

CONSTRUCTION SPECIFICATIONS

for

Contract FCD 97-30
Phase 2, Santan Channel Project, Outfall Channel
and P-MIP Pipelines (2)
PCN 4900132

ADOT Project 600-7-502
TRACS H4314 02 C

State of Arizona Department of Transportation
Intermodal Transportation Division

Flood Control District of Maricopa County

Gila River Indian Community

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

REGISTERED PROFESSIONAL ENGINEER (CIVIL)
CERTIFICATE NO.
25118
JEROME J.
ZOVNE
Date Signed 8-17-98
ARIZONA, U.S.A.
Jerome J. Zovne

(Engineer's
Seal)

Prepared By

HDR Engineering, Inc.
2141 E. Highland Avenue, Suite 250
Phoenix, Arizona 85016

Recommended by: *Edward A. Raleigh*
Edward A. Raleigh, P.E.
Manager Engineering Division

Date: 8/18/98

Issued for Public Bidding by: *M.S. Ellegood*
Michael S. Ellegood, P.E.
Chief Engineer and General Manager

Date: 8/21/98

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

CONSTRUCTION SPECIFICATIONS

for

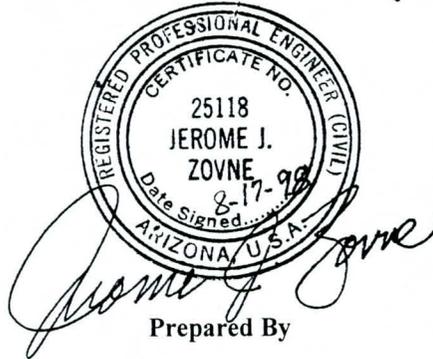
Contract FCD 97-30
Phase 2, Santan Channel Project, Outfall Channel
and P-MIP Pipelines (2)
PCN 4900132

ADOT Project 600-7-502
TRACS H4314 02 C

State of Arizona Department of Transportation
Intermodal Transportation Division

Flood Control District of Maricopa County

Gila River Indian Community



(Engineer's
Seal)

Prepared By

HDR Engineering, Inc.
2141 E. Highland Avenue, Suite 250
Phoenix, Arizona 85016

Recommended by: Edward A. Raleigh Date: 8/18/98
Edward A. Raleigh, P.E.
Manager Engineering Division

Issued for Public Bidding by: M.S. Ellegood Date: 8/21/98
Michael S. Ellegood, P.E.
Chief Engineer and General Manager

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

ATTENTION

ALL PROSPECTIVE BIDDERS

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

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

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

Please submit your bids accordingly.

PROFESSIONAL ENGINEER SEALS

This book of specifications and related contract documents represents the efforts of the following firms:

- (1) HDR Engineering, Inc.
- (2) Wood, Patel & Associates, Inc
- (3) Project Engineering Consultants
- (4) AGRA Earth & Environmental

A representative(s) of each firm has affixed his/her professional seal below, which attests that those portions of these specifications which relate to the plan sheet numbers appearing with his/her seal were prepared under his/her direction.



HDR Engineering, Inc.



Project Engineering Consultants:



Wood, Patel & Associates, Inc:

AGRA Earth & Environmental

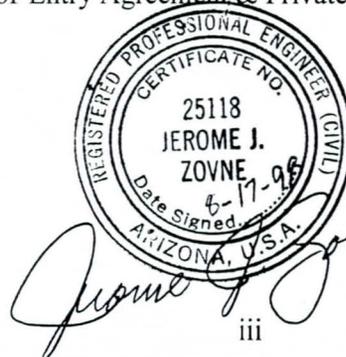


FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

CONTRACT FCD 97-30
PCN 4900132
Santan Outfall Channel, Phase 2

TABLE OF CONTENTS

	Page
1. Invitation for Bids.....	1
2. Bid Form (Proposal).....	4
3. Bidding Schedule.....	6
4. Subcontractor Listing.....	11
5. Surety Bond.....	12
6. No Collusion Affidavit.....	13
7. Verification of License.....	14
10. MBE/WBE Assurances Affidavit.....	15
11. MBE/WBE Participation Affidavit, Sample.....	16
12. MBE/WBE Participation Report (Form).....	17
13. Contract Agreement.....	18
14. Statutory Payment Bond.....	21
15. Statutory Performance Bond.....	22
16. Indemnification and Insurance Requirements.....	23
17. Certificate of Insurance.....	27
18. Indemnification Agreement.....	27
19. Supplementary General Conditions (SGC).....	29 Pages
20. Special Provisions (SP).....	27 pages
21. Drawings: (119 Plan Sheets).....	(Separate)
Supplemental Cross Sections (16 Plan Sheets).....	(Separate)
Appendix "A" - Excavation and Backfill Cross Sections between Sta. 1+080 and 1+200.....	1 page
Appendix "B" - P-MIP Pipeline Specifications.....	15 pages
Appendix "C" - Salt River Project (SRP) Standard Specifications.....	49 pages
Appendix "D" - Gila River Indian Community Regulations.....	40 pages
Appendix "E" - ADOT Stored Specifications, Section 701.....	42 pages
Appendix "F" - UPRR Right-of-Entry Agreement & Private Road Crossing Application.....	12 pages



(Area to left reserved
for Engineer's Seal

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

INVITATION FOR BID

BID OPENING DATE: October 8, 1998

LOCATION: This project is located in the City of Chandler and on the Gila River Indian Community (Community) along the north side of the Pecos Road alignment from west of Kyrene Road to and along the west side of Interstate 10.

