

*Planning*

*bid Range*  
*# 450 - 550,000*

**SPECIAL PROVISIONS**

**FOR**

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

**SANITARY SEWER SIPHON  
and  
48" WATERLINE RELOCATION**

**19th AVENUE and HATCHER ROAD**

**CONTRACT NO. FCD 87-26**



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

**A118.523**

**SPECIAL PROVISIONS**

**FOR**

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SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION EDITION OF 1979 AND REVISIONS  
AND SUPPLEMENTS THERETO.**

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
CONTRACT FCD 87-26

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**INVITATION FOR BIDS**  
**(Construction Contract)**

**Project:** Sanitary Sewer Siphon and  
48" Waterline Relocation  
19th Avenue & Hatcher Road

Ref. Invitation FCD 87-26  
Date: August 24, 1987  
Issued by: Flood Control District  
of Maricopa County

**Vicinity:** 19th Avenue at the Arizona Canal,  
Phoenix, Arizona

SEALED BIDS, IN SINGLE COPY FOR THE WORK DESCRIBED HEREIN WILL BE RECEIVED UNTIL 2:00 PM, LOCAL TIME AT THE PLACE OF THE BID OPENING SEPTEMBER 16, 1987, IN THE OFFICE OF THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, 3335 WEST DURANGO STREET, PHOENIX, ARIZONA, 85009, AND AT THAT TIME PUBLICLY OPENED.

A PRE-BID CONFERENCE WILL BE HELD ON SEPTEMBER 8, 1987, AT 10:00 A.M. IN THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY CONFERENCE ROOM, 3335 WEST DURANGO STREET. IT IS IN THE BEST INTEREST OF PROSPECTIVE BIDDERS TO ATTEND THE PRE-BID CONFERENCE.

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

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

**DESCRIPTION OF WORK:** Construction of a sanitary sewer siphon beneath the Arizona Canal and the location for the future construction of the Arizona Canal Diversion Channel, relocation of a 48" waterline and other miscellaneous related work.

INVITATION FOR BIDS  
NO. FCD 87-26

**THE WORK SHALL COMMENCE WITHIN SEVEN (7) CALENDAR DAYS AFTER RECEIPT OF THE NOTICE TO PROCEED, AND BE COMPLETED ON OR BEFORE JANUARY 31, 1988.**

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

**CHERIE PENNINGTON, CLERK  
BOARD OF DIRECTORS  
FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY**

**INVITATION FOR BIDS  
NO. FCD 87-26**

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
INVITATION FOR BIDS, FCD 87-26  
INSTRUCTIONS TO BIDDERS**

1. **Explanation to Bidders.** Any explanations desired by the bidder, questions, or items for clarification regarding the meaning or interpretation of the invitation for bids, drawings, specifications, etc., may be addressed to the Chief Engineer and General Manager, preferably in writing, prior to the pre-bid conference. Any answers, interpretations, or clarifications affecting the cost will be addressed to all bidders in an addendum to the invitation. The receipt of an addendum by the bidder must be acknowledged in the space provided on the bid form or by letter or telegram received before the time set for the bid opening. Oral explanations or instructions given before the award of the contract will not be binding.
2. **Conditions Affecting the Work.** It is in the best interest of the bidders to attend the pre-bid conference. Bidders should visit the site and take such other steps as may be reasonably necessary to ascertain the nature and the location of the work, the general and local conditions which can affect the work and the cost thereof. Failure to do so will not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the work. (See MAG 102.4)
3. **Bidder's Qualifications.** Before a bid is considered for award, a bidder may be requested by the Chief Engineer and General Manager of the Flood Control District to submit a statement regarding his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the work.
4. **Bid Guarantee.** Where a bid guarantee is required by the invitation for bids, failure to furnish a bid guarantee in the proper form and amount by the time set for opening of bids, may be cause for rejection of the bid.

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

**INVITATION FOR BIDS  
NO. FCD 87-26**

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

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

Unless called for, alternate bids will not be considered.

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

6. Submission of Bids. Bids must be sealed, addressed to the Chief Engineer and General Manager, Flood Control District of Maricopa County, 3335 West Durango, Phoenix, Arizona 85009, and marked to identify the bid to the referenced Contract FCD Number. Failure to appropriately identify the bid may result in a premature opening of, or a failure to open, such bid. The name of the bidder shall be on the outside of the envelope. (See MAG 102.9)
7. Withdrawal of Bids or Modifications. Bids may be withdrawn by written request received from the bidder prior to the time set for opening of bids.
8. Public Opening of Bids. Bids will be publicly opened at the time and place set for the opening in the invitation for bids. Their content will be made public for the information of bidders and others interested, who may be present either in person or by representative.
9. Award of Contract. Award and execution of a contract shall be in accordance with MAG Section 103.
10. Specifications. Specifications referred to herein shall include all revisions and amendments in effect on the date of issuance of the invitation for bids. These instructions, Special Instructions to Bidders, and the herein contained Construction Special Provisions supplement the Uniform Standard Specifications herein referred to by "MAG" section number or paragraph number; however, in case of conflict, these instructions and Special Provisions supersede the Uniform Standard Specifications (MAG).

INVITATION FOR BIDS  
NO. FCD 87-26

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
INVITATION FOR BIDS, FCD 87-26  
SPECIAL INSTRUCTIONS TO BIDDER

Contract Plans, Special Provisions and Contract Documents: Plans, Special Provisions, and forms for proposal, Bidding Schedule, Contract Agreement and Performance Bond may be obtained from the Flood Control District of Maricopa County, 3335 West Durango Street, Phoenix, Arizona, upon payment of \$10.00 by check payable to the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. This payment will not be refunded.

APPROXIMATE QUANTITIES FOR PRINCIPAL ITEMS

<u>QUANTITY</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
199	L.F.	48" Waterline
910	L.F.	15" VCP Sanitary Sewer
708	L.F.	10" MJDIP Sanitary Sewer (Install only)
354	L.F.	20" MJDIP Sanitary Sewer (Install only)
275	L.F.	12" PVC Sewer Air Line
77	L.F.	6" MJDIP Waterline

and such other pertinent items as are necessary for the completion of the project as shown on the plans or as called for in the Special Provisions or in the Maricopa Association of Governments Uniform Standard Specifications for Public Works Construction.

Location of Work: The proposed work is located at 19th Avenue and the Arizona Canal, Phoenix, Arizona.

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

INVITATION FOR BIDS  
CONTRACT NO. FCD 87-26

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
(Construction Contract)

BID FORM

Project: Sanitary Sewer Siphon and  
48" Waterline Relocation  
19th Avenue & Hatcher Road

Invitation FCD 87-26  
Date: August 24, 1987

Location: 19th Ave. at the Arizona Canal  
Phoenix, Arizona

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

The following Proposal is made on behalf of \_\_\_\_\_  
\_\_\_\_\_ and no others. The Total Contract amount of

this proposal is (in words) \_\_\_\_\_

\_\_\_\_\_ and \_\_\_\_\_/100 dollars, (in figures)

\_\_\_\_\_, this amount being the sum total of the extended  
amount for each pay item on the Bidding Schedule.

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

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

The Undersigned declares that the amount and nature of the work to be done is understood and that at no time will misunderstanding of the Plans, Specifications, Special Provisions, or conditions to be overcome, be pled. On the basis of the Plans, Specifications, Special Provisions, the forms of Contract, and the Bond proposed for use, the Undersigned proposes to furnish

all the necessary machinery, equipment, tools, apparatus, and other means of construction, to do all the work and to furnish all the materials in the manner specified and to finish the entire project within the time hereinafter proposed and to accept, as full compensation therefor, the sum of various products obtained by multiplying each unit price, herein bid for work or materials, by the quantity thereof actually incorporated in the completed project, as determined by the Chief Engineer and General Manager, Flood Control District of Maricopa County.

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

PROPOSAL  
CONTRACT FCD 87-26

BIDDING SCHEDULE

**PROJECT :** Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road.

**CONTRACT NO. :** FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
48"	WATER	LINE	RELOCATION:		\$	\$
310-1	<del>188</del> 125	TON	Aggregate Base Course			
315-1	1	TON	Bituminous Prime Coat			
330-1	<del>1</del>	<del>TON</del>	<del>Asphalt Cement for Chip Seal</del>			
330-2	9	TON	<del>Stone Chips for Chip Seal</del> <i>C 34 Asphalt Concrete</i>			
336-1	58.5	SY	Furnish & Install AC Pavm't Repl. MAG S.D. 200, Type 'B'			
340-1	30	LF	Install 6" Vert. C&G MAG S.D. 220, Type 'A'			
340-2	125	SF	Install 9" D/W Slab C.O.P. S.D. P-1255			

BIDDING SCHEDULE

**PROJECT :** Sanitary Sewer Relocation & Siphon  
& 48" Waterline Relocation  
19th Avenue & Hatcher Road

**CONTRACT NO. :** FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
340-3	25	SF	Install 5' Sidewalk C.O.P. S.D. P-1230		\$	\$
350-1	6	LF	Remove Exist. 66" Casing Pipe & Grout			
350-2	1	EA	Remove Exist. 12 cu. ft. Conc. Thrust Block			
350-3	32	LF	Remove Exist. 48" Pipe Plug			
350-4	2	EA	Furnish & Install 48" Pipe Plug			
350-5	45	LF	Remove Exist. 18" RCP & Block Headwall			
350-6	1	EA	Furnish & Install 18" Pipe Plug			
350-7	30	LF	Sawcut & Remove 6" Vert. Curb & Gutter			

BIDDING SCHEDULE

**PROJECT :** Sanitary Sewer Relocation & Siphon  
& 48" Waterline Relocation  
19th Avenue & Hatcher Road

**CONTRACT NO. :** FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
350-8	125	SF	Sawcut & Remove 9" Driveway Slab		\$	\$
350-9	25	SF	Sawcut & Remove 5' Sidewalk			
350-10	1	EA	Furnish & Install Hydrant Guards C.O.P. S.D. P-1359			
350-11	1	LS	Miscellaneous Removal & Other Work			
401-1	1	LS	Traffic Control			
401-2	40	HR	Uniformed Off-Duty Law Enforcement Officer			
401-3	1	LS	Traffic Signal Relocation			
610-1	199	LF	Furnish & Install 48" Transmission Pipe			

BIDDING SCHEDULE

**PROJECT :** Sanitary Sewer Relocation & Siphon  
& 48" Waterline Relocation  
19th Avenue & Hatcher Road

**CONTRACT NO. :** FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
610-2	2	EA	Furnish & Install 6" Flanged Outlet		\$	\$
610-3	77	LF	Furnish & Install 6" MJDIP, Class 52			
610-4	3	EA	Furnish & Install 6" Valve			
610-5	3	EA	Furnish & Install Valve Box & Cover MAG S.D. 391, Type A			
610-6	1	EA	Furnish & Install 6" Fire Hydrant C.O.P. S.D. P-1361			
610-7	200	LBS	Furnish & Install Excess DIP Fittings Not Shown On Plans			
772-1	1	LS	Rolling Gate & Misc. Chain Link Fence Relocation (see note 3 on Sheet 7 of 7)			
SUB-	TOTAL	48"	WATERLINE ITEMS			

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
& 48" Waterline Relocation  
19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
SA	NITARY	SEWER	SIPHON		\$	\$
336-2	258	SY	Surface Replacement Type 'B', Detail 200			
336-3	1125	SY	Surface Replacement S.R.P. Channel Lining			
340-4	55	LF	Combined Conc. Curb & Gutter Std. Det. 220, Type A, H=6"			
340-5	223	SF	Concrete Sidewalk Std. Detail 230			
340-6	50	SF	Concrete Driveway Std. Detail P-1255			
350-12	1	LS	Misc. Removal & Other Work			
350-13	55	LF	Sawcut & Remove 6" Vert. Curb & Gutter			

BIDDING SCHEDULE

**PROJECT :** Sanitary Sewer Relocation & Siphon  
& 48" Waterline Relocation  
19th Avenue & Hatcher Road

**CONTRACT NO. :** FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
350-14	50	SF	Sawcut & Remove Driveway Slab		\$	\$
350-15	223	SF	Sawcut & Remove 5' Sidewalk			
401-4	1	LS	Traffic Control			
401-5	80	HRS	Uniformed Off-Duty Law Enforcement Officer			
602-1	150	LF	36" Encasement for Sewer Pipe By Jacking or Tunneling			
602-2	75	LF	48" Encasement for Sewer Pipe by Jacking or Tunneling			
615-1	910	LF	15" VCP Sanitary Sewer Pipe			

## BIDDING SCHEDULE

**PROJECT :** Sanitary Sewer Relocation & Siphon  
& 48" Waterline Relocation  
19th Avenue & Hatcher Road

**CONTRACT NO. :** FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
615-2	26	LF	30" RGRCP Sewer Pipe with PVC T-Lock Liner *		\$	\$
615-3	708	LF	10" MJDIP Sewer Pipe*			
615-4	354	LF	20" MJDIP Sewer Pipe*			
615-5	275	LF	12" Air Line (PVC)			
615-6	3	EA	Cut & Plug Exist. 12 & 15" Sewer Line Std. Det. 427			
625-1	7	EA	Sanitary Sewer Manhole Std. Det. 420			
625-2	1	EA	Sanitary Sewer Siphon Inlet Structure			
625-3	1	EA	Sanitary Sewer Siphon Outlet Structure			

\* Bid for this Quantity shall be for Installation of pipe only. MJDIP & RGRCP Pipe has been pre-purchased for this job and available at the Contractor yard at 25th Avenue & ACDC.

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
& 48" Waterline Relocation  
19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION.	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
625-4	1	EA	Sanitary Sewer Special Manhole		\$	\$
625-5	1	EA	Fill & abandoned manhole and plug pipe <i>Hatcher &amp; crossroad</i>			
SUB-TOTAL		SANITARY	RY SEWER SIPHON ITEMS			

The bidder hereby acknowledges receipt of and agrees his proposal is based on the following Addenda.

Total \_\_\_\_\_

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

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

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

IF BY AN INDIVIDUAL: License No. \_\_\_\_\_ Classification \_\_\_\_\_

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

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

IF BY A FIRM OR PARTNERSHIP: License No. \_\_\_\_\_ Classification \_\_\_\_\_

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

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

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

\*Name and Address of Each Member:

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

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

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

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

**IF BY A CORPORATION:** License No. \_\_\_\_\_ Classification \_\_\_\_\_

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

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

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

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

**Names and Addresses of Officers:**

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

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

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

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

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

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

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

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

**SURETY BOND**

**KNOW ALL MEN BY THESE PRESENTS:**

That we, \_\_\_\_\_, as Principal, (hereinafter called the Principal), and the \_\_\_\_\_, a corporation duly organized under the laws of the State of \_\_\_\_\_, as Surety, (hereinafter called the Surety), are held and firmly bound unto the Flood Control District of Maricopa County as Obligee, in the sum of \_\_\_ percent (\_\_\_%) 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 A.R.S.

WHEREAS, the said Principal is herewith submitting its proposal for \_\_\_\_\_

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 such proposal and give such Bonds and Certificates of Insurance as specified in the Standard Specifications with good and sufficient Surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter into such contract and give such Bond and Certificates of Insurance, if the Principal shall pay to the Flood Control District of Maricopa County the sum of money set forth above as liquidated damages for failure of the Principal to enter into the contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 19\_\_.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Title

Witness:

\_\_\_\_\_

\_\_\_\_\_  
Surety

\_\_\_\_\_  
Title

Witness:

\_\_\_\_\_



CONSTRUCTION SPECIAL PROVISIONS  
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
FCD CONTRACT NO. 87-26

for  
19TH AVENUE SANITARY SEWER SIPHON  
AND 48" WATERLINE RELOCATION  
at the  
ARIZONA CANAL DIVERSION CHANNEL

**PROPOSED WORK:** The work includes the construction of a three-barrel sanitary sewer siphon with special inlet and outlet structures, other sanitary sewer pipes, and manholes. Also, the work includes the construction of approximately 188 linear feet of 48" waterline replacement, and miscellaneous related items required for completion of the project.

**LOCATION OF WORK:** This project is located in Phoenix, Arizona, on 19th Avenue at the Arizona Canal Diversion Channel, approximately 1/4 mile north of Dunlap Avenue.

**A. SPECIFICATIONS:** The work embraced herein and as shown on the plans for the construction of this project shall be done in accordance with the Maricopa Association of Governments Uniform Standard Specifications for Public Works Construction dated 1979 and the current revisions thereto, and the Construction Special Provisions contained herein.

**PRECEDENCE OF CONTRACT DOCUMENT:** The City of Phoenix Supplements to MAG Specifications and Details will govern over the MAG Standard Specifications and Details. In case of a discrepancy or conflict, Project Plans will govern over both the City of Phoenix Supplements and MAG Standard Specifications and Details. These Construction Special Provisions will govern over the City of Phoenix Supplements and MAG Standard Specifications and Details and the Project Plans.

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

**CONTRACT TIME:** The Contractor shall start work within seven (7) calendar days after the date of the notice to proceed and complete all work on the project on or before January 15, 1988. →

The Contractor shall complete all work under the Arizona Canal from Siphon ("Line C") Station 1 + 40 to 2 + 90 during a dry-up period of the Arizona Canal from November 13 to December 12, 1987.

**B. NEGOTIATION CLAUSE:** Recovery of damages related to expenses incurred by the Contractor for a delay for which the Flood Control District of Maricopa County 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 Flood Control District of Maricopa County. This provision shall not be construed to void any provision in the contract which requires notice of delays, provides for arbitration or other procedure for settlement or provides for liquidated damages.

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

PROGRESS SCHEDULE: The Contractor shall submit his proposed work progress schedule to the Chief Engineer and General Manager for approval before starting the work. The schedule shall include a separate schedule for the work to be done under the Arizona Canal.

ITEM COMMENTS: The herein contained Construction Special Provisions supplement the Uniform Standard Specifications; however, in case of conflict, these Special Provisions supersede the Uniform Standard Specifications.

MATERIAL SOURCES: Concrete, Aggregate Base and Pipe shall be obtained from commercial sources. The Contractor shall pay all royalties, or any other charges or expenses, incurred in connection with the securing and hauling of the material.

The Contractor will be required to furnish the Engineer with a list of his proposed commercial sources prior to use, and shall present certificates stating that the material produced from commercial sources is in accordance with the Uniform Standard Specifications and these Special Provisions.

Also, the Contractor shall note that all MJDIP class 54 pipe, fittings, and couplings, and T-Lock RGRC Class 4 pipe has been previously purchased by FCDIMC and is available at the Contractor's yard at 25th Avenue and the ACDC, no later than November 9, 1987. (See Section 615)

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

SUBSECTION 101.2 - DEFINITIONS AND TERMS: Change the definition of Budget Project to read as follows: A project financed by funds set aside in the annual budget or otherwise approved by the Board of Directors of the Flood Control District of Maricopa County.

Change the definition of Engineer to read as follows: The Chief Engineer and General Manager of the Flood Control District of Maricopa County acting directly or through his authorized representative.

Change the definition of Owner to read as follows: The Flood Control District of Maricopa County, acting through its legally

constituted officials, officers, or employees.

SECTION 102 - ADDENDA & SUBMISSION OF BIDDING SCHEDULE: It shall be the responsibility of prospective bidders to determine, prior to submission of a bid, if any addenda have been issued. This may be accomplished by calling 602-262-1501. Any addendum issued, if not already bound into the Special Provisions, must be included as a part of the Special Provisions, and any quantities on the Bidding schedule requiring change shall be adjusted by pen and ink to the new figure.

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

SECTION 102.5 - PREPARATION OF PROPOSAL: The bidder's Arizona State Contractor's license number and classifications shall be shown on the proposal. The Contractor shall be appropriately licensed as a contractor in the State of Arizona for performing the work in this project.

SECTION 103.6 - CONTRACTOR'S INSURANCE: Concurrently with the execution of the contract, the Contractor shall furnish a Certificate of Insurance. The types on insurance and the limits of liability shall be as indicated thereon, i.e.

\$1,000,000	bodily injury per person
\$5,000,000	bodily injury each occurrence
\$1,000,000	property damage

The Flood Control District of Maricopa County shall be named as coinsured, and a certificate of insurance should be filled with the Flood Control District of Maricopa County.

SECTION 104 - SCOPE OF WORK:

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

SUB-SECTION 105.2 - PLANS AND SHOP DRAWINGS: Sub-Section 105.2 of the MAG Standard Specifications is amended to include the following:

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

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

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

The Contractor shall furnish the Engineer with these copies of shop drawings, pipe layout diagrams, manufacturer's catalog data, and detailed information, in sufficient detail to show completed compliance with all specified requirements, covering, but not

limited to, the following items:

- A. Fabricated Pipe and Design Data
- B. Pre-cast Manhole Risers
- C. Reinforcing Steel
- D. Castings
- E. Field Closures
- F. Concrete Mix Designs
- G. PVC Structure Lining
- H. Caulking Materials
- I. Coating Materials
- J. Grating Design Calculations and Details
- K. All Special Fabricated Fiberglass Items: Stop Logs, Ladders, Slide Gates, etc.
- L. Structural Design Calculations and Details for All Concrete Structures, as Required.
- M. Hatch Covers and Appurtenances
- N. Water stops
- O. Detailed Sequence of Construction for Structures

Review: The Contractor, at his own expense, shall make such changes in the drawings as may be necessary to conform to the plans and specifications. Prior to return of such drawings, marked "Furnish as Submitted" or "Furnish as Noted", any work which the Contractor may do on the fabrications covered by the same shall be at his own risk, as the County will not be responsible for any expense or delays incurred by the Contractor for changes required to make the same conform to the drawings as finally reviewed.

One copy of submitted drawings will be returned to the Contractor marked "Furnish as Submitted" or "Furnish as Noted". If the submittal is marked "Revise and Resubmit" or "Rejected", a new submittal shall be made in the same manner as the original submittal.

When submitted for the Engineer's review, shop drawings, line layouts, etc. shall bear the Contractor's certification that he has reviewed, checked, and approved the shop drawings, etc. and that they are in conformance with the requirements of the Contract Documents. The Engineer will not review any submittals which do not bear the Contractor's certification.

After the review has been completed, the above drawings, lists, samples, design calculations, and other data shall become part of the Contract documents, and the fabrications furnished shall conform to the submittal.

Review of material and layout drawings consists of review for general conformity to plans and specifications, and in no way relieves the Contractor or the supplier from responsibility for the correctness of the drawings.

Deviations or changes from plans or specifications must be called out as such and will require review by the Engineer for approval or rejection.

Construction of this project shall not begin until the shop drawings and line layouts have been reviewed and approved.

Corrections required on the shop drawings will not constitute a valid reason for delay in the project schedule.

SECTION 105.6 - COOPERATION WITH UTILITIES: An attempt has been made to determine the locations of all underground utilities and drainage pipes, culverts, and structures. The Contractor shall comply with the requirements of the ARS 40-360 21 through 40-360-29 in notification to the interested utility owners prior to the start of construction and shall ascertain the approximate locations of the various underground utilities shown on the plans and as may be brought to his attention. The exact locations of these underground utilities shall be determined by excavations made by the Contractor prior to any trenching operations. It shall be the Contractor's responsibility to cooperate with the pertinent utility companies, so that any obstructing utility installation may be adjusted. Should the Contractor's operations result in damage to any utility, the location of which has been brought to his attention, he shall assume full responsibility for such damage.

Any facility or work which may be performed for the accommodation of any utility shall be paid for by the utility owner. The Contractor shall make all arrangements that may be necessary for the construction, and any financial agreement shall be solely between the Contractor and the utility owner.

The following phone numbers, as indicated, should place the Contractor in contact with proper personnel:

- Mountain Bell Telephone Company.....Ron Catlett...842-7750
- Salt River Project (Overhead Power)...236-8888 or 273-2202
- Salt River Project Water Users Association.....Slavko Jovanovic...236-5072
- Arizona Public Service.....(Leis Winkler).....371-6837
- Location Staking(APS, Mountain Bell, SRP).....263-1100
- City Phoenix (Water).....Steve Schebler.....268-4709
- (Sewer).....Bob Rentfro.....268-1864
- Maricopa County Highway Department.....262-3631
- Flood Control District of Maricopa County.....262-1501
- Southwest Gas Corporation.....271-4277

SECTION 105.8 - CONSTRUCTION STAKES, LINES AND GRADES: The project control line and bench mark elevation are shown on the drawings and will be established by the Engineer. The contractor shall establish offset stakes and temporary bench marks for referencing the designated construction lines and grades. The Contractor shall provide all rough grade, fine grade, and structural reference lines and shall be responsible for their conformance to the plans and specifications.

The Flood Control District of Maricopa County reserves the right to adjust design grades or the locations of the siphon structures, sewerline, and waterline prior to construction if, in the opinion of the Engineer, it should become necessary, without

additional cost to the Flood Control District of Maricopa County.

Survey work shall be performed by a qualified and experienced surveyor under the supervision of a licensed land surveyor.

No separate payment will be made for construction surveying, and the cost thereof shall be included in the price bid for related items of work.

SECTION 106 - CONTROL OF MATERIALS:

106.1 Source of Materials and Quality: The Contractor shall guarantee the construction work for one year against faulty materials, faulty workmanship and failure to meet the requirements of the specifications. Said guarantee by the Contractor shall not apply to damage caused by earthquakes or other acts of god, land subsidence, or faulty operations or any abuse of the structures by others.

SECTION 107.2 - PERMITS: The contractor shall be responsible for obtaining all permits and licenses, paying all charges, fees, taxes, and giving all notices necessary and incidental to the due and lawful execution of the work. Permits for earth moving may be obtained from the Bureau of Air Pollution Control, Maricopa County Department of Health Services, 1845 East Roosevelt, telephone number 258-6381. The Contractor shall obtain a permit from the City of Phoenix for construction within the city's right-of-way. The contractor shall also obtain a permit from S.R.P. for construction within their right-of-way.

SECTION 108.5 - LIMITATION OF OPERATIONS: Should the Contractor or subcontractor elect to perform any work before or after regular working hours, on week-ends, or legal holidays, any charges incurred by the district for inspection of the work, surveys, or tests of materials will be deducted from monies due or to become due to the Contractor. If work is designated to be performed before or after regular working hours, as in the case of trenching in 19th Avenue or Hatcher Road (See section 610 and 615), this work will be considered as done during regular working hours for the purpose of this section. This requirement will not be enforced during the Arizona Canal dry-up (November 13, 1987 to December 12, 1987, nor during the time that the 48" water is shut down.

SUB-SECTION 108.7 - DETERMINATION AND EXTENSION OF CONTRACT TIME  
and SUB-SECTION 108.9 - FAILURE TO COMPLETE ON TIME: Sub-sections 108.7 and 108.9 of the MAG Standard Specifications are amended to include the following:

SEQUENCE OF CONSTRUCTION

General: The right to direct the sequence of the work under this contract is a function vested solely in the Engineer. Prior to commencement of the work, the Contractor shall prepare and submit to the Engineer for approval, a written schedule covering the general sequence of the whole work to be performed. The schedule shall be submitted to the Engineer at the Pre-Construction

Conference.

The work schedule, when approved, shall not be subject to change 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 must conform to the contract time requirements.

Special Requirements on Segments: A) The contractor shall complete all work for connecting the new 48" waterline to the existing waterline between December 15th, 1987 through January 15, 1987. Special requirement for connection to the existing are outlined in Section 610. B) The contractor shall complete all work for the siphon (Line "C") from Station 1+40+ to Station 2+90+ during a dry-up period of the Arizona Canal from November 13 to December 12, 1987. All pipe installation and backfill between these stations shall be complete by December 6, 1987.

Failure to Complete on Time:

"For all portions of the work except those noted below, Sub-Section 108.7, Determination and Extension of Contract Time, Sub-Section 108.9, Failure to Complete on Time, and MAG Table 108 will be enforced.

Time is of the essence in completing the portion of the project below the Arizona Canal. Therefore, in Sub-Section 108.7, Determination and Extension of Contract Time, and Sub-Section 108.9, Failure to Complete on Time, MAG Table 108 is deleted, for that portion of the Siphon work that lies between Station 1+40 to 2+90 and connecting the new 48" Waterline to the existing 48" Watermain, the following paragraphs are substituted:

Sanitary Sewer Siphon (Line "C") Station 1+40 to Station 2+90

To assure completion of the work between Stations 1+40 and 2+90 within the scheduled time, a review of the Special construction schedule for this work will be made by the Contractor and construction Manager on a daily basis. Should it appear to the Engineer that the remaining time in the schedule will be insufficient to successfully complete the work as required, the Engineer will direct, in writing, measures to be taken by the Contractor, at no expense to the Flood Control District, to assure that the work will be completed on time. Payment for this work will be withheld until final inspection and acceptance of this work. Failure to completely install the pipe, including mechanical compaction of the trench and the lining of the canal by December 12, 1987, in accordance with the plans details, prior to the end of the dry-up period will result in termination of the contract by the Flood Control District and forfeiture of the performance bond by the Contractor. Any further backfilling, compaction, or lining of the Arizona Canal not completed by the Contractor within five days of the end of the dry-up period will be performed by construction forces of the Salt River Valley Water User' Association. The cost of this work will be negotiated by

the Flood Control District with the Salt River Valley Users' Association and paid for with monies withheld from the Contractor. Any further work required to complete the installations as shown on the drawings, will be paid for with monies withheld from the Contractor. For all other portion of work (outside stations 1+40 to 2+90) MAG Table 108 will still apply.

#### 48" Waterline Relocation

To assure completion of the work for completing te tie-in of the new 48" waterline to the existing 48" waterline, the contractor is reminded that the City of Phoenix has limited the shutdown of the existing 48" water main to 48 hours. All connections, welding, ect., as required, in Section 610 shall be completed within that 48 hours unless directed by the engineer. Failure to complete this work within the 48 hours shall result in a penalty of \$2,000.00 per day until the connection is complete. For all other work for installation of the 48" waterline relocation MAG Table 108 will still apply.

SECTION 201 - CLEARING & GRUBBING: The work under this item consists of removal and disposal of all trees, stumps, asphaltic pavement, and structures within the limits of the roadways and easements, as designated on the plans. Materials shall be disposed of off-site.

No separate payment will be made for clearing and grubbing, and the costs thereof shall be included in the price bid for related items of work.

SECTION 206 - STRUCTURE EXCAVATION AND BACKFILL: Structure excavation and backfill shall conform to section 206 of the MAG Standard Specifications except that no direct payment will be made for this item. The cost of this item shall be included in the contract price bid for related items. All backfill around structure shall be Type III as specified by Table 601-2.

SECTION 225 - WATERING: The work under this item shall be in accordance with section 225 of the MAG Standard Specifications.

SECTION 310 - UNTREATED BASE: Item 310-1 Aggregate Base shall conform in their entirety to the requirements of Section 310 of the Uniform Standard Sepcifications. Aggregate Base shall be crushed in accordance with Section 702.2.

The Contractor will be required to furnish the Engineer certified weight tickets covering all of the Aggregate Base placed on the project. Final pay quantities will be based upon the scale tickets accepted by the Engineer.

SECTION 315 - BITUMINOUS PRIME COAT: Item 315-1 shall conform to entirety to requirements of Section 315. The bituminous material shall be Grade MC-70 or MC250 liquid asphalt as determined by the Engineer. Prime coat shall be applied to the total width of the Aggregate Base Material at the rate of 0.40 gallon per square

yard unless otherwise specified by the Engineer.

SECTION 330 - CHIP SEAL COAT: Items 330-1 and 330-2 shall fully comply with Section 330 of the Uniform Standard Specifications except that the application of the chip seal coat shall not begin before two days after the application of the prime coat, but shall be completed by seven days after the application of the prime coat.

The liquid asphalt shall be grade RS-2 or CRS-2h and shall fully comply with Section 713 of the Uniform Standard Specifications. Application shall be at the rate of 0.4 gallon per square yard, unless otherwise specified by the Engineer.

The stone chips shall fully comply with Section 716 of the Uniform Standard Specifications except precoating is not required and gradation shall be as follows:

Sieve Size	% Passing
3/8"	100
1/4"	65 - 100
No. 8	0 - 15
No. 200	0 - 2

Application shall be at the rate of approximately 25 - 30 pounds per square yard.

Payment for this will made at the contract unit price bid per ton for ITEM NO. 330-1, LIQUID ASPHALT FOR CHIP SEAL (RS-2 OR CRS-2h) and ITEM NO. 330-2, STONE CHIPS, which price shall be full compensation for the items, complete in place, including all necessary labor, material and equipment.

SECTION 336 - PAVEMENT MATCHING AND SURFACING REPLACEMENT: Items 336-1 and 336-2 of this project shall conform in their entirety to Section 336 of the MAG Standard Specifications. Item 336-3 of this project shall conform to SRP Specification for Channel lining. Payment for this work will be paid for on a square yard basis for surface replacement SRP Channel Lining.

Item 336-3 shall be constructed in accordance with the Salt River Valley Water Users' Association sketch included on pages 34 and 35 at the end of these Construction Special Provisions in the License Agreement, which is part of these contract documents, and shall otherwise conform to Section 336 of the MAG Standard Specifications. The ABC supplier shall provide certificates of compliance and test results indicating conformance with MAG Standard Specifications.

SECTION 340 - CONCRETE & GUTTER, SIDEWALKS, DRIVEWAYS AND ALLEY ENTRANCES: Item 340-1 through 340-6 of this project shall conform in its entirety to Section 340 of the MAG Standard Specifications.

SECTION 350 - REMOVAL OF EXISTING IMPROVEMENTS: Item 350-1 through 350-15 of this project shall conform in its entirety to Section 350 of the MAG Standard Specifications. In addition to

the items listed in the MAG Standard Specifications, Section 350-3 Miscellaneous Removal and Other Work the following shall be included:

- K. Restoration of Right-of-way and/or Temporary Construction Easements: The Contractors shall leave the easements in as good condition, or better, after work is completed, special care must be taken to replace any asphalt, trees, sprinklers, lights, walls, fences, etc., which were disturbed as a result of construction. Where grass is located within the easement, such as a lawn, the Contractor shall remove the sod which would be in the path of any construction, store it, keep it moist, and replace it immediately after construction is complete.
- Ⓛ Any and all items not specifically set forth as a separate pay item.
- M. Sawcutting and matching existing pavements and curbs, gutters, etc.
- Ⓝ Relocating positions of existing signs to be staked by the Inspector.
- O. Relocating positions of existing plants within the right-of-way to be staked by the Inspector.
- P. Removing existing AC, concrete curb and gutter and adjusting an existing, if required, water meter as directed by the Engineer.

SECTION 401 - TRAFFIC CONTROL:

Items 401-1 through 401-5 shall conform in its entirety to Section 401 of the MAG Standard Specifications.

Add the following to MAG Sub-Section 401.7, Payments:

Payment for Item 401-1 and 401-4, Traffic Control, will be paid for on a lump sum basis for Traffic Control Devices

Payment for Item 401-3, TRAFFIC SIGNAL RELOCATION, will be paid for on a lump sum basis for Traffic Control Devices.

401.5 General Traffic Regulations:

- A. 19th Avenue and Hatcher Road shall be considered major streets.

Access to local businesses is required at all times.

- B. All traffic and/or traffic control devices on this project shall be provided, maintained, and/or controlled as specified in the City of Phoenix Traffic Barricade Manual, latest revision.

- C. Permission to restrict city streets, sidewalks, and alleys (street closure permits) shall be requested as specified in section III of the Traffic Barricade Manual.
- D. Unless otherwise provided for in the following "Special Traffic Regulations", all traffic on this project shall be regulated as specified in Section IV of the Traffic Barricade Manual.
- E. The Contractor shall provide a traffic control plan for each barricade installation used for this project.

SPECIAL TRAFFIC REGULATIONS:

When the contractor elects or is required to work at night in the right-of-way in the vicinity of 19th Avenue and Hatcher Road, he may reduce the traffic lanes to one in each direction. The hours to begin and end this special requirement shall be set by the City of Phoenix Traffic Engineering Department but generally shall be 9:00 pm to 6 am on week days and 9:00 pm Friday through 6 am Monday over weekends or as directed by the Engineer or the City of Phoenix Traffic Engineering Department.

SECTION 601 - TRENCH EXCAVATION, BACKFILLING, AND COMPACTION:

- A. CITY OF PHOENIX SUPPLEMENT SUB-SECTION 601.2.1 GENERAL: is amended to add the following paragraph:

"No extra compensation or additional time will be authorized for claims that soil conditions differ from those anticipated or those indicated by soil logs and/or reports. It is the Contractor's responsibility to make his own determination as to actual existing conditions."

- B. SUB-SECTION 601.2.2 TRENCH WIDTH: is amended to add the following paragraph:

"If the Contractor elects to slope the trench walls in lieu of shoring, sheeting or other wall support measures, he shall be responsible for any and all problems encountered and costs incurred as a result of the increased trench width. Furthermore, no increase in contract time will be allowed as a result of sloping trench walls."

- C. SUB-SECTION 601.2.5 OVER EXCAVATION: is amended to add the following paragraph:

"When the Engineer determines that over excavation and backfilling, below the normal foundation and bedding depth, are required as a result of unsuitable material, it will be considered extra work. Payment and construction time extension will be negotiated with the Contractor or as otherwise provided for in these contract documents. As a condition of the Contractor receiving payment, agreement on method of payment and construction time extension shall be reached prior to start of work unless otherwise authorized

in writing by the Engineer."

- D. SUB-SECTION 601.2.8 GRADING AND STOCKPILING: Add the following paragraph:

"Excavated material shall not be considered as unsuitable due to an excessive moisture content or an inadequate moisture content for proper compaction. The Contractor shall take whatever measures are required at his own expense to add or remove moisture from material to be used as backfill in order that proper compaction can be obtained within the limits set in Section 601 4.

The Contractor may elect, at no cost to the Contracting Agency, to haul off and dispose of excessively wet or dry material and replace it with material conforming to the specifications for backfill.

In either event, the proper compaction shall be obtained. There will be no additional payment or time extension for this work."

- E. SUB-SECTION 601.4.3 BACKFILL: Delete the fourth paragraph in its entirety, and substitute the following:

"When mechanical compaction is to be used, the contractor will provide a test section demonstrating his proposed method and equipment to be used. Upon agreement with the Engineer as to the acceptability of the Contractor's proposed method and equipment, they shall not be changed without prior approval of the Engineer. Mechanical compacted lifts in excess of one foot will not be allowed without the express written consent of the Engineer."

- F. SUB-SECTION 601.4.3 BACKFILL: is amended to add the following paragraphs:

"Backfill material shall be within the range of +2% to -4% of the optimum moisture content, prior to placing the material in the trench. The moisture content shall be uniform throughout the backfill material. Material not meeting these requirements may be required to be removed from the trench and moisture added or removed to correct the deficiencies prior to replacement, all at no increase in cost to the contract."

It shall be the contractor's responsibility to blend excavated material, removing or adding moisture as may be necessary to meet the requirements of the specifications, all at no increase in cost to the contract.

Excavated material when used for backfill shall meet the requirements of the preceding paragraph.

The moisture content requirements contained herein are waived when granular material is used and water settled.

The engineer may require all or any part of the trench to be lead tested for stability with Contractor's equipment prior to placement of asphalt or Portland cement concrete pavement. Unstable areas as determined by the Engineer shall be corrected by the Contractor at no increased in cost to the contract."

LIMITS OF BACKFILL TYPE

Type I : Canal right-of-way, street right-of-ways and to 10' above pipes in the ACDC right-of-way.

Type II : Will not be used.

Type III: For all structures.

G. SUBMITTAL: The Contractor shall submit his plan, methods, and procedures for protecting existing utilities prior to beginning construction. Approval of the plan does not limit the Contractor's responsibility for utility protection, and the contractor shall implement all additional utility protection measures as determined to be necessary in the field.

SECTION 602 - ENCASEMENT OF WATER OR SEWER PIPE BY JACKING OR TUNNELING OPERATION: Items 602-1 and 602-2 of this project shall conform in its entirety to Section 602 of the MAG Standard Specifications.

SECTION 610 - WATER LINE CONSTRUCTION - Items 610-1 thru 610-7 of the Bidding Schedule of this project shall conform in their entirety to Section 610 of the MAG Standard Specification and City of Phoenix Supplements.

The Contractor shall do all work associated with trenching and installation of pipe including connection to existing facilities for work in the street right-of-way at night in accordance with SECTION 401, Special Traffic Regulations.

The Contractor shall note and incorporate into the project scheduling the following information:

The City of Phoenix Engineering and Water Distribution Departments have imposed the following restrictions/requirements on this project.

A. If any work is being done on any of the following City of Phoenix water lines which removes them from the City distribution network, then work requiring removing the 48" water line for this project from the City distribution network shall not be permitted under any circumstance(s).

1. 43rd Avenue - 12" Water Line
2. 39th Avenue - 12" Water Line
3. 35th Avenue - 42" Water Line  
- 12" Water Line
4. 29th Avenue - 16" Water Line

Note it is currently anticipated the tie in work on

this 48" water line relocation shall not begin until after December 15, 1987 due to relocation work currently scheduled for the 42" water line in 35th Avenue in conjunction with the Arizona Canal dry up.

B. The 48" water line for this project is a major link in the City of Phoenix distribution network. Because the City anticipates difficulty in maintaining balance in the City distribution network system within this service zone while the 48" water line is out of service, the City shall permit only a 48 hour shutdown period for the tie in of the new water line to the existing water line. Therefore, the Contractor shall be required to have installed (excluding the closure tie ins), tested and passed the new 48" water line and appurtenances before the shutdown for the tie ins is requested.

WLT tie ins after Dec 15

C. The Contractor shall be required to coordinate this relocation work with the City of Phoenix. Water Distribution Department Supervisor for this service area is Lloyd Cordon, 943-1211.

ADDITIONS TO SECTION 610 - WATERLINE CONSTRUCTION

The following Sections: 610.A through 610.J are City of Phoenix requirements and shall be added to those requirements of M.A.G. Section 610 - Waterline Construction.

<u>SECTION 610.A</u>	<u>Pipe Size</u>	<u>Pipe Type</u>
	6" Pipe for pipeline tie-ins and fire hydrant connections.	M. J. Ductile Iron Pipe, Thickness Class 52 -Section 750.2 with fittings per Section 750.4.
	48" Transmission Pipe	Reinforced Concrete Water Pipe, Steel Cylinder Type, prestressed per AWWA C-301, latest revision. The pipe may be either the lined cylinder type or the embedded cylinder type.

SPECIAL NOTE: All references to AWWA Standards throughout the project specifications shall mean to the latest revision published.

SECTION 610.B RESTRAINED JOINTS FOR CONCRETE CYLINDER PIPE

For waterlines 20 inches in diameter and larger joint restraint will be provided by means of welded joints. The procedure

outlined in American Water Works Joint Restraint Design shall be based on test pressures. Shop drawing submittals shall include calculations showing the extent of welded joints required, tensile stress to be resisted by, and design of joint welds and pipe longitudinal reinforcement. The extent of welded joints shall be shown on the pipeline and layout drawings, and shall in no case be less than that shown on the plan drawings. Note for this project of lowering the 48" waterline below the ACDC; all joints shall be welded. Where welded joints are required, the weld shall be continuous around the entire circumference of the pipe joint. Welds shall be made intermittently, in short sections of approximately 6 inches, to avoid overheating the gasket on joints where a gasket is used. All costs for restrained joints shall be included in the cost of the pipe.

Design parameter minimums shall be as follows: Soil unit weight = 110 lbs. per cubic foot, soil friction coefficient = 0.3, height of backfill over pipe = maximum 4 feet or as shown in plans, pressure = 188 psi.

SECTION 610.C DESIGN CRITERIA FOR CONCRETE CYLINDER WATER PIPE

1. Design Pressure

All water pipe shall be designed for the working pressure plus surge as stated below:

<u>Pipe Size</u>	<u>Station Limits</u>	<u>Design Pressure</u>	<u>Surge</u>	<u>Test Pressure</u>
All	All	150 lb	60 lb	188 psi

2. Supplemental Pipe Design Criteria for Prestressed Pipe Designed and Manufactured in Accordance with AWWA C-301, Latest Revisions

- (a) Pipe shall be designed for a combination of internal working pressure plus surge as specified, water load, pipe dead load, and maximum possible earth load as shown on the plans. The pipe shall also be designed for the combination of external earth load plus vacuum. Stress analysis of pipe shall be made using "Olander's" coefficients for a 120 degree bedding angle. Earth loads on pipe shall be calculated for pipe installed in a positive projecting embankment condition.

Where the earth cover over the pipe is less than 8 feet, then the design shall be based on 8 feet minimum cover. Where future finished profiles are shown on plans, they shall be used for design purposes where they provide more cover than the existing profile.

The soil unit weight shall be based on a weight of 140 pounds per cubic foot. The loading for projecting embankment condition (unlimited trench) shall be derived using a product of the

projection ratio and the settlement ratio of 0.5. The Ku Factor shall be 0.150.

- (b) The pipe shall be designed for external loading from trucks on the backfill. Computations shall be based on an H-20 truck loading, using tables based on the Iowa Engineering Experiment Station Bulletin No. 96 and an impact factor of 1.1.
- (c) Pipe reinforced with ring stiffeners shall not be permitted.

3. Modifications to AWWA C-301

(a) Affidavit of Compliance

An affidavit of compliance as specified in Section 1.10 of C-301 shall be furnished to the Engineer.

(b) Cement

Cement used in manufacture of pipe shall conform to ASTM C-150, Type II, low alkali.

(c) Concrete Admixture

No concrete admixture shall be used except as approved in writing by the Engineer.

(d) Liquid Membrane-Forming Compounds

Liquid membrane-forming compounds shall conform to ASTM C-309, Type I, and shall be of such composition that after drying they shall not impart taste or odor to water flowing through the pipe, nor shall they contain any toxic materials. The use of such compounds shall be subject to approval of the Engineer.

(e) Paint

The paint or equivalent used for preventing the rusting of steel surfaces at hold-backs of mortar lining and/or coating shall be quick-drying, corrosion resistant material with good bonding properties to the steel, and shall dry tack-free and smooth within four hours after applying. Paint shall be RUSTOLEUM #769 or approved equal.

(f) Lining and Coating Structural Steel Connections

Openings, connections, and outlets shall be cement mortar lined and concrete coated as detailed on the plans in accordance with Section 4.4 of AWWA C-301.

(g) Joints

All joints shall be the Carnegie Bell and Spigot type modified for interior circumferential pipe welding in the field. The joint rings for spigot ends shall be Carnegie Shape M-3516, M-3318 or M-3836.

4. Joint Mortaring

The Contractor shall mortar the inside and outside of all pipe joints on all concrete cylinder water pipe. The mortar shall be hand applied in the field on the inside joints such that the mortared surface is flush with the adjacent pipe mortar lining. The outside of the joints shall be mortar coated by the diaper method.

The mortar shall be a Type M mortar per MAG 776 using a Type II, low alkali cement. The cost for mortaring the joints shall be included in the cost of the pipe.

5. Coating of Exposed Steel

All exposed ferrous surfaces shall be coated with a minimum of 2 inches of hand packed mortar. Wire mesh shall be used to hold the mortar in place. Mortar shall be the same as that applied to the joints. Field applied coal-tar coatings shall not be acceptable.

SECTION 610.D MATERIAL AND EQUIPMENT DRAWINGS

1. GENERAL

The Contractor shall furnish the Engineer with two (2) additional copies of the shop drawings in addition to the number required in Subsection 105.2 of the City of Phoenix Supplement, latest revision.

The shop drawings shall include pipe layout diagrams and manufacturer's catalog data in sufficient detail to show complete compliance with all specified requirements. This shall include, but not be limited to, the following items:

- (1) Fabricated pipe and specials
- (2) Design calculations
- (3) Reinforcing Steel
- (4) Concrete Mix Designs
- (5) Coating Materials
- (6) Welded or Restrained Joint Detail

2. Shop Drawings and Line Layout

- (a) The manufacturer's pipeline layout shall be furnished together with standard details for review. The line layout shall show each standard pipe joint and each special joint or fitting by number. Manufacturer's standard details shall be furnished in sufficient detail to assure that the detail design of the pipe and specials shall comply with the design concept and structural requirements of the project as presented in the Contract Documents. Full details of reinforcement, concrete, cement, mortar, joint dimensions, etc., for the straight pipe, specials and connections shall be furnished. Layout drawing shall show the invert elevations of the pipeline.
- (b) Manufacturer's shop drawings shall be furnished for fabrication, inspection and record purposes in accordance with the "General Conditions." The manufactured pipe and specials shall conform to the approved standard details and shall meet all specified requirements unless otherwise approved in writing.

3. Pipeline Appurtenances

Drawings of minor or incidental fabricated materials and/or equipment may not be required by the Engineer. The contractor shall furnish the Engineer tabulated lists of such fabrications, showing the names of the manufacturers and catalog numbers, together with samples or general data as may be required to permit determination by the Engineer as to their acceptability for incorporation in the work.

4. Design Calculations for Concrete Cylinder Pipe Only

The manufacturer's complete design calculations shall be submitted to the Engineer for review prior to or with the Joint Detail submittal.

5. Review by Engineer

The Contractor, at his own expense, shall make such changes in the above drawings as may be necessary to conform to the plans and specifications. Prior to return of such drawings marked "Furnish as Submitted", or "Furnish as Noted", any work which the Contractor may do on the fabrication covered by the same shall be at his own risk, as the Flood Control District of Maricopa County (FCD/MC) shall not be responsible for any expense or delays incurred by the Contractor for changes to make the same conform to the drawings as finally reviewed.

One copy of submitted drawings will be returned to the Contractor marked, "Furnish as Submitted", or "Furnish as Noted." If the submittal is marked "Revise and Resubmit" or "Rejected", a new submittal shall be made in the same manner as the original submittal.

When submitted for the Engineer's review, shop drawings, line layouts, etc., shall bear the Contractor's certification that he has reviewed, checked and approved the shop drawings, etc., and that they are in conformance with the requirements of the Contract Documents.

After the review has been completed, the above drawings, lists, samples, design calculations, and other data, shall become a part of the Contract Documents and the fabrications furnished shall conform to the submittal.

Review of material and layout drawings consists of review for general conformity to plans and specifications and in no way relieves the Contractor or the supplier from responsibility for the correctness of the drawings. Deviations or changes from plans and specifications shall be called out as such and shall require review by the Engineer for acceptance or rejection.

Construction of this project shall not begin until the shop drawings and line layouts have been reviewed by the Engineer.

6. Off Site Inspection

The Contractor shall be responsible for all expenses, including but not limited to travel and per diem expenses, for required inspections by the Engineer and/or the cost of inspection and testing by an independent testing laboratory as required by and at the discretion of the Engineer for any inspection of any pipe manufactured outside of a fifty-mile radius from the city limits of Phoenix, Arizona.

SECTION 610.E VALVES

1 6" Valves

The 6" valves shall be of one of the types specified in MAG Specification 630, revised to date.

2 Measurement and Payment

Measurement shall be by each unit. Payment shall be at the unit price for each valve and shall be compensation in full for the complete installation in place including valve, valve stem extension, Dresser-Type couplings, bolts, gaskets, excavation, concrete pads, concrete thrust blocks, brick piers, backfilling, compaction, testing disposal of surplus excavate material, and surface replacement.

## SECTION 610.F FLANGED OUTLETS

Measurement for flanged outlets shall be made for each outlet furnished and installed in the transmission pipe. Payment will be made at the unit price bid per each size of outlet and shall be compensation in full for furnishing and installing the flanged outlets as shown on the plans, including cement mortar lining and coating.

## SECTION 610.G BORING LOGS AND SOILS REPORT

The soil boring logs and a copy of the soils report is included in the project specifications for the Contractor's information only. The Flood Control District of Maricopa County (FCD/MC) does not guarantee the accuracy of the boring logs in the soils report. The Contractor shall make his own determination as to soil and subsurface conditions and shall complete his work in whatever material and under whatever condition he may encounter or create, without extra cost to the FCD/MC (except as modified in MAG). 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.

## SECTION 610.H ADJUSTING FRAMES, COVERS, WATER METER BOXES AND VALVE BOXES

Any existing frames, covers, water meter boxes and valve boxes which are disturbed or removed during construction outside the project limits shall be adjusted or replaced according to MAG Standard Specification 345. There will be no direct payment for this item, the cost shall be included in the total amount bid for this 48" waterline relocation project.

## SECTION 610.I SPECIAL BACKFILL REQUIREMENTS

Prior to testing the transmission main, backfilling must be completed to a minimum of 6 feet over the top of the pipe.

1. Within 30 feet of all anchor and thrust blocks.
2. Trenches for pipes connected to outlets on new main.
3. Within 20 feet of all vertical P.I.'s where the change exceeds 2%.
4. Full distance encompassed by all welded joints.

## SECTION 610.J SPECIAL CONSTRUCTION SPECIFICATION S.C.S. -W-8

### SHOP INSPECTION AND TESTS FOR STEEL AND STEEL CYLINDER PIPE

#### 1. GENERAL

This specification covers shop inspection and tests for both rigid and semi-rigid steel and steel cylinder water pipe. These requirements shall supersede or modify any portion of M.A.G. or

AWWA Specifications when a conflict exists.

## 2. Inspection

- (a) The Flood Control District of Maricopa County (FDC/MC) and its representatives shall have access to the work wherever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection during the manufacturing process.
- (b) Inspection by the FCD/MC or its representatives, or failure of the FCD/MC or its representatives to provide inspection, shall not relieve the Contractor of his responsibility to furnish materials and to perform work in accordance with this specification.
- (c) Material, fabricated parts, and pipe which are discovered to be defective or which do not conform to the requirements of this specification, will be subject to rejection at any time prior to final acceptance. Rejected material and pipe shall promptly be removed from the site of the work.

## 3. Tests and Materials

- (a) In advance of manufacture of the pipe, the Contractor shall furnish the Engineer three (3) copies of the mill test certificate for all steel products incorporated in the pipe. Three copies shall be furnished of mill test reports on each heat form which the steel is rolled.
- (b) Methods of Tests for Cement Mortars and Concrete

### 1. Mortar Lining

The mortar for all mortar lined pipe shall be supplied and molded by the following procedure:

The mortar sample shall be taken directly from the transfer bucket between the mixer and the charging trough which injects the mixed mortar into the spinning pipe. A sufficient amount shall be extracted to make four (4) 6" x 12" cylinders, and shall be placed in a wheelbarrow or other suitable container. The mortar sample material shall then be transported to the location at which the cylinder cans are to remain without moving for the next 24 hours. The mortar shall be thoroughly mixed immediately prior to pouring into the cylinders in order to prevent segregation. After the mortar has been thoroughly mixed, it shall be poured in a continuous stream into the test cylinder cans. The cans shall immediately be capped and allowed to remain without disturbing for 24 hours.

### 2. Mortar Coating

Mortar for all mortar coated pipe shall be sampled by molding four (4) cylinders for compressive tests of the representative material being used to coat the pipe. The mortar sample shall be molded in 6" diameter cylinder in accordance with applicable provisions of ASTM D-558..

3. Curing of Test Cylinders

The curing of concrete, lining and coating cylinders for the first 24 hours, shall be the same as that for the pipe except that the mortar for coating cylinders shall be covered with a piece of damp burlap to retard the drying out of the low moisture content of the mortar coating. At the end of 24 hours, the cylinders shall be transported to a moist curing cabinet and cured in accordance with AWWA.

(C) Strength of Cement Mortar Lining, Coating, Concrete and Steel

1. Mortar Lining

The average compressive strength, as per Section c. below, of cylinders for mortar lining for the several types of pipe shall be as follows:

a. Semi-Rigid Pipe

Steel pipe and steel cylinder pipe, single wrap, pretensioned, the average compressive strength of cylinders shall not be less than 3000 psi at seven days and 4500 at 28 days.

b. Rigid Pipe

Steel cylinder pipe prestressed, the average compressive strength of cylinders shall not be less than 3000 psi at seven days and 4500 psi at 28 days. Steel cylinder pipe, double wrapped shall not be less than 4500 psi at 28 days.

2. Mortar Coating and Concrete for Prestressed Pipe

The average compressive strength, as per Section c. below, of cylinders for mortar coating and concrete for the several types of pipe shall be as follows:

a. Semi-Rigid Pipe

Steel pipe and steel cylinder pipe, single wrap, pretensioned, the average compressive strength of cylinders shall not be less than

3000 psi at seven days and 4500 psi at 28 days.

b. Rigid Pipe

Steel cylinder pipe prestressed and steel cylinder pipe, double wrap pretensioned, the average compressive strength of cylinders shall not be less than 3000 psi at seven days and 4500 psi at 28 days.

3. To conform to these requirements, the average of any five consecutive strength tests of the laboratory cured specimens shall be equal to or greater than the specified strength, and not more than 20% of the strength tests shall have values less than the specified strength. If any one cylinder falls below 80% of the specified strength at seven days, an extra cylinder from the same batch shall then be broken, and if the strength of this cylinder also falls below 80% of the specified strength, then the entire production represented by these cylinders shall not be accepted for purchase by the FCD/MC until the results of the 28 day test is known, and if it also falls below 80% of the specified strength, the above non-acceptance shall become final. The expense of the required tests of cylinders and of testing the welds shall be borne by the pipe manufacturer and shall be performed by the Engineer or his duly authorized representative. The cost of cutting and matching metal test specimens shall be borne by the pipe manufacturer.

4. Testing of Steel Pipe Cylinders (Hydrostatic Pressure Test)

Each steel pipe cylinder, prior to embedment in cement mortar, or concrete, shall be hydrostatically tested under a water pressure which stresses the steel to a unit stress of at least 22,000 psi after the bell and spigot ends have been welded in place. The test shall be performed with rubber gaskets in place, utilizing companion bell and spigot test heads. While under this stress, the welded seams shall be hammered vigorously at one foot intervals with a one pound sledge hammer, and shall be thoroughly inspected.

All parts of the cylinder showing leakage shall be marked for rewelding. After rewelding, such cylinders shall be subjected to another hydrostatic test as stipulated above. The costs of hydrostatic pressure test shall be at the pipe manufacturer's expense.

5. Testing of Fittings and Specials

The seams in angle pipe, short-radius bends and special fittings shall be welded in two or more passes, and each weld tested for tightness by the air-soap method or by the dye-penetrant method. However, if the fitting is fabricated from cylinders which have been previously tested, hydrostatically, no further test is required for seams so tested. Hydrostatic testing of fittings to 150% of the design operating pressure may replace the tests described above. Any defects revealed under any of the alternate test methods shall be rewelded, and the weld again tested. The cost of these tests shall be at the pipe manufacturer's expense.

#### 4. MARKING, HANDLING AND DELIVERY

##### (a) Marking

Special marks of identification for each type of water pipe as specified herein, shall be placed on the pipes. These marks shall show the proper location of the pipe or special in the line by reference to layout drawings. All bends shall be marked on the ends with the angle of deflection and the plane through the axis of the pipe. All beveled pipe shall be marked with the amount of bevel, and the point of maximum bevel shall be marked at the end of the spigot.

##### (b) Handling and Delivery

All pipe shall be manufactured, handled, loaded, shipped, unloaded and stored at the job site in such a manner as to prevent any damage to the pipe. Any pipe section that becomes damaged shall be repaired as directed by the Engineer if in his opinion a satisfactory repair can be made; otherwise, it shall be replaced with an undamaged section at the Contractor's expense. No handling method shall be permitted involving lifting from the inside of the pipe.

SECTION 615 - SEWER LINE CONSTRUCTION: Items 615-1 through 615-4 of this project shall conform in their entirety to section 615 of the MAG Standard Specifications.

The Contractor shall do all work associated with trenching and installation of pipe, including connection to existing facilities, in the street right-of-way, in the vicinity of the Hatcher road and 19th Avenue intersection, at night in accordance with SECTION 401 Special Traffic Regulations.

The Contractor shall note that the following material for the Sanitary Sewer line has been purchased and will be available at the contractor's yard at 25th Avenue and the ACDC no later than Novemeber 9, 1987.

	ITEM	QUANTITY
1.	10" Ductile Iron Sanitary Sewer Pipe	800 LF
2.	20" Ductile Iron Sanitary Sewer Pipe	40QLF
3.	10" x 11.25 MJDIP Bends	4 ea
4.	10" x 22.50 MJDIP Bends	12 ea
5.	20" x 22.50 MJDIP Bends	8 ea
6.	10" MJDIP Dresser Couplings	12 ea
7.	20" MJDIP Dresser Couplings	6 ea
8.	30" RGRCP "T-Lock PVC Lined"	30 LF ✓

The Contractor shall transport these materials from the storage yard to the job site. The Contractor shall be responsible for protecting these materials from damage both to the pipe and the factory applied lining. If damage should occur to either the coal tar epoxy lining of the MJDIP, or the PVC lining of the RGRCP, the damaged areas shall be repaired in accordance with the manufactures recommendations, so that the repaired area is equal to the undamaged areas in all respects. This work shall be done by the contractor at no additional cost to the contracting agency.

Upon completion of construction, remaining portions of items 1 through 8 will be delivered by the contractor to the county yard on Glendale Avenue, 1/4 mile east of the Glendale airport.

All vitrified clay pipe shall be extra strength, conforming to MAG specifications Section 743.

The trenching, bedding and backfilling of the foregoing items shall be in accordance with Section 601 of the Standard Specifications and the amendments in these special provisions.

#### Backfill Limits

- Type I : Canal Rights-of-Way  
All Road Rights-of-Way  
ACDC Right-of-Way
- Type II : Shall not be used
- Type III: Structures

Item 615-5, as detailed on the project plans, shall be PVC sewer pipe, conforming to the following specifications:

P.V.C. (Polyvinylchloride) sewer Pipe: P.V.C. pipe and fittings shall meet the requirements of ASTM Specification D3034 for SDR35.

Prior to installation of the pipe, the Contractor shall obtain and submit a manufacturer's certification that the pipe meets the foregoing specifications and passes the tests described in this section.

Pipe shall be suitable for use as a gravity sewer conduit. Provisions must be made for contraction and expansion at each joint with rubber ring. The bell shall consist of an integral wall section with a solid cross-section rubber ring, factory

assembled, securely locked in place to prevent displacement during assembly.

The pipe (6" long section) shall be subjected to impact from a free-falling tup (20-lb Tup A.) in accordance with ASTM Method of Test D2444. No shattering nor splitting shall be evident when impacted with an energy of 220 ft-lbs. (Denting is not a failure.)

All fittings and accessories shall be as manufactured and furnished by the pipe supplier, or approved equal, and have been and/or spigot configurations compatible with that of the pipe.

One full length of P.V.C. pipe selected from 20 lengths shall be subjected to the following tests, which shall be conducted at 73 degrees F. (+-3 degrees F.):

a. Pipe Stiffness

Minimum "pipe stiffness" (F y) at 5% deflection shall be 46 psi when tested in accordance with ASTM Method of test D2411, "External Loading Properties of Plastic Pipe by Parallel-Plate Loading".

b. Joint Tightness

Two sections of pipe shall be assembled in accordance with the manufacturer's recommendation. Joints shall be tested in accordance with ASTM D3212, "Joints for Drain and Sewer Plastic Pipe Using Flexible Elastomeric Seals".

c. Flattening

There shall no evidence of splitting, cracking, or breaking when the pipe is tested as follows:

Flatten specimen of pipe, six inches long, between parallel plates in a suitable press until the distance between the plates is forty percent of the outside diameter of the pipe. The rate of loading shall be uniform and such that the compression is completed within two to five minutes.

Trenching, bedding, and backfilling of P.V.C pipe shall be in accordance with Section 601 of the Standard Specifications and the amendments in these special provisions.

All pipe for the air jumper line shall be measured by the linear foot, parallel to the central axis, and shall include lengths of fittings.

The accepted quantities of pipe, measured as provided above, will be paid for at the contract unit price complete-in-place. No measurement or direct payment will be made for furnishing and placing bedding material, condensate pit materials, fittings, collars, bands, or couplings joining the various sections of

pipe.

**SECTION 625 - MANHOLE CONSTRUCTION:** Items 625-1 and 625-5 shall conform in their entirety to Section 625 of the MAG Standard Specifications.

**Special Structures:** The work described in this section of the Special Provisions involved the general requirements for furnishing and installing the following special structures:

- Item 625-2 - Siphon Outlet Structure
- Item 625-3 - Siphon Inlet Structure
- Item 625-4 - Special Sanitary Sewer Manhole

The general requirements, as follows, shall apply to each of the foregoing special structures.

- A. Structural excavation and backfill shall conform to the requirements of MAG 206 except that the backfill type shall be Type III as noted in Table 601-2. Compaction of backfill around and over the structure shall be by hand-operated equipment only. No operator-mounted equipment shall be used. Jetting of pipe within 10 feet of the structure will not be permitted.
- B. The site work for each special structure shall include the temporary support or relocation of utilities which are disturbed as a part of the work for the special structure. Work done to protect existing utilities shall be in conformance with applicable MAG specifications and Details and shall be done to the satisfaction of the affected utility.
- C. The top 6 inches of undisturbed soil below the structure base slabs shall be compacted to 95 percent of maximum density. Structural sub-base material above structure subgrade and below the slabs shall be ABC, conforming to MAG 702, and shall be compacted to 95 percent of maximum density.
- D. Construction materials for the concrete structures shall conform to the requirements as called for on the plans, specified elsewhere in these special provisions, applicable MAG Specifications, and the following:
  - 1. Concrete: Class A, 3,000 psi
  - 2. Reinforcing Steel: Grade 60
  - 3. Structural Steel: Grade A-316 Stainless Steel.
  - 4. Structural steel Fasteners, supports, Anchors, Bolts, Nuts, Etc.: Stainless Steel type 304, conforming to ASTM Specifications A240, A270, or A479, as appropriate.
  - 5. Concrete Additions: Fly ash may be added to the

concrete mix per MAG Specification 725.2.1 and as approved by the Engineer.

6. Bearing Pads: Neoprene rubber, ozone-resistant, Shore A hardness to 30+-5.
7. Coal Tar Epoxy: Koppers 300M, or equal, applied in two or more coats for a total dry film thickness of 16 mils, in accordance with manufacturer's application instructions; metal surfaces shall be prepared in accordance with Steel Structures Painting Council (SSPC) Specification SP-10 not more than 12 hours before painting.
8. Joint Sealant: One component, polyurethane base sealant, as manufactured by Grove International, Inc. (Mono-Caulk 100) or equal.
9. Epoxy Grout: Pourable, nonshrink, 5,500 psi minimum compressive strength at 24 hours, as manufactured by Master Builders, Inc., or equal.
10. Bituminous Mastic: MAG Section 729.2
11. Concrete Bonding Agent: Epoxy adhesive, as manufactured by Everbond, Dural bond, or equal.
12. Waterstops shall be PVC, dumbbell type, 3/8" thickness. Waterstops shall be made continuously with all splicing performed in accordance with the manufacturer's recommendations. Waterstops shall be Grace Servicized/Dura-Joint, or equal, shall be installed in accordance with the details on the plans. Locations of waterstops shall be noted on the plans for the individual structures affected.
13. Where new concrete is poured against existing concrete surfaces, the existing surface (including concrete bricks and pipe walls) shall be sandblasted to remove all earth and foreign material. The existing surface shall then be coated with a bonding agent, applied in accordance with the manufacturer's recommendations. Bonding agents shall be Epoxy Adhesive Engineering concrete No. 1 LPL, Hunts Process HB 100 or 151, or equal.
14. Bond breaker for concrete form surfaces shall be white pigmented curing compound, conforming to ASSHTO M-148, Type 2.
15. Grout used for the repair of imperfect concrete work, filling of holes left by form bolts or ties,, filling of voids around items through the concrete and in setting machinery and anchor bolts shall be five-star, nonmetallic, nonshrink

grout, such as PORROK, Hallenite Manufacturing Company, Burke Stone, Burke concrete associates, Inc., or equal.

16. Caulking, where indicated on the plans, shall be done with a synthetic rubber sealing compound. The rubber sealing compound shall be a multi-part polyurethane, designed to cure at room temperature, to a firm, highly-resilient rubber. Application shall be in strict accordance with the manufacturer's instructions and by means of a pneumatic caulking tool or other acceptable method.

17. Fillets shall be furnished and installed in each special structure, in accordance with the general flow lines indicated on the plans. Fillets shall be constructed of Class C concrete, in accordance with MAG Section 725, or course Brick in Mortar.

Fillets shall be hand-shaped and trowel-finished to create a smooth, even flow line which is free of obstructions to the flow.

E. Precast deck units (roof) shall be fabricated in accordance with the notes and details indicated on the plans. The bottom and all vertical faces of the roof sections, except the outside face, shall be covered with PVC liner plate. Lifting hooks shall be cast into the deck units as indicated on the plans and shall be capable of supporting the entire weight of the roof section. Joints between walls and top sections and between adjacent top sections shall be sealed in accordance with plan details.

Liner plate material for interior faces of concrete structures and roof sections shall conform to Section 741 of MAG and shall be installed on surfaces indicated on the drawings. All PVC liner plate shall be white in color. Installation shall conform to Section 741 of MAG, where applicable, and to manufacturer's recommendations. The Contractor shall have a technical representative of the PVC liner manufacturer present during initial placement of the liner to ensure that proper application procedures and materials are used. Section 741 shall be amended to include the following paragraphs:

741.4 Application to Cast-in-Place concrete Structures:  
Special Requirements

741.4.1 Liner plate sheets shall be closely fitted and properly secured to the inner forms. Sheets shall be cut to fit curved and warped surfaces, using a minimum number of separate pieces. If liner plate joints are to be Type C-3 joints, as described below, the adjacent sheets shall be butted with not more than 1/8" opening between the sheets. A welding strip shall be fusion-welded on the backs of butt joints to prevent wet concrete from flowing around the edges.

Unless otherwise indicated on the plans, liner plate shall be returned 4" at the surfaces of contact between the concrete structure and items not of concrete. The same procedure shall be followed at joints where the type of protective lining is changed or the new work is built to join existing unlined concrete. At each return, the returned liner plate shall be sealed to the adjacent surface in contact with the plastic-lined concrete using Amercoat NO. 19Y adhesive, or equal. If the joint space is too wide or the joint surfaces are too rough to allow satisfactory sealing with this adhesive, the joint space shall be filled with 2" of densely-caulked lead wool or other approved caulking material.

#### 741.4.2 Joints in Liner Plate for Cast-in-Place Concrete Structures

Liner plate at joints shall be free of all mortar and other foreign material and shall be clean and dry before joints are made.

Field joints in the liner plate shall be of the following described types, used as prescribed.

Type C-1: The joint shall be made with a separate 4-inch joint strip and two welding strips. The width of the space between adjacent liner plate sheets shall not exceed 2". The 4" joint strip shall lap over each liner plate a minimum of 1". It may be used at any transverse or longitudinal joint.

Type C-2: The joint shall be made by lapping sheets not less than 1 inch. One welding strip is required. The upstream sheet shall overlap the one downstream.

Type C-3: The joint consists of one welding strip applied to the face of the liner plate sheets butted together, with one welding strip applied on the back of the joint. It will not be permitted if the gap between the sheets exceeds 1/8".

All welding is to be in strict conformance with liner plate manufacturer's specifications.

- G. Where new concrete is poured against existing concrete surfaces, the existing surface (including concrete bricks and pipe walls) shall be sandblasted to remove all earth and foreign material. The existing surface shall then be coated with a bonding agent applied in accordance with the manufacturer's recommendations. Bonding agents shall be Epoxy Adhesive Engineering Concessive No. 1 LPL, Hunts Process HB 100 or 151, or equal.
- H. Grout fillets shall be furnished and installed in each special structure, in accordance with the general flow lines indicated on the plans. Fillets shall be constructed of Class C concrete, in accordance with MAG Section 725, or Course Brick Mortar. Fill concrete shall contain an epoxy binder and nonshrink additives containing no metallic particles, as manufactured by Master Builders, Inc., or

equal. Fillets shall be hand-shaped and trowel-finished to create a smooth, even flow line which is free of obstruction to the flow.

- I. The access hatch shall be a BILCO Company Type J-5AL, with a 42" square opening or an equivalent. The door shall be 1/4" minimum thickness of aluminum, diamond-pattern plate, capable of sustaining a 300 lb./Sq. Ft. minimum live load.
- J. Fiberglass or aluminum maintenance ladders shall be shipped from the manufacturer's shop complete and ready for installation. The manufacturer shall submit shop drawings for approval, and fabrication shall not proceed until drawings and manufacturer's certifications have been approved by the Engineer.

The ladder shall be clearly identified with a chemical-resistant tag showing the manufacturer's drawing number.

The fiberglass ladder shall meet the following requirements:

Design:

1. Design shall be as specified under the OSHA sub-section entitled "Fixed Ladders".
2. A minimum safety factor of five (5) shall be applied to loads referenced in OSHA.
3. Joints, couplings, etc. shall be bonded with epoxy or mechanically fastened with non-metallic hardware.
4. Rung and side rail connections shall utilize a pin and keyway arrangement to prevent rotation of the rungs during climbing.
5. Upper surface of rungs shall have an epoxy/glass bead non-skid coating.
6. The clear rung width shall be 18"; with rungs at 12" vertical centers.

Materials:

1. All material supplied under this specification shall be made of premium-grade, chemical-resistant, fire retardant, glass-reinforced polyester resin, with the following properties:
  - a. Fire retardant Class I flame spread of 25 (ASTM E-84)
  - b. Color: yellow throughout
  - c. Mechanical properties (minimum):
    - (1) Ultimate tensile strength 30,000 psi

- |     |                               |            |
|-----|-------------------------------|------------|
| (2) | Ultimate compressive strength | 30,000 psi |
| (3) | Ultimate shear                | 5,500 psi  |
| (4) | Modulus of elasticity         | 2.5 x 10   |
| (5) | Barcol Hardness               | 50         |

2. Side rails shall have a polyurethane coating.

Workmanship:

1. All cut edges and holes shall be sealed with a compatible resin system.
2. Side rails shall run square and true, without warp, twist, sag, or buckle.
3. Surfaces shall be free of fiber blemish.

K. The fiberglass grating shall be Irving type, or equivalent, and installed within the structure, as shown on the plans. Each section of the grating shall be held in place with four (4) stainless steel studs and saddle clips. The grating shall have 1 1/2-inch-deep sections, with a minimum safe load rating of 300 pounds per square foot.

L. Stop log grooves, stop logs, and gates shall consist of fiberglass material, as detailed on the construction plans. All fiberglass material shall be made of premium-grade, chemical-resistant, fire-retardant, glass-reinforced, polyester resin, which shall be fire retardant Class I - frame spread of 25 according to ASTM Specification E-84 and have a Barcol hardness of 50.

M. The plastic staff gauges shall be of 1 1/2" diameter, white PVC pipe, which shall be capped and installed in the mortar lining of the structure, as shown on the project plans. The water level markings shall be etched and the gauges then printed with black lines and numerals, as shown on the plans, with corrosion-resistant paint, as approved by the Engineer, or be formed with pieces of black PVC pipe, as detailed on the construction plans.

N. All open excavations for construction of the structures shall be securely and completely fenced during nonworking hours. The excavations shall be barricaded at all times, in accordance with the Maricopa County Highway Department Barricade Manual.

O. Shop Drawings: Prior to the manufacture and/or installation of any items in the special structures noted, the Contractor shall submit eleven (11) copies of shop drawings for review. The shop drawings shall consist of setting plans, details, materials of manufacture, and such other information as may be required to verify that the proposed material or equipment meets the requirements of the project documents. These shop drawings submittals are in addition to any other submittal requirements noted in other parts of the contract documents, and apply to all materials and equipment

furnished for each of the special structures previously noted.

- P. Measurement and payment for each special structure shall be on a lump sum basis. The prices bid shall include all necessary excavation, backfill, and compaction to install each structure, concrete reinforcing steel, PVC lining, coatings as specified, grout fillets, and all other miscellaneous items necessary to complete the work on each structure.
- Q. The Contractor shall submit his proposed detailed method of construction for each structure for review by the Engineer one month prior to construction of each structure.

The brick work and mortar for item 615-6, Sanitary Sewer Pipe Plugs, shall be constructed in accordance with Section 625 of the MAG Standard Specifications.

Construction of Item 625-5, Fill and Abandon Manhole and Plug Pipe, shall be undertaken after the new sanitary sewer siphon and connector pipes have been placed into service and accepted by the engineer. Prior to installation of any plugs, filling in, removing, or abandoning any manholes, the abandoned sewer lines will be dewatered and aerated by the Contractor as will not cause damage to public property nor constitute any nuisance or menace to the public. The Contractor shall plug all pipes entering and exiting the manhole, remove and salvage the frame and covers, fill and compact all manholes with aggregate base up to the frame and cover base.

The aggregate base used shall comply with Table 702 in the MAG Standard specifications.

The surface replacement for the manhole to be abandoned in 25th Avenue to the south of the ACDC bridge shall be Type C, 12" thick, as shown in Detail 200 of the MAG Uniform Standard Details.

The surface replacement for the manhole to be abandoned in 25th Avenue to the north of the ACDC bridge shall be Type B, as shown in Detail 200 of the MAG Uniform Standard Details.

The surface replacement for the manhole to be abandoned in the service road north of the Arizona Canal and west of 25th Avenue shall be Type F, as shown in Detail 200 of the MAG Uniform Standard Details.

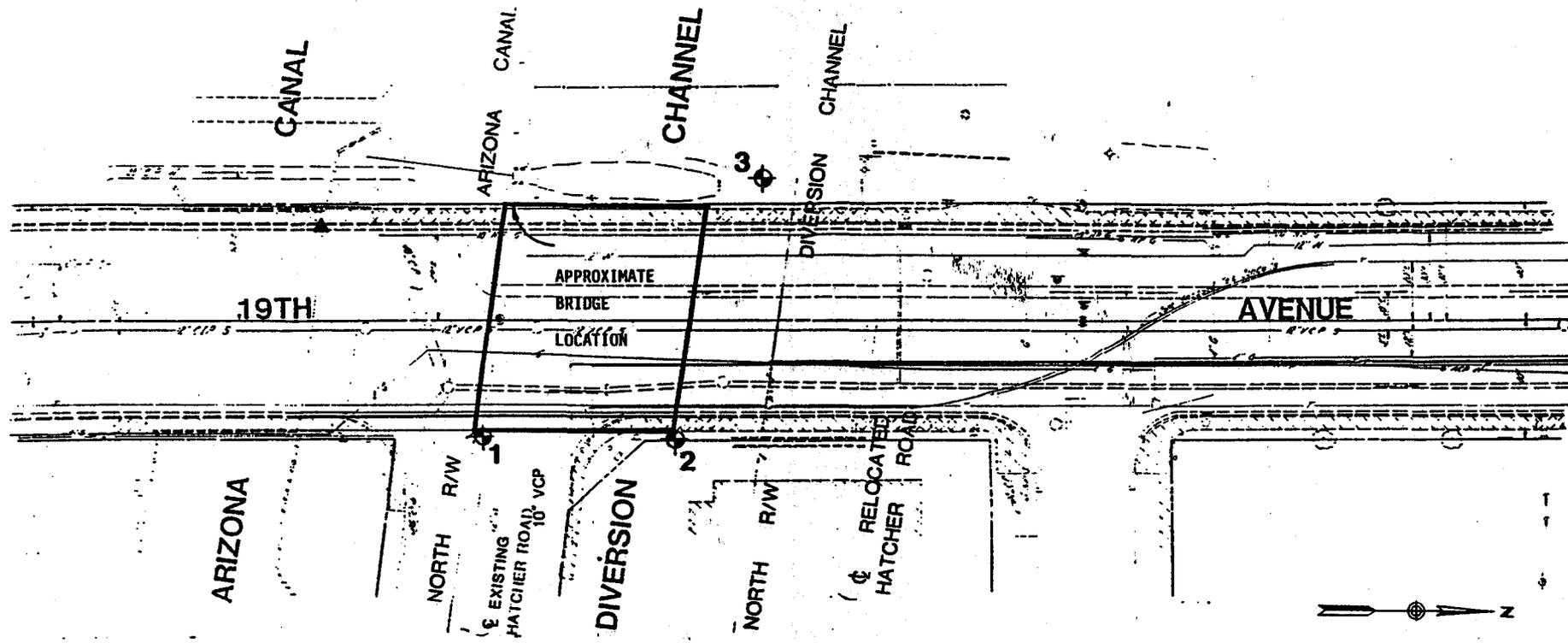
Removed frame and covers shall become the property of the City of Phoenix, and the Contractor shall load, haul, and stockpile the frame and covers, as directed, at the City of Phoenix Maintenance Yard 2301 W. Durango Avenue.

Measurement and payment will be on a unit basis for each manhole filled and will include surface replacement, salvaging of frames and covers, delivery to the City, and plugging pipes.

## OPEN CUTTING-LINED/UNLINED CANALS

1. Clearance between the utility line and the bottom of the canal shall be 18 inches for lined canals and 48 inches for unlined canals.
2. Backfill is to be native material or material approved by the Inspector and compacted in lifts to a minimum of 90% proctor density.
3. The utility line in any portion of the canal right-of-way shall have a minimum of 36 inches of cover.
4. Manhole, valves, etc., shall not be located on the canal right-of-way.
5. Canal right-of-way is to be restored to original condition as determined by Salt River Project's Inspector. Care shall be taken to prevent any dirt or debris from falling into the canal.
6. Canal banks and floor are to be concrete lined as specified in Salt River Project's drawing #B-5458.
7. Salt River Project assumes no responsibility for damage to Licensee's installation in operation and maintenance of irrigation facilities.
7. Access to right-of-way shall be available to Salt River Project's personnel at all times.
8. The contractor assumes sole responsibility for dust control.





**LEGEND**

- ◆ Indicates test boring location
- ▲ Benchmark: Brass cap in street at NW corner of existing Arizona Canal bridge

THOMAS-HARTIG & ASSOCIATES, INC.  
 Project No. 87-0478



# SOIL BORING LOG

PAGE 2 OF 2

NO. 1      ELEV: 99.2 ft.      SIZE OF HOLE 7 in.      FIELD ENGR: JT      DATE: 6 May 1987

DEPTH FT	PENETRATION RESISTANCE BLOWS/FT		SAMPLE TYPE	DRY DENSITY PCF	MOISTURE CONTENT	DESCRIPTION	SOIL CLASSIFICATION	GRAIN SHAPE			RELATIVE DENSITY			PLAST- TICITY			CONSIS- TENCY			CEMEN- TATION					
	C	N						GRADU- ATION			RELATIVE DENSITY			PLAST- TICITY			CONSIS- TENCY			CEMEN- TATION					
								WELL SOLID	POOR	ANGULAR	SUBANGULAR	ROUNDED	SUBROUNDED	LOW	MED	HIGH	NONE	LOW	MEDIUM	HIGH	SOFT	FIRM	STIFF	VERY STIFF	HARD
1						Clayey Sandy Gravel; brown;	GC	X		X	X		X	X	X								X		
2						possible cobbles																			
3																									
4																									
5																									
6																									
7																									
8																									
9																									
50																									
1																									
2																									
3																									
4																									
5																									
6																									
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4																									
5																									
6																									
7																									
8																									
9																									
80																									

Auger Refusal at 42 feet  
Ground water encountered: none

NOTE: The data presented on the boring logs represents subsurface conditions only at the specific locations and at the time designated. This data may not represent conditions at other locations and/or times. This boring data was compiled primarily for design purposes, and should not be construed as part of the plans governing construction or defining construction techniques. Bidders are fully responsible for interpretations or





# SOIL BORING LOG

NO. 3      ELEV: 99.3 ft.      SIZE OF HOLE 7 in.      FIELD ENGR: JT      DATE: 11 May 1987

DEPTH FT	PENETRATION RESISTANCE BLOWS/FT		SAMPLE TYPE	DRY DENSITY PCF	MOISTURE CONTENT	DESCRIPTION	SOIL CLASSIFICATION	GRADE- TION			GRAIN SHAPE			RELATIVE DENSITY			PLAST- TICITY			CONSIS- TENCY			CEMEN- TATION							
	C	N						WELL	MED	POOR	ANGULAR	SUBANGULAR	ROUNDED	SUBROUNDED	LOW	MED	HIGH	NONE	LOW	MEDIUM	HIGH	SOFT	FIRM	STIFF	VERY STIFF	HARD	NONE	WEAK	MEDIUM	STRONG
1						Damp Sandy Clay; brown;	CL										X	X		X			X							
2						to stratified with occasional																								
3						Moist lenses of clayey sand (SC).																								
4																														
5		7	S																											
6																														
7																														
8																							X	X						
9																														
10		39	R	105	20																									
1																														
2																														
3																														
4																														
5		19	S																											
6																														
7																														
8																														
9																														
20		30	R	103	16																									
1																														
2																														
3																														
4																														
5		41	S																											
6																														
7																														
8						Sand, Silty Sand, and Clayey	SP-	X	X		X	X		X	X	X							X							
9						Sand; brown; stratified;	SM,																							
30		54	R	122	9	occasional gravelly lenses;	SM,																							
1						scattered lenses of hard	SC																							
2						sandy clay (CL).																								
3																														
4																														
5		51	S																											
6																														
7																														
8																														
9																														
40		32	S																											

CONTINUED

Project No. 87-0478  
THOMAS-HARTIG & ASSOCIATES, INC.

NOTE: The data presented on the boring logs represents subsurface conditions only at the specific locations and at the time designated. This data may not represent conditions at other locations and/or times. This boring data was compiled primarily for design purposes, and should not be construed as part of the plans governing construction or defining construction techniques. Bidders are fully responsible for interpretations or

# SOIL BORING LOG

PAGE 2 OF 2

NO. **3** ELEV: **99.3 ft.** SIZE OF HOLE **7 in.** FIELD ENGR: **JT** DATE: **11 May 1987**

DEPTH FT	PENETRATION RESISTANCE BLOWS/FT		SAMPLE TYPE	DRY DENSITY PCF	MOISTURE CONTENT	DESCRIPTION	SOIL CLASSIFICATION	GRADA- TION			GRAIN SHAPE			RELATIVE DENSITY			PLAST- TICITY			CONSIS- TENCY			CEMEN- TATION							
	C	N						WELL SORTED	MEDIUM	POOR	ANGULAR	SUBANGULAR	ROUNDED	SUBROUNDED	LOW	MED	HIGH	NONE	LOW	MEDIUM	HIGH	SOFT	FIRM	STIFF	VERY STIFF	HARD	NONE	WEAK	MEDIUM	STRONG
1					Damp	Sandy Clay; brown;	CL																							
2					to	stratified with occasional																								
3					Moist	lenses of clayey sand (SC).																								
4						Sand, Silty Sand, and Clayey	SP-	X	X		X	X		X	X	X									X					
5		50	R	119	8	Sand; brown; stratified;	SM,																							
6						occasional gravelly lenses;	SM,																							
7						scattered lenses of hard	SC																							
8						sandy clay (CL).																								
9																														
50																														
1		73	S																											
2																														
3																														
4																														
5		75	R	111	12																									
6																														
7																														
8					Damp	Sandy Clay; brown;	CL																							
9					to	stratified with occasional																								
60					Moist	lenses of clayey sand (SC).																								
1		87	S																											
2																														
3																														
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4																														
5																														
6																														
7																														
8																														
9																														
80																														

Stopped test drilling at: 60.5 ft.

Ground water encountered: none

NOTE: The data presented on the boring logs represents subsurface conditions only at the specific locations and at the time designated. This data may not represent conditions at other locations and/or times. This boring data was compiled primarily for design purposes, and should not be construed as part of the plans governing construction or defining construction techniques. Bidders are fully responsible for interpretations or conclusions they draw from the boring log.

Project No. 87-0478

THOMAS-HARTIG & ASSOCIATES, INC.

CONTRACT FCD 87-26

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

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

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

ARTICLE I-SCOPE OF WORK: The CONTRACTOR shall furnish any and all labor,  
materials, equipment, transportation, utilities, services and facilities  
required to perform all work for the construction of Project No. FCD 87-26,  
Sanitary Sewer Siphon and 48" Waterline Relocation 19th Avenue and Hatcher Road  
and to complete and totally construct the same and install the material therein  
for the OWNER, in a good and workmanlike and substantial manner and to the  
satisfaction of the OWNER through its Engineers and under the direction and  
supervision of the Engineer, or his properly authorized agents and strictly  
pursuant to and in conformity with the Plans and Specifications prepared by the  
Engineers for the OWNER, and with such modifications of the same and other  
documents that may be made by the OWNER through the Engineer or his properly  
authorized agents, as provided herein.

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

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

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

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

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

PARTY OF THE FIRST PART

\_\_\_\_\_

RECOMMENDED BY:

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

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

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
PARTY OF THE SECOND PART

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

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

ATTEST:

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

LEGAL REVIEW

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

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

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

CONTRACT NO. FCD 87-26

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

KNOW ALL MEN BY THESE PRESENTS:

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

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

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

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

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

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

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

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

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

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

CONTRACT NO. FCD 87-26  
PAYMENT BOND

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

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

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

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

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

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

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

**KNOW ALL MEN BY THESE PRESENTS:**

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

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

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

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

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extension thereof, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived; then the above obligation shall be void, otherwise to remain in full force and effect;

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

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

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

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

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

CONTRACT NO. FCD 87-26  
PERFORMANCE BOND

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

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

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

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

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

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

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CERTIFICATE OF INSURANCE

CONTRACT FCD 87-26

PROJECT TITLE

19th Avenue Sanitary Sewer Siphon a  
the Arizona Canal Diversion Channel

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

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.

COMPANY LETTER	TYPE OF INSURANCE	POLICY NUMBER	EXPIRATION DATE	LIMITS OF LIABILITY IN \$1,000	
				MINIMUM	each occurrence
	<input checked="" type="checkbox"/> COMPREHENSIVE GENERAL 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			BODILY INJURY per person \$1,000 each occurrence \$5,000 PROPERTY DAMAGE \$1,000 OR BODILY INJURY AND PROPERTY DAMAGE Combined \$5,000	
	<input checked="" type="checkbox"/> COMPREHENSIVE AUTO LIABILITY & NON-OWNED			SAME AS ABOVE	
	<input type="checkbox"/> EXCESS LIABILITY			NECESSARY IF UNDERLYING NOT ABOVE MINIMUM	
	<input checked="" type="checkbox"/> WORKERS' COMPENSATION and EMPLOYERS' LIABILITY			STATUTORY	\$100
	<input type="checkbox"/> OTHER				

The Flood Control District of Maricopa County is added as an additional insured as respects work done for the District by the named insured as required by statute, contract, purchase order or otherwise requested. It is agreed that any insurance available to the named insured shall be primary of other sources that may be available. It is further agreed that no policy shall expire, be cancelled or materially changed to effect the coverage available to the District without fifteen days written notice to the District. THIS CERTIFICATE IS NOT VALID UNLESS COUNTERSIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY.

NAME AND ADDRESS OF CERTIFICATE HOLDER  
 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
 3335 West Durango Street  
 Phoenix, Arizona 85009

DATE ISSUED \_\_\_\_\_

AUTHORIZED REPRESENTATIVE \_\_\_\_\_

It is further agreed that:

The Contractor hereby agrees to indemnify and save harmless the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, or any of its departments, agencies, officers or employees, from and against all loss, expense, damage or claim of any nature whatsoever which is caused by any activity, condition or event arising out of the performance or nonperformance of any of the provisions of this Agreement. The Flood Control District of Maricopa County shall in all instances be indemnified against all liability, losses and damages of any nature for or on account of any injuries to or death of persons or damages to or destruction of property arising out of or in any way connected with the performance or nonperformance of this Agreement, except such injury or damage as shall have been occasioned by the negligence of the Flood Control District of Maricopa County.

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

Date \_\_\_\_\_ Contractor \_\_\_\_\_

CERTIFICATE OF INSURANCE  
CONTRACT FCD 87-26

**FLOOD CONTROL DISTRICT of Maricopa County**  
(TABULATION OF BIDS)

PROJECT

19th AVENUE SANITARY SEWER SIPHON at the ACDC

CONTRACT FCD

FCD 87-26

DATE OPENED

SEPT 16, 1987

SHEET

1 of 4

ITEM NO.	DESCRIPTION	LUNDELL CONSTR.				SWENGEL-ROBBINS		T+T CONSTR.							
		QUANTITY	UNIT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT
	48" WATERLINE RELOCATION														
310-1	AGGREGATE BASE COURSE	216	TN	11.30	2,440.80	19.00	4,104.00	20.00	4,320.00						
315-1	BITUMINOUS PRIME COAT	1	TN	700.00	700.00	803.00	803.00	1000.00	1,000.00						
321-1	ASPHALT CONCRETE C 3/4	87	TN	37.30	3,245.10	44.00	3,828.00	100.00	8,700.00						
336-1	FURNISH + INSTALL AC PAVEMENT REPL. MAG S.D. 200, TYPE "B"	58.5	SY	96.00	5,616.00	40.00	2,340.00	30.00	1,755.00						
342-1	INSTALL 6" VERT C+G MAG S.D. 220, TYPE "A"	30	LF	15.00	450.00	10.00	300.00	20.00	600.00						
342-2	INSTALL 9" D/W SLAB C.O.P. S.D. P-1255	125	SF	5.25	656.25	4.00	500.00	4.00	500.00						
342-3	INSTALL 5' SIDEWALK C.O.P. S.D. P-1230	25	SF	9.60	240.00	4.00	100.00	2.00	50.00						
350-1	REMOVE EXIST. 66" CASING PIPE + GROUT	6	LF	255.00	1,530.00	113.00	678.00	200.00	1,200.00						
350-2	REMOVE EXIST. 12 cu. yd. CONC. THRUST BLOCK	1	EA.	1700.00	1,700.00	3164.00	3,164.00	500.00	500.00						
350-3	REMOVE EXIST. 48" TRANSMISSION PIPE	32	LF	20.00	640.00	9.50	3,040.00	200.00	6,400.00						
350-4	FURNISH + INSTALL 48" PIPE AUG	2	EA.	150.00	300.00	41.00	128.20	100.00	200.00						
350-5	REMOVE EXIST. 18" RCP + BLOCK HEADWALL	45	LF	22.00	990.00	6.00	270.00	5.00	2,250.00						
350-6	FURNISH + INSTALL 18" PIPE AUG	1	EA.	600.00	600.00	120.00	120.00	500.00	500.00						
350-7	SAWCUT + REMOVE 6" VERT CURB + GUTTER	30	LF	5.00	150.00	4.00	120.00	5.00	150.00						
350-8	SAWCUT + REMOVE 9" DRIVEWAY SLAB	125	SF	2.20	275.00	1.00	125.00	2.00	250.00						
350-9	SAWCUT + REMOVE 5' SIDEWALK	25	SF	8.70	217.50	2.00	50.00	2.00	50.00						
350-10	FURNISH + INSTALL HYDRANT GUARDS C.O.P. S.D. P-1359	1	EA.	250.00	250.00	596.00	596.00	500.00	500.00						

FLOOD CONTROL DISTRICT of Maricopa County (TABULATION OF BIDS)				PROJECT 19th AVENUE SANITARY SEWER SIPHON AT THE ACDC				CONTRACT FCD FCD 87-26		DATE OPENED SEPT 16, 1987		SHEET 2 of 4	
ITEM NO.	DESCRIPTION	LUNDALL CONSTR.		SWENGEL-ROBBINS		T+T CONSTR.							
		QUANTITY	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE
350.11	MISCELLANEOUS REMOVAL + OTHER WORK	1	LS	20100.00	20100.00	14015.00	14015.00	20000.00	20000.00				
401.1	TRAFFIC CONTROL	1	LS	15100.00	15100.00	6310.00	6310.00	12000.00	12000.00				
401.2	UNIFORMED OFF-DUTY LAW ENFORCEMENT OFFICER	40	HR	20.00	800.00	25.00	1000.00	3.00	1200.00				
401.3	TRAFFIC SIGNAL RELOCATION	1	LS	10600.00	10600.00	12000.00	12000.00	12000.00	12000.00				
610.1	FURNISH + INSTALL 48" TRANSMISSION PIPE	199	LF	6.3640	126643.60	730.65	145399.35	2500.00	497500.00				
610.2	FURNISH + INSTALL 6" FLANGED OUTLET	2	EA	2170.00	4340.00	1755.00	3510.00	2000.00	4000.00				
610.3	FURNISH + INSTALL 6" MIDIP CLASS 52	112	LF	89.10	9979.20	86.00	9632.00	40.00	4480.00				
610.4	FURNISH + INSTALL 6" VALVE	3	EA	275.00	825.00	325.00	975.00	300.00	900.00				
610.5	FURNISH + INSTALL VALVE BOX + COVER MAG S.D. 391, TYPE A	4	EA	425.00	1700.00	480.00	1920.00	37.50	150.00				
610.6	FURNISH + INSTALL 6" FIRE HYDRANT C.O.P. S.D. P-1361	2	EA	670.00	1340.00	1327.00	2654.00	1500.00	3000.00				
610.7	FURNISH + INSTALL EXCESS DIP FITTINGS NOT SHOWN ON PLANS	200	LBS	1.00	200.00	.50	100.00	1.00	200.00				
610.8	FURNISH + INSTALL 6" TAPPING SLEEVE	1	EA	685.00	685.00	1387.00	1387.00	1000.00	1000.00				
772.1	ROLLING GATE + MISC. CHAIN LINK FENCE RELOCATION (see note 3 on Sheet 7 of 7)	1	ES	2000.00	2000.00	1000.00	1000.00	2000.00	2000.00				
SUBTOTAL - 48" WATERLINE ITEMS					213773.45		227434.50		583155.00				

**FLOOD CONTROL DISTRICT of Maricopa County**  
(TABULATION OF BIDS)

PROJECT

19th AVENUE SANITARY SEWER SIPHON at the ACDC

CONTRACT FCD

FCD 87-26

DATE OPENED

SEPT 14, 1987

SHEET

3 of 4

ITEM NO.	DESCRIPTION	LUNDELL CONSTR.				SWENGEL-ROBBINS		T+T CONSTR.							
		QUANTITY	UNIT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT
	SANITARY SEWER SIPHON														
336-2	SURFACE REPLACEMENT TYPE "B" DETAIL 200	258	SY	71.50	18,447.00	20.00	5,160.00	30.00	7,740.00						
336-3	SURFACE REPLACEMENT SRP. CHANNEL LINING	1125	SY	23.10	25,987.50	16.00	18,000.00	18.00	20,250.00						
340-4	COMBINED CONC. CURB + GUTTER STD. DET. 229 TYPE "A", H=6"	55	LF	15.00	825.00	11.00	605.00	20.00	1,100.00						
340-5	CONCRETE SIDEWALK STD. DETAIL 230	223	SF	5.00	1,115.00	4.00	892.00	2.00	446.00						
340-6	CONCRETE DRIVEWAY STD. DETAIL P-1255	50	SF	5.25	2,625.00	4.00	2,000.00	4.00	2,000.00						
350-12	MISC. REMOVAL + OTHER WORK	1	LS	22,750.00	22,750.00	13,190.00	13,190.00	5,000.00	5,000.00						
350-13	SAWCUT + REMOVE 6" VERT. CURB + GUTTER	55	LF	5.00	275.00	11.00	605.00	5.00	275.00						
350-14	SAWCUT + REMOVE DRIVEWAY SLAB	50	SF	2.20	110.00	4.00	200.00	2.00	100.00						
350-15	SAWCUT + REMOVE 5' SIDEWALK	223	SF	2.20	490.60	4.00	892.00	2.00	446.00						
40-4	TRAFFIC CONTROL	1	LS	6,200.00	6,200.00	5,163.00	5,163.00	1,000.00	1,000.00						
401-5	UNIFORMED OFF-DUTY LAW ENFORCEMENT OFFICER	80	HRS	20.00	1,600.00	25.00	2,000.00	30.00	2,400.00						
602-1	36" ENCASEMENT FOR SEWER PIPE BY JACKING OR TUNNELING	150	LF	248.00	37,200.00	199.00	29,850.00	200.00	30,000.00						
602-2	48" ENCASEMENT FOR SEWER PIPE BY JACKING OR TUNNELING	75	LF	305.00	22,875.00	275.00	20,625.00	250.00	18,750.00						
615-1	15" VCP SANITARY SEWER PIPE	910	LF	59.80	54,418.00	83.70	76,167.00	100.00	91,000.00						

**FLOOD CONTROL DISTRICT of Maricopa County**  
(TABULATION OF BIDS)

PROJECT

19th AVENUE SANITARY SEWER SIPHON at the ACDC

CONTRACT FCD

FCD 87-26

DATE OPENED

SEPT 16 1987

SHEET

4 of 4

ITEM NO.	DESCRIPTION	LUNDELL CONSTR				SWENGEL-ROBBINS		T+T CONSTR.							
		QUANTITY	UNIT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT	UNIT PRICE	\$ AMOUNT
615-2	30' RGRCP SEWER PIPE WITH PVC T-LOCK LINER	26	LF	9170	238450	3000	78000	12500	325000						
615-3	10' MJDIP SEWER PIPE	708	LF	8150	5770200	52660	3728328	20000	14160000						
615-4	20' MJDIP SEWER PIPE	354	LF	8375	2964750	10455	3701070	20000	7080000						
615-5	12" AIR LINE (PVC)	275	LF	2845	782375	3930	1080750	4500	1237500						
615-6	CUT + PLUG EXIST. 12 + 15" SEWER LINE STD DET 427	3	EA	14000	42000	123900	371700	50000	150000						
625-1	SANITARY SEWER MANHOLE STD. DET. 420	7	EA	22600	158200	188200	1317400	27000	189000						
625-2	SANITARY SEWER SIPHON INLET STRUCTURE	1	EA	36000	36000	5227200	5227200	40000	40000						
625-3	SANITARY SEWER SIPHON OUTLET STRUCTURE	1	EA	38000	38000	4765400	4765400	40000	40000						
625-4	SANITARY SEWER SPECIAL MANHOLE	1	EA	11600	11600	2625200	2625200	13500	13500						
625-5	FILL + ABANDONED MANHOLE + PLUG PIPE	1	EA	550	550	84700	84700	10000	10000						
SUB-TOTAL - SANITARY SEWER SIPHON ITEMS					39250285		40334648		53863200						
TOTAL					60627630		63077083		112178700						

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
48"	WATER	LINE	RELOCATION:		\$	\$
310-1	125	TON	Aggregate Base Course		10.00	1,250.00
315-1	1	TON	Bituminous Prime Coat		<del>350.00</del> 600	<del>350.00</del> 600
330-1	1	TON	Asphalt Cement for Chip Seal		300.00	300.00
330-2	9	TON	Stone Chips for Chip Seal		40.00	360.00
336-1	58.5	SY	Furnish & Install AC Pavm't Repl. MAG S.D. 200, Type 'B'		56.00	3,276.00
340-1	30	LF	Install 6" Vert. C&G MAG S.D. 220, Type 'A'		12.00	360.00
340-2	125	SF	Install 9" D/W Slab C.O.P. S.D. P-1255		11.00	1,375.00

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
340-3	25	SF	Install 5' Sidewalk C.O.P. S.D. P-1230		\$ 10 3.00	\$ 250 75.00
350-1	6	LF	Remove Exist. 66" Casing Pipe & Grout		200.00	1,200.00
350-2	1	EA	Remove Exist. 12 cu. ft. Conc. Thrust Block		1,000.00	1,000.00
350-3	32	LF	Remove Exist. 48" Pipe <del>Plug</del> TRANSMISSION PIPE		125.00	4,000.00
350-4	2	EA	Furnish & Install 48" Pipe Plug		450.00	900.00
350-5	45	LF	Remove Exist. 18" RCP & Block Headwall		15.00	675.00
350-6	1	EA	Furnish & Install 18" Pipe Plug		175.00	175.00
350-7	30	LF	Sawcut & Remove 6" Vert. Curb & Gutter		5.00	150.00

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
350-8	125	SF	Sawcut & Remove 9" Driveway Slab		\$ 2.00	\$ 250.00
350-9	25	SF	Sawcut & Remove 5' Sidewalk		2.00	50.00
350-10	1	EA	Furnish & Install Hydrant Guards C.O.P. S.D. P-1359		300.00	300.00
350-11	1	LS	Miscellaneous Removal & Other Work		<del>2,500.00</del>	<del>2,500.00</del> 25000.00
401-1	1	LS	Traffic Control		<del>7,500.00</del>	<del>7,500.00</del> 10,000.00
401-2	40	HR	Uniformed Off-Duty Law Enforcement Officer		19.00	760.00
401-3	1	LS	Traffic Signal Relocation		12,500.00	12,500.00
610-1	199	LF	Furnish & Install 48" Transmission Pipe		600 <del>400.00</del>	119400.00 <del>79,600.00</del>

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
610-2	2	EA	Furnish & Install 6" Flanged Outlet		\$ 1500.00 <del>500.00</del>	3000.00 <del>1,000.00</del>
610-3	77	LF	Furnish & Install 6" MJDIP, Class 52		30.00	2,310.00
610-4	3	EA	Furnish & Install 6" Valve		350.00	1,050.00
610-5	3	EA	Furnish & Install Valve Box & Cover MAG S.D. 391, Type A		175.00	525.00
610-6	1	EA	Furnish & Install 6" Fire Hydrant C.O.P. S.D. P-1361		1,500.00	1,500.00
610-7	200	LBS	Furnish & Install Excess DIP Fittings Not Shown On Plans		10.00	2,000.00
610-8 721-1					1000 3000	1000 3000
SUB-TOTAL	48"		WATERLINE ITEMS			\$127,291.00 ✓

+ 71,225  


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 198,516

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
SA	NITARY	SEWER	SIPHON		\$	\$
336-2	258	SY	Surface Replacement Type 'B', Detail 200		56.00	14,448
336-3	1125	SY	Surface Replacement S.R.P. Channel Lining		25.00	28125.00
340-4	55	LF	Combined Conc. Curb & Gutter Std. Det. 220, Type A, H=6"		12.00	660.00
340-5	223	SF	Concrete Sidewalk Std. Detail 230		3.00	669.00
340-6	50	SF	Concrete Driveway Std. Detail P-1255		11.00	550.00
350-12	1	LS	Misc. Removal & Other Work		<del>5000.00</del>	<del>5000.00</del> 15000.00
350-13	55	LF	Sawcut & Remove 6" Vert. Curb & Gutter		5.00	275.00

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
& 48" Waterline Relocation  
19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
350-14	50	SF	Sawcut & Remove Driveway Slab		\$ 2.00	\$ 100.00
350-15	223	SF	Sawcut & Remove 5' Sidewalk		2.00	446.00
401-4	1	LS	Traffic Control		7500.00	7,500.00
401-5	80	HRS	Uniformed Off-Duty Law Enforcement Officer		19.00	1,520.00
602-1	150	LF	36" Encasement for Sewer Pipe By Jacking or Tunneling		300.00 <del>200.00</del>	45,000.00 <del>30,000.00</del>
602-2	75	LF	48" Encasement for Sewer Pipe by Jacking or Tunneling		300.00	22,500.00
615-1	910	LF	15" VCP Sanitary Sewer Pipe		60.00	54,600.00

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
615-2	26	LF	30" RGRCP Sewer Pipe with PVC T-Lock Liner *		\$ 100.00	\$ 2600.00
615-3	708	LF	10" MJDIP Sewer Pipe*		65 <del>50.00</del>	46,020.00 <del>35400.00</del>
615-4	354	LF	20" MJDIP Sewer Pipe*		75 <del>60.00</del>	26,550.00 <del>21240.00</del>
615-5	275	LF	12" Air Line (PVC)		50.00	13750.00
615-6	3	EA	Cut & Plug Exist. 12 & 15" Sewer Line Std. Det. 427		200.00	600.00
625-1	7	EA	Sanitary Sewer Manhole Std. Det. 420		2500.00	17,500.00
625-2	1	EA	Sanitary Sewer Siphon Inlet Structure		40,000.00	40,000.00
625-3	1	EA	Sanitary Sewer Siphon Outlet Structure		40,000.00	40,000.00

\* Bid for this Quantity shall be for Installation of pipe only. MJDIP & RGRCP Pipe has been pre-purchased for this job and available at the Contractor yard at 25th Avenue & ACDC.

BIDDING SCHEDULE

PROJECT : Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road

CONTRACT NO. : FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
625-4	1	EA	Sanitary Sewer Special Manhole		\$ 25,000.00	\$ 25,000.00
625-5	1	FA	Fill & abandoned manhole and plug pipe		500.00	500.00
SUB-TOTAL		SANITARY SEWER SIPHON ITEMS				\$ 362,983.00 ✓
SUB-TOTAL		48" WATER LINE RELOCATION				40,930.00 ✓
TOTAL AMOUNT OF		BID FOR WATER & SIPHON ITEMS				403,913 ✓
						\$ 490,274.00 ✓
				sewer =	403,913	
				water =	198,516	
					602,429	

The bidder hereby acknowledges receipt of and agrees his proposal is based on the following Addenda.

---

Revised 9-10-87 - ~~OK~~  
 602,429  
 use 600,000

BID SUMMARY & CHECKLIST

19th Ave. Sanitary Sewer

2:00 p.m.

PROJECT: Siphon at the A.C.D.C.

CONTRACT FCD: 87-26 DATE: Sept 16, 1987

CO Personnel

Earl Kirby  
Joy Ketchum  
Charlie Khan

Item	Name Lundell Contr. Co.	T & T Contr.	Swengel-Robbins			
Schedule Complete	✓	✓	✓			
Addenda Noted	✓	✓	✓			
No Exceptions	✓	✓	✓			
Changes Initialed	✓	✓	✓			
Proposal Signed	✓	✓	✓			
License Number						
Bid Security	✓	✓	✓			
No Collusion Affidavit	✓	✓	✓			
1						
2						
3						
TOTAL CONTRACT	# 606,276. <sup>30</sup>	1,121,787. <sup>00</sup>	630,770. <sup>83</sup>			

1

3

2

**MANN & JOHNSON ENGINEERS, INC.**

8805 North 23rd Avenue Suite 9  
PHOENIX, ARIZONA 85021

**LETTER OF TRANSMITTAL**

(602) 264-1228

FCD

TO

DATE	9/10/87	JOB NO.	88016-10
ATTENTION	Ed		
RE:	Data for Addendum to Specs.		

WE ARE SENDING YOU  Attached  Under separate cover via WSK the following items:

- Shop drawings     Prints     Plans     Samples     Specifications  
 Copy of letter     Change order     \_\_\_\_\_

COPIES	DATE	NO.	DESCRIPTION
1		1	Staff Gauge Marking schedule Table on sheet 9 of 10 of Sewer Plans
1		1	Revision to sheet 4 of 7 of Water Plans

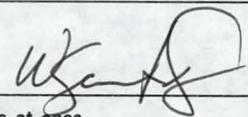
THESE ARE TRANSMITTED as checked below:

- For approval     Approved as submitted     Resubmit \_\_\_\_\_ copies for approval  
 For your use     Approved as noted     Submit \_\_\_\_\_ copies for distribution  
 As requested     Returned for corrections     Return \_\_\_\_\_ corrected prints  
 For review and comment     \_\_\_\_\_  
 FOR BIDS DUE \_\_\_\_\_ 19 \_\_\_\_\_  PRINTS RETURNED AFTER LOAN TO US

REMARKS

Revise the "STAFF GAUGE MARKING SCHEDULE" TO READ: (see attached sheet.)

COPY TO \_\_\_\_\_

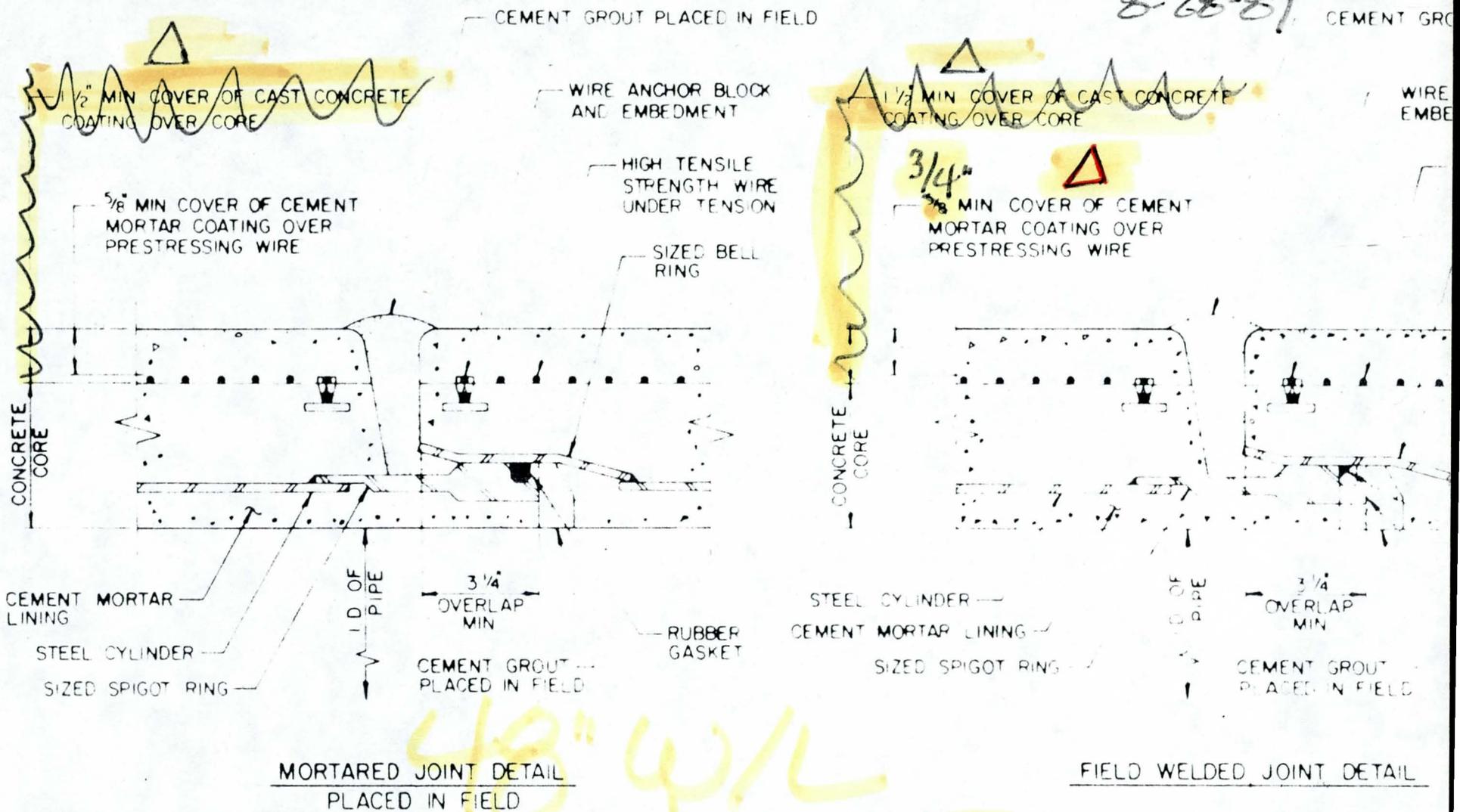
SIGNED: 

DETAIL No.

L-3

CROSS SECTION THRU FIRE HYDRANT BLOW OFF

8-28-87



MORTARED JOINT DETAIL  
PLACED IN FIELD

FIELD WELDED JOINT DETAIL

48" 4/L  
SHT 4 OF 7

DETAIL No.

L-5

SPECIAL JOINT DETAIL  
PRESTRESSED CONCRETE CYLINDER PIPE

### STAFF GAUGE MARKING SCHEDULE

<i>Siphon Size</i>	<i>Outlet Structure</i>			<i>Inlet Structure</i>		
	<i>Letters</i>	<i>Bottom</i>	<i>Top</i>	<i>Letters</i>	<i>Bottom</i>	<i>Top</i>
<i>10" West</i>	<i>Left</i>	<i>0</i>	<i>2.0</i>	<i>Right</i>	<i>0</i>	<i>2.0</i>
<i>10" Center</i>	<i>"</i>	<i>0</i>	<i>2.0</i>	<i>"</i>	<i>0</i>	<i>2.0</i>
<i>20" East</i>	<i>"</i>	<i>0</i>	<i>3.0</i>	<i>"</i>	<i>0</i>	<i>3.0</i>

PROJECT FCD 87-26

CALCULATIONS FOR \_\_\_\_\_

MADE BY JEMILINE DATE 9-8-87 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

48" WATERLINE RELOCATION  
19TH AVE & HATCHER RD.

ADDENDUM -

SPECIAL PROVISIONS

1. BIDDING SCHEDULE, PAGE 3a OF 5, ITEM 350-3

"REMOVE EXIST. 48" PIPE PLUG" SHOULD READ  
REMOVE EXIST. 48" TRANSMISSION PIPE

2. SECTION 610.C DESIGN CRITERIA FOR CONCRETE CYLINDER  
WATER PIPE, PAGE 16, 17 OF 35

ADD 610.C 2.(d)

(d) STEEL FITTINGS SHALL BE DESIGNED FOR PRESSURE  
ONLY. FITTINGS SHALL BE CONCRETE ENCASED  
IN FIELD PER DETAIL BY THE CONTRACTOR.

CHANGE 610.C 3.(g), NEXT TO LAST LINE

CHANGE M-3318 TO READ M-3818

3. SECTION 610.D MATERIAL AND EQUIPMENT DRAWINGS,  
PAGE 18 OF 35.

CHANGE 610.D 4. TITLE TO READ:

DESIGN CALCULATIONS FOR REINFORCED CONCRETE  
WATER PIPE, STEEL CYLINDER TYPE, PRESTRESSED  
PER AWWA C-301, LATEST REVISION.

PROJECT FCD 87-26

CALCULATIONS FOR \_\_\_\_\_

MADE BY JEMILUS DATE 9-8-87 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

**48" WATERLINE RELOCATION  
19TH AVE & HATCHER RD.**

**ADDENDUM -**

**SPECIAL PROVISIONS**

Item # 350-2, change 12 ft<sup>3</sup> to be 12 gpd<sup>3</sup>

1. BIDDING SCHEDULE, PAGE 3a OF 5, ITEM 350-3

"REMOVE EXIST. 48" PIPE PLUG" SHOULD READ  
REMOVE EXIST. 48" TRANSMISSION PIPE

C.S.P.  
P. 16+17 of 35

2. SECTION 610.C DESIGN CRITERIA FOR CONCRETE CYLINDER  
WATER PIPE, PAGE 16, 17 OF 35

ADD 610.C 2.(d)

C.S.P.  
P. 16 of 35

(d) STEEL FITTINGS SHALL BE DESIGNED FOR PRESSURE  
ONLY. FITTINGS SHALL BE CONCRETE ENCASED  
IN FIELD PER DETAIL BY THE CONTRACTOR.

C.S.P.  
P. 17 of 35

CHANGE 610.C 3.(g), NEXT TO LAST LINE  
CHANGE M-3318 TO READ M-3818

3. SECTION 610.D MATERIAL AND EQUIPMENT DRAWINGS,  
PAGE 18 OF 35.

C.S.P.  
P. 18 of 35

CHANGE 610.D 4. TITLE TO READ:

DESIGN CALCULATIONS FOR REINFORCED CONCRETE  
WATER PIPE, STEEL CYLINDER TYPES, PRESTRESSED  
PER AWWA C-301, LATEST REVISION.

14. add fire hydrant @ 21st Drive

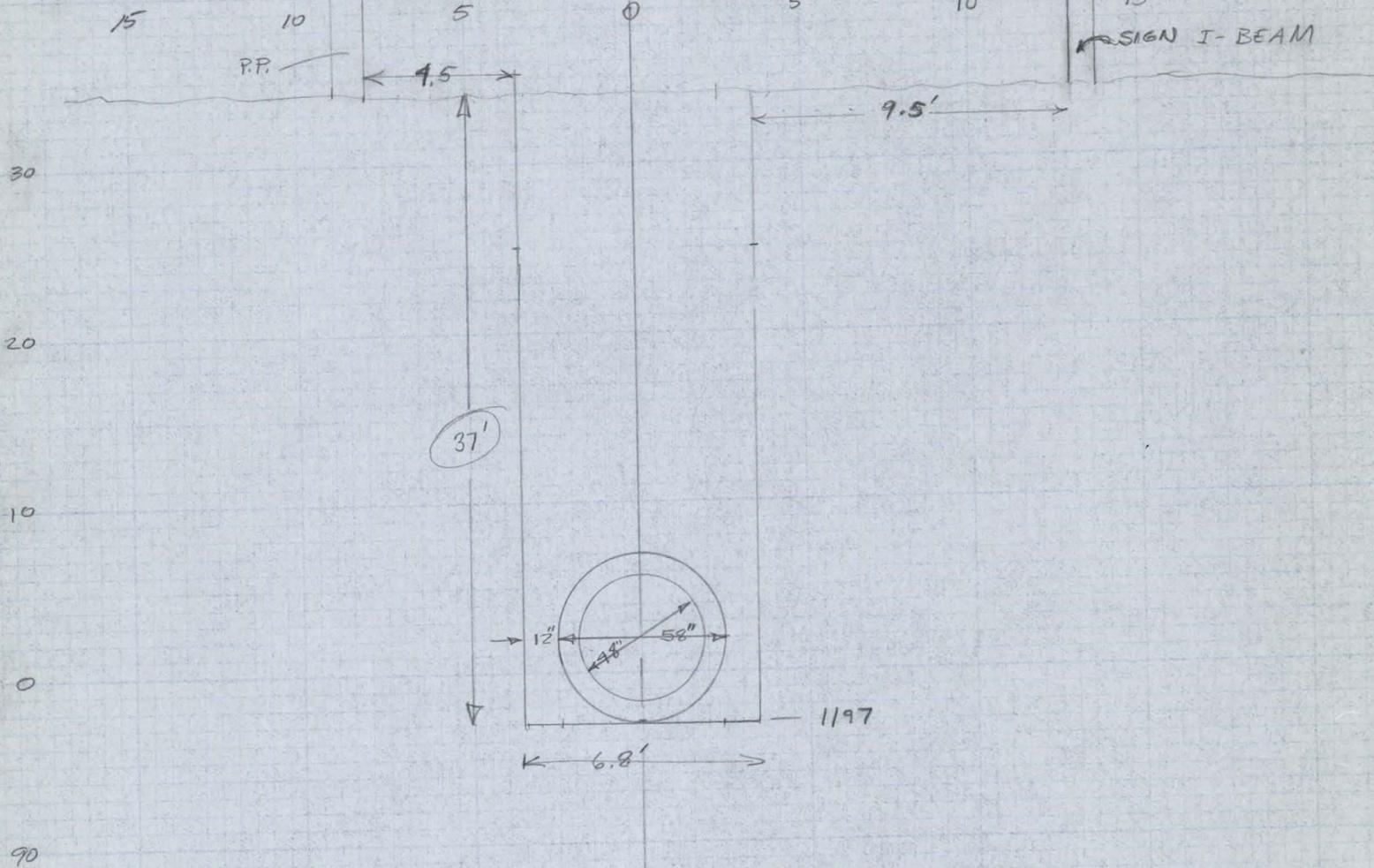
15. Change detour road materials to 2" A.C. over 6" A.B.C. bid schedule 3 of 5  
C.S.P. 9/85

16. add Staff gauge details at (outlet?) structure

17. add to C.S.P. contractor to contact Lois Winkler of APS  
to arrange for bracing or relocation of P.P.'s.

FOR 48" PRESSURE PIPE, O.D. = 58"

FROM MAG 601.2.2; Min trench width = 12" beyond O.D. at each side of springline - Min trench width = 6.8', Max trench width = 7.25'



IS IT POSSIBLE TO VERTICALLY SHORE 37' ? (AT 25' vert. shore, but) ONLY 26'..

DEPTH OF P.P. AND SIGN EMBEDMENT.?

NOTIFY OWNER AND GET THEIR DETERMINATION.

SIGN NATIONAL 3M

P.P. - APS ?

IF THIS CAN BE VERT. SHORED, WERE STILL ONLY 4.5' FROM EDGE OF P.P. WILL HAVE TO BE BRACED + THERES NO ROOM FOR BRACING. HAVE APS CHECK

ADDENDUM NO. 1  
Date: September 9, 1987

FCD Contract No. 87-26

Page 1 of 2

To Contract Documents

ENTITLED: Sanitary Sewer Siphon and 48" Waterline Relocation; 19th Avenue and Hatcher Road

OWNER: Flood Control District of Maricopa County

The above documents are herein modified. The provisions of said documents applicable to these modifications remain unchanged unless specifically indicated otherwise herein. This Addendum forms a part of the contract Documents and modifies them as follows:

1. Bid Form Page 3 of 5:

Item 310-1, Aggregate Base Course, change "125 tons" to "216 tons".

Delete Item 330-1, Asphalt Cement for Chip Seal.

Delete Item 330-2, Stone Chips for Chip Seal, and replace it with Item 321-1, Asphalt Concrete, C 3/4, 87 tons.

2. Bid Form Page 3a of 5:

Item 350-2, change "Remove exist. 12 cu. ft. Conc. Thrust Block" to "Remove exist. 12 cu. yd. Thrust Block".

Item 350-3, change "Remove exist. 48" Pipe Plug" to "Remove exist. 48" Transmission Pipe".

3. Delete Bid Form Page 3c of 5 and insert the new attached Page 3c of 5.

4. Construction Special Provisions Page 5 of 35, insert the following paragraph at the end of Section 105.6, Cooperation with Utilities:

"Should the Contractor wish to have power poles temporarily braced or relocated to facilitate his work, arrangements may be made thru Lois Winkler of APS. Any financial agreement for this work shall be solely between the Contractor and APS."

5. Construction Special Provisions, Page 9 of 35, delete Section 330 - Chip Seal Coat and replace it with the following Section:

"SECTION 321 - ASPHALT CONCRETE PAVEMENT: Item 321.1 shall conform in its entirety to Section 321 of the MAG Standard Specifications. The work under this item consists of paving a temporary; access roadway as shown on Sheet 7 of 7 of the project plans. The asphalt concrete pavement shall be a C 3/4" mix, compacted to a thickness of 2 inches."

6. Construction Special Provisions, Page 16 of 35, add paragraph 610.C 2.(d):

"(d) Steel fittings shall be designed for pressure only. Fittings shall be concrete encased in the field per the Contractor's approved detail."

7. Construction Special Provisions, Page 17 of 35, 610.C 3.(g), next to last line, change "M-3318" to M-3818".

8. Construction Special Provisions, Page 18 of 35, change the title of Item (4) from "Design Calculations for Concrete Cylinder Pipe Only" to "Design Calculations for Reinforced Concrete Water Pipe, Steel Cylinder Type, Prestressed per AWWA C301, Latest Revisions".

9. Construction plans Sheet 4 of 7, revise detail L-5 as shown on the attached exhibit "C".

10. Construction plans Sheet 7 of 7, modify Sheet 7 to include the installation of the fire hydrant, 35 L.F. of 6" M.J.D.I.P., tapping sleeve, valve box and cover at 21st Drive, as shown on the attached exhibit "A".

11. Construction plans Sheet 7 of 7, Section A-A, change "Double Penetration Chip Seals" to "C 3/4 AC Pavement, 2 inches thick".

In Section A-A, change "4" A.B.C." to "6" A.B.C.".

12. Construction Plans Sheet 9 of 10, Staff Gauge Detail, revise the Staff Gauge Marking Schedule as shown on the attached exhibit "B".

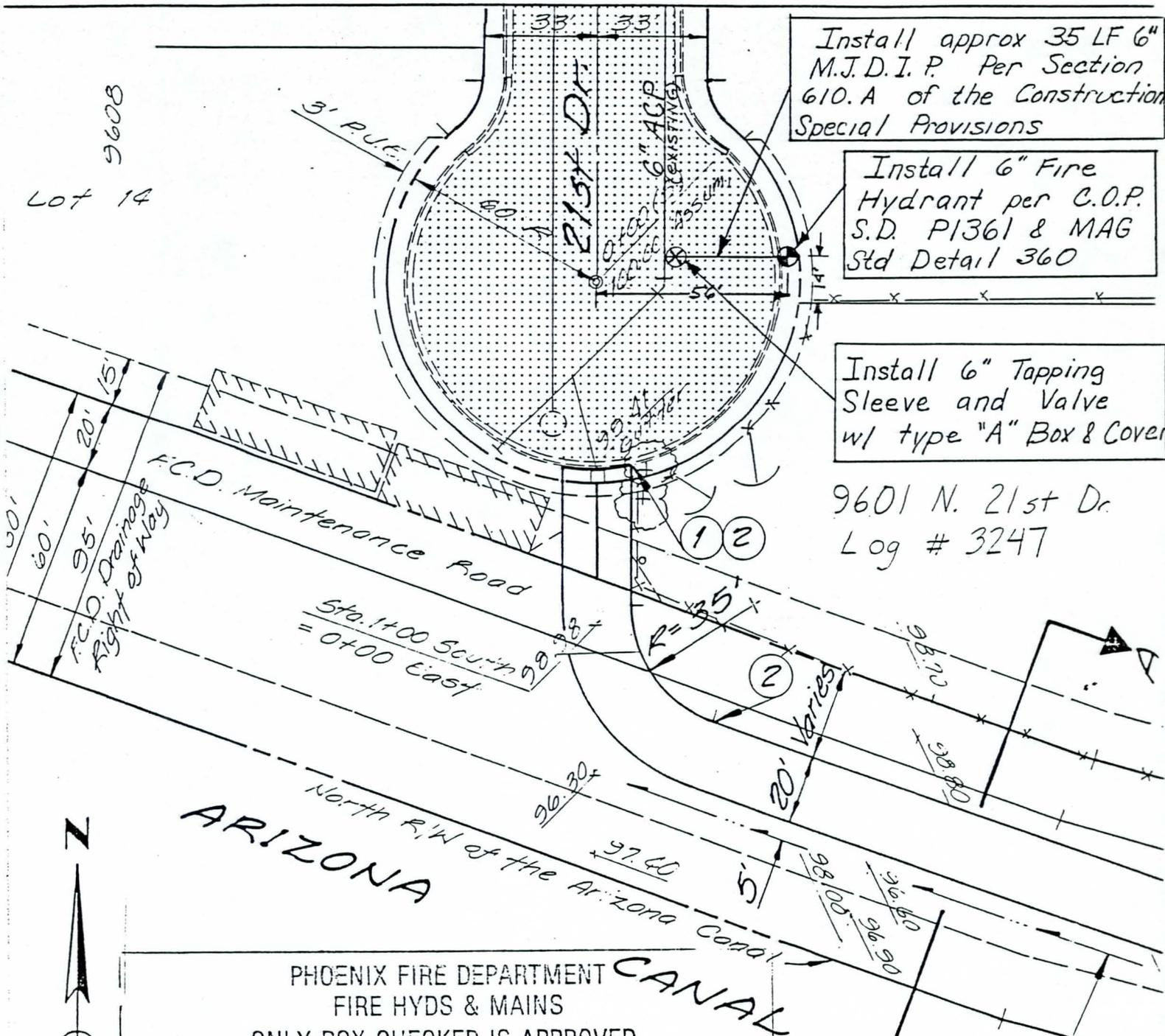
13. Construction Special Provisions, Page 6 of 35, insert the following sentence at the end of Section 107.2 - Permits: "The Contractor shall obtain all necessary permits from the City of Phoenix. No fee will be charged for permits from the City of Phoenix."

**PROJECT :** Sanitary Sewer Relocation & Siphon  
 & 48" Waterline Relocation  
 19th Avenue & Hatcher Road

**CONTRACT NO. :** FCD 87-26

ITEM NO.	APPROX. QUANT.	UNIT	DESCRIPTION	UNIT COST IN WRITING	UNIT COST IN FIGURES	EXTENDED AMOUNT
610-2	2	EA	Furnish & Install 6" Flanged Outlet		\$	\$
610-3	112	LF	Furnish & Install 6" MJDIP, Class 52			
610-4	3	EA	Furnish & Install 6" Valve			
610-5	4	EA	Furnish & Install Valve Box & Cover MAG S.D. 391, Type A			
610-6	2	EA	Furnish & Install 6" Fire Hydrant C.O.P. S.D. P-1361			
610-7	200	LBS	Furnish & Install Excess DIP Fittings Not Shown On Plans			
610-8	1	EA	Furnish & Install 6" Tapping Sleeve			
772-1	1	LS	Rolling Gate & Misc. Chain Link Fence Relocation (see note 3 on Sheet 7 of 7)			
SUB-TOTAL		48"	WATERLINE ITEMS			

9608  
Lot 14



Install approx 35 LF 6" M.J.D.I.P. Per Section 610.A of the Construction Special Provisions

Install 6" Fire Hydrant per C.O.P. S.D. P1361 & MAG Std Detail 360

Install 6" Tapping Sleeve and Valve w/ type "A" Box & Cover

9601 N. 21st Dr.  
Log # 3247

ARIZONA CANAL

PHOENIX FIRE DEPARTMENT  
FIRE HYDS & MAINS  
ONLY BOX CHECKED IS APPROVED.

- PRELIMINARY ONLY — RESUBMIT FINAL PLAN.
- \*PUBLIC HYDRANTS — WATER DEPT. APPROVAL REQ.
- \*PRIVATE HYDRANTS — SEALS OR DETECTOR REQ.

\*IN ALL CASES — SHOP DRAWINGS MUST BE SUBMITTED TO DIVISION OF FIRE PREVENTION, 620 W. WASHINGTON FOR PERMIT & FEE PAYMENT.

DATE 9/9/87 LWB

Grade to We.

SCALE 1" = 40'

EXHIBIT A



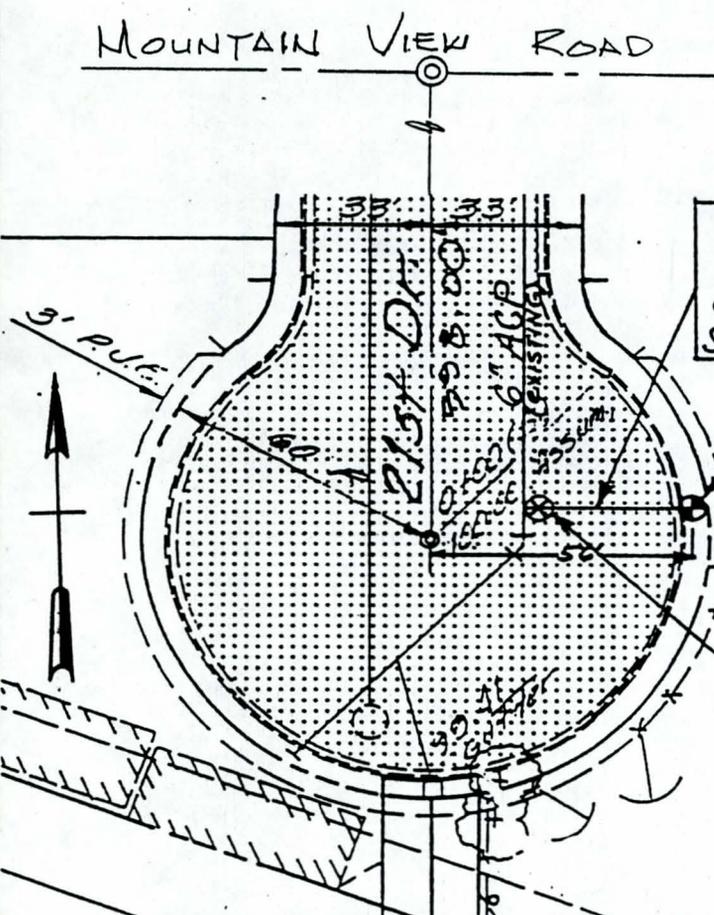
Job # 88049-60-942

**ENTRANCO • MANN • JOHNSON, INC.**  
ENGINEERS ENVIRONMENTAL SCIENTISTS PLANNERS

8805 NORTH 23RD AVENUE, SUITE 9,  
PHOENIX, ARIZONA 85021

(602) 264-1228

MOUNTAIN VIEW ROAD



Install approx 35 LF 6"  
M.J.D.I.P. Per Section  
610.A of the Construction  
Special Provisions

Install 6" Fire  
Hydrant per C.O.P.  
S.D. P1361 & MAG  
Std Detail 360

Install 6" Tapping  
Sleeve and Valve  
w/ type "A" Box & Cover

MATERIALS LIST:

1.	6" M.J.D.I.P.	35	L.F.
2.	6" FIRE HYD.	1	Ea.
3.	6" T.S. + V.	1	Ea.
4.	6" V.B. + C.	1	Ea.
	TYPE "A"	1	Ea.

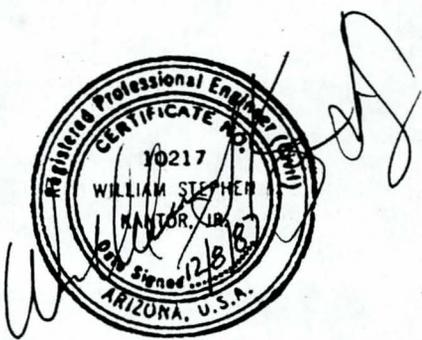
Fire Hydrant for Flood Control District of  
Maricopa County @ 9601 N. 21st Drive Log #3247

**NOTES:**

- All construction to conform to M.A.G. Specifications and Details, City of Phoenix Supplement to M.A.G. Specifications and Details, unless modified on the plans.
- The following M.A.G. Details are specifically not approved:  
391-1 Valve box installation (type "C")
- ALL COMPACTION TYPE I.

**WATER AND WASTEWATER DEPARTMENT SPECIFICATIONS**

- C.I. Fittings (4-1972)
- C.I.P. 3" to 24" (8-1972)
- Fire Hydrants (11-1971)
- Gate Valves (4-1972) Open Left
- Tapping Sleeve and Tapping Valve (2-1972) Open Left



*William C. O'Neil*  
SUPT. WATER & WASTEWATER ENGR. + DEV. *W.C.O.* DATE 12-16-87

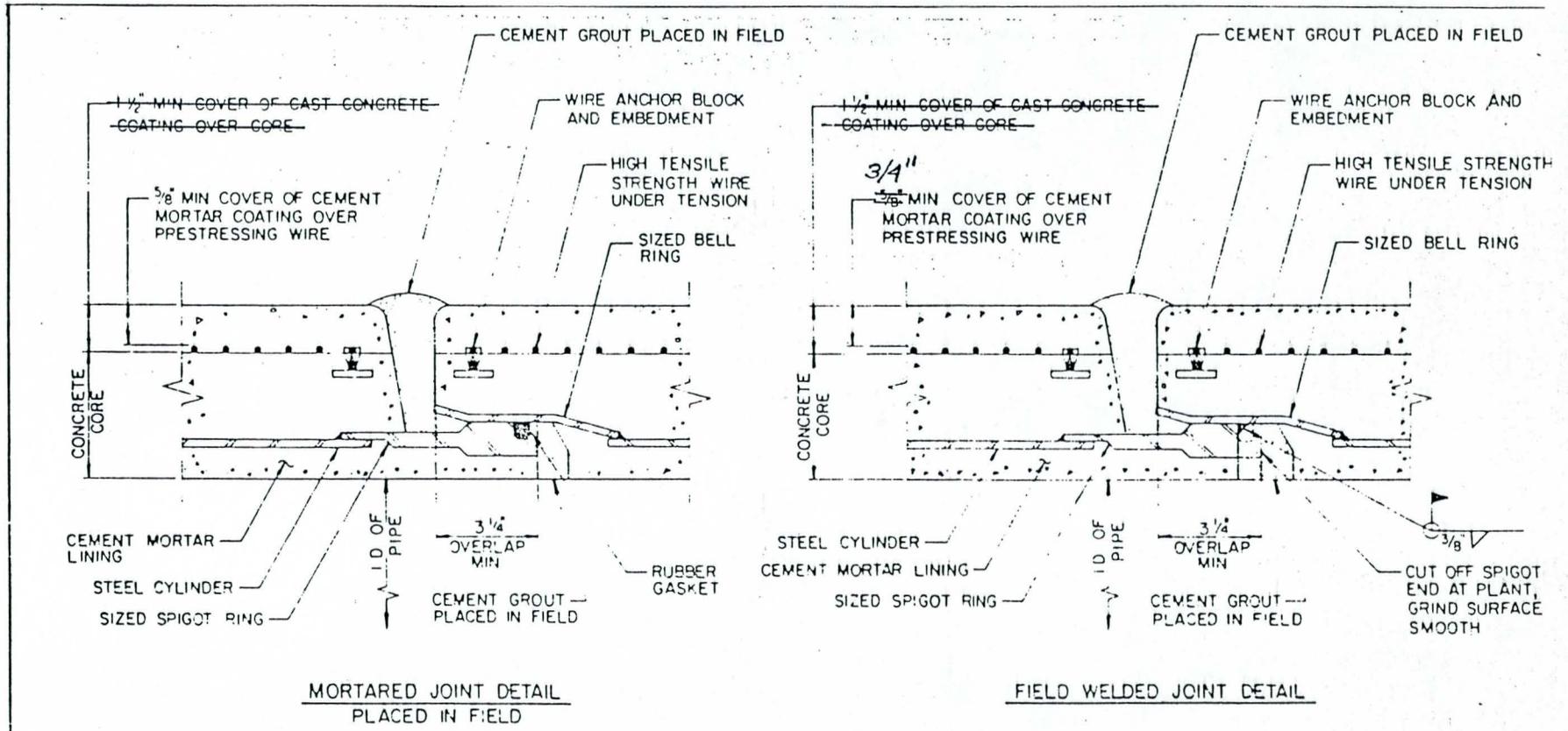
OFFICES IN SEATTLE AND EVERETT, WASHINGTON

ESTIMATED APPROX. COST: \$ 3000.00

STAFF GAUGE MARKING SCHEDULE

<i>Siphon Size</i>	<i>Outlet Structure</i>			<i>Inlet Structure</i>		
	<i>Letters</i>	<i>Bottom</i>	<i>Top</i>	<i>Letters</i>	<i>Bottom</i>	<i>Top</i>
<i>10" West</i>	<i>Left</i>	<i>0</i>	<i>2.0</i>	<i>Right</i>	<i>0</i>	<i>2.0</i>
<i>10" Center</i>	<i>"</i>	<i>0</i>	<i>2.0</i>	<i>"</i>	<i>0</i>	<i>2.0</i>
<i>20" East</i>	<i>"</i>	<i>0</i>	<i>3.0</i>	<i>"</i>	<i>0</i>	<i>3.0</i>

EXHIBIT B



DETAIL No.

L-5

SPECIAL JOINT DETAIL  
PRESTRESSED CONCRETE CYLINDER PIPE

NO SCALE

EXHIBIT C