strapping:** Strapping shall be 2" webbed nylon strap.

**Decomposed Granite:** Decomposed granite shall be as per Subsection 702.4 with the following exceptions:

- (A) All material used for a specific project or location shall be from a single source and shall present a uniform appearance.
- (B) The Contractor shall ensure that sufficient quantity is available from a single source to complete the project. The Engineer shall approve one sample prior to ordering.
- (C) Granite shall be 3/4" minus, "Desert Tan" color, or approved equal. Submit two separate color samples and size gradations from different quarries for review by the Engineer. The Engineer will choose one rock sample for use on the project based on the aesthetic appearance and overall acceptability of the rock for its intended use. No additional monies will be paid to the Contractor for selecting one of the provided samples or alternative selections proposed and accepted by the Engineer.

#### **Subsection 795.7 - Measurement and Payment**

No payment will be made for landscape material as such; the cost thereof shall be included in the bid price for the construction and installation of the items for which said landscape material is incidental or appurtenant.

### **SECTION 796 - TURF SOD**

#### **Subsection 796.1 - Description**

Turf sod shall be strongly rooted sod, not less than 2 years old, free of weeds and undesirable native weeds and grasses and machine cut to a pad thickness of 3/4 inches, excluding top growth and thatch. The Contractor shall provide only sod capable of vigorous growth and development when planted. Turf sod shall be of uniform pad sizes with maximum deviation of five (5) percent in either length or width. Broken pads incapable of supporting their own weight when suspended vertically with a firm grasp on the upper 10 percent of the pad will be rejected.

Turf sod shall be composed principally of Common Bermuda Grass (*Cynodon dactylon*).

#### **Subsection 796.2 - Construction Methods**

##### **Subsection 796.2.1 - Soil Preparation**

- (A) Limit preparation to areas which will be sodded in the immediate future.
- (B) Fine grade lawn areas to the lines and grade shown on the plans. The area shall be graded to a smooth even surface with loose, uniformly fine texture. Lightly roll, rake, remove ridges and fill depressions to meet finish grades. Allow for maximum level of natural compaction. Remove trash, debris, stones larger than 1-inch diameter and other objects which may interfere with planting or maintenance operations.
- (C) Lightly moisten prepared lawn areas before applying sod if the soil is very dry or to achieve desired compaction. Allow surface to dry and loosen top 1-inch before planting. Do not create a muddy soil condition.
- (D) It is the intent of these specifications that no rainfall shall have occurred between the time of final surface preparation and the sodding operation. Restore prepared areas to specified condition if eroded or otherwise disturbed after fine grading and prior to sodding.

#### **Subsection 796.2.2 - Sodding Lawns**

- (A) Lay sod within 24 hours of soil preparation. Place sod immediately upon arrival to site. Do not lay dormant sod.
- (B) Lay sod to form solid mass with tightly fitted joints. Butt ends and sides of sod strips, do not overlap. Stagger strips to offset joints in adjacent courses. Tamp or roll lightly to ensure contact with subgrade or as directed by the Engineer. Place sod on mounds and slopes with strips parallel to contours.
- (C) Anchor sod on slopes with wood pegs as required to prevent slippage. Pegs to be 1-inch square by 6-inch long wood pins.
- (D) Protection: Erect barricades and warning signs as required to protect the newly planted areas from traffic. Maintain barricades throughout maintenance period until lawn is established.

#### **Subsection 796.3 - Turf Inspection**

Initial turf inspection shall be performed by the Engineer upon substantial completion of the turf sod installation. Upon successful completion of the installation of turf sod, the Engineer shall issue an effective beginning date for the maintenance period.

A final turf inspection will be conducted by the Engineer at the end of the maintenance period. The final turf inspection may be conducted earlier at the discretion of the Engineer. The final turf inspection will evaluate the planted areas for compliance with the acceptance criteria provided in Subsection 230.6. The Engineer may extend the maintenance period at his discretion while the Contractor takes necessary corrective action for the final turf inspection.

#### **Subsection 796.4 - Maintenance**

The Contractor shall be responsible for the care and maintenance of the newly planted lawn immediately after each area is planted and continue through the maintenance period or until the lawn is accepted. The turf sod shall be cared for in such a manner that there is minimal loss of grass coverage. The Contractor shall maintain the lawns by watering, weeding, mowing, trimming and other operations such as rolling, regrading, rock picking, repair of all erosion, fertilizing and replanting as required to establish a smooth, acceptable lawn, free of eroded or bare areas. The lawn height shall be maintained by mowing at regular intervals which should be timed to maintain a grass height of 1-1/2". Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. A top dressing fertilizer shall be applied to lawn areas during the growing season at a rate of (1) pound of actual nitrogen per 1,000 square feet of lawn area. This top dress fertilizer application shall be applied once prior to the third mowing.

The maintenance period for the newly planted lawn area shall begin at the time of the initial sod placement and continue for 3 months. The maintenance period may be shortened upon acceptance of the lawn by the Engineer. The maintenance period may be extended as needed until the newly planted lawn areas meet the acceptance criteria described herein and evaluated by the final turf inspection.

#### **Subsection 796.5 - Warranty**

The Contractor shall warranty lawns through the maintenance period or until the lawn is accepted. The Engineer will conduct a final turf inspection at the end of the maintenance period as described in Subsection 230.4. Lawns will be acceptable provided the following:

- (A) The grass is vigorous, health and well-rooted
- (B) The lawn is free of weeds

- (C) The lawn is free of bare areas greater than 2-inch diameter
- (D) The lawn has no surface irregularities.

**Subsection 796.6 - Measurement**

Measurement for turf sod shall be made by the square-foot for the completed item, in place to the limits shown on the plans. Measurement will only be made to the limits shown on the plans, although grass replacement with turf sod may be required for areas damaged beyond the limits shown.

**Subsection 796.7 - Payment**

Payment for turf sod shall be made at the unit price bid per square foot. Payment shall be full compensation for furnishing and installing the turf sod. The cost of removal and disposal of existing turf, soil preparation and earthwork, maintenance and all other work and appurtenances not specifically addressed herein shall be incidental to the cost of turf sod.

**ITEM 796-1 - TURF SOD**

**SECTION 797 - GEOMAT**

**Subsection 797.1 - Description**

Geomat shall describe the geosynthetic material that is used to provide a mat for channel erosion stabilization, capable of allowing the root structure of grass/sod to fully integrate with the geosynthetic mat to provide erosion resistance, and which meets the material requirements described herein.

**Subsection 797.2 - Material Properties**

The Contractor shall submit to the Engineer, at least three weeks prior to installation, product certification to meet the material property requirements described herein. Suitable geomat products which meet the project requirements include:

Multimat 100 - Tenax Corporation (800)356-8495

Pyramat - Synthetic Industries (800)621-0444

The Contractor may select an alternative, equivalent product upon approval of the Engineer. Other geomat products will be considered equivalent and substitutable for the above products which meet the following criteria:

- (A) Permissible flow velocity - the geomat must be certified to withstand flow velocities up to 12 feet per second.
- (B) Shear strength - the geomat must be certified to withstand a minimum shear stress of 5 pounds per square foot.
- (C) Tensile strength - the geomat shall have a minimal tensile strength of 500 pounds per foot (machine directions) and 1,300 pounds per foot (cross-machine direction) per ASTM D-4595.
- (D) UV Resistance - the geomat shall be certified to have a minimum strength retention of 80-percent at 500 hours of UV exposure per ASTM D-4355.

The Contractor shall submit the names and addresses of the geomat manufacturer, fabricator and installer and a material specification list particularly describing the installation recommendations of the geomat including anchoring, stapling, and bury depths to secure the geomat.

**Subsection 797.3 - Geomat Installation**

- (A) The underlying surface shall be free of large rocks, soil clods and other debris that may puncture or damage the geomat.
- (B) The underlying surface shall be smooth such that the geomat will lay flat against the surface without any voids beneath the mat.
- (C) An anchor trench, a minimum of 2-feet deep, shall be installed at the top of each slope to secure the geomat. The beginning of the roll shall be anchored to the full depth of the outlet headwall as shown on the plans. The geomat shall be anchored to a minimum depth of 2-feet at the end of protection as shown on the plans.
- (D) A minimum 3-inch overlap shall be required for all adjacent rolls. Adjacent rolls will be secured and fastened to each other in accordance with the manufacturer's recommendation. Rolls shall be additionally anchored, secured and joined per the manufacturer's recommendations.
- (E) The geomat shall be stored and protected from ultraviolet exposure wherever possible. Once exposed to UV light, the geomat shall be installed in-place and covered within 15 days.
- (F) The Contractor shall ensure the geomat is installed to the manufacturer's recommendations and ensure the geomat is not damaged in any way prior to the installation of turf sod.
- (G) The specified turf sod shall be installed per the geomat manufacturer's recommendations and as described above in Subsection 230.3.2. A 2-inch soil layer will be placed over the geomat stabilization and prepared as described in Subsection 230.3.1.

**Subsection 797.4 - Measurement**

Measurement for the geomat shall be made by the square-foot for the completed item, in place to the limits shown on the plans.

**Subsection 797.5 - Payment**

Payment for geomat shall be made at the unit price bid per square foot. Payment shall be full compensation for labor, material and equipment to furnish and install the geomat. Soil preparation, earthwork, anchoring, backfill, and all other work and appurtenances necessary to install this item not specifically addressed herein shall be incidental to the cost of the geomat.

**ITEM 797-1 - GEOMAT**