PROPOSED WORK: The proposed work includes the construction of a box culvert and open trapezoidal outfall channel and two large diameter irrigation pipelines. This project is in metric units.

BIDS:

SEALED BIDS for the proposed work will be received by the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009 until 2:00 p.m. (Phoenix time) on October 8, 1998 and then publicly opened and read at 2801 West Durango Street, Phoenix, Arizona 85009. All bids are to be marked in accordance with Section 102.9 of the MAG Uniform Standard Specifications and addressed to the Chief Engineer and General Manager, Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009. No bids will be received after the time specified for bid opening. All bids must be submitted on proposal forms furnished by the Flood Control District and included in the Proposal Pamphlet. The Board of Directors reserves the right to reject any and all bids and to waive any informality in any bid received.

ELIGIBILITY OF CONTRACTOR:

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

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

MANDATORY PRE-BID CONFERENCE:

A **Mandatory Pre-Bid conference will be held on September 22, 1998 at 2:00 p.m.** in the Flood Control District, New River Conference Room, 2801 West Durango Street, Phoenix, Arizona. Prime Contractors are required to attend this pre-bid conference in order to submit a bid for the project. Attendees should be prepared at that time to submit in writing and discuss any comments concerning this solicitation.

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

CONTRACT TIME:

All work on this Contract is to be completed within four hundred fifty (450) calendar days after date of Notice to Proceed.

MBE/WBE PARTICIPATION:

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

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

Two Affidavits are included herein. The first form, the "M/WBE Assurances Affidavit", must be completed and submitted with the bid - Failure to do so may be cause for rejection of the bid. If M/WBE goals have been established, the first and second low bidders must complete and return the second form, "Actual M/WBE Participation Affidavit", to the Minority Business Office, with a copy to the Flood Control District, by 4:00 p.m. on the seventh calendar day after bid opening,

For this contract, a goal of five (5) percent is established for Minority/Women-Owned Business Enterprises. Complete instructions and additional forms are available from the Maricopa County Minority Business Office, located at 2901 West Durango Street, Phoenix, Arizona, telephone number 506-8656. Failure to implement "good faith" efforts in accordance with the Maricopa County Minority Business Enterprise Program to the satisfaction of Maricopa County may result in the rejection of the bid.

PROJECT PLANS, SPECIAL PROVISIONS AND CONTRACT DOCUMENTS:

Plans and Construction Specifications may be obtained from the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona 85009 upon payment of \$75.00 by check, payable to the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. This payment will not be refunded. Mail orders for project documents must include an additional \$10.00 for first class U.S. postage and handling. The total \$85.00 will not be refunded. Regardless of circumstances, we cannot guarantee mail delivery.

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

PRINCIPLE ITEMS AND APPROXIMATE QUANTITIES

QUANTITY	UNIT	DESCRIPTION
977	LM	Double Reinforced Concrete Box Culvert
34,729	SM	Concrete Channel Lining
583	LM	VCP & DIP Sanitary Sewer Pipe
2,975	LM	Reinforced Concrete Pipe

BID

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

Gentlemen:

The following Bid is made for FCD 97-30, Santan Outfall Channel Project, in the County of Maricopa, State of Arizona.

The following Bid is made on behalf of

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

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

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

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

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

The Undersigned further proposes to execute the Contract Agreement and furnish satisfactory Bonds and Sureties within ten (10) days of receipt of Notice of Bid acceptance, **TIME BEING OF THE ESSENCE**. The Undersigned further proposes to begin work as specified in the Contract attached hereto,

and to complete the work within **four hundred fifty (450) calendar days** from the effective date specified in the Notice to Proceed, and maintain at all times a Payment and Performance Bond, approved by the Board of Directors, each in an amount equal to one hundred percent of the contract amount. This Bond shall serve not only to guarantee the completion of the work on the part of the Undersigned, but also to guarantee the excellence of both workmanship and material and the payment of all obligations incurred, said Bonds and Sureties to be in full force and effect until the work is finally accepted and the provisions of the Plans, Specifications, and Special Provisions fulfilled.

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

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

Addendum No. _____	Dated _____

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

BID SCHEDULE

**Contract FCD 97-30, Santan Outfall Channel Project
ADOT Project 600-7-502**

ITEM NO.	DESCRIPTION	UNIT	APPROX		UNIT AMOUNT	EXTENDED AMOUNT
				QTY.		
105-1	Partnering	LS		1	10,000.00	10,000.00
105-2	UPRR Contractor Support Allowance	LS		1	25,000.00	25,000.00
105-3	UPRR Remove / Replace Track Allowance	LS		1	25,000.00	25,000.00
105-4	UPRR Flagman Allowance	LS		1	25,000.00	25,000.00
107-1	UPRR ROE Permit Allowance	LS		1	2,500.00	2,500.00
107-2	NPDES/SWPPP Permits	LS		1		
107-3	Public Information and Notification Allowance	LS		1	10,000.00	10,000.00
107-4	Project Signs Allowance	LS		1	6,000.00	6,000.00
202-1	Mobilization	LS		1		
211-1	Channel Fill Construction	CM		11,567		
215-1	Drainage Excavation	CM		42,275		
220-1	Plain Riprap - Gradation No. 1	CM		151		
220-2	Plain Riprap - Gradation No. 2	CM		12		
301-1	GRIC Access Road Compaction	SM		5,568		
310-1	Aggregate Base	CM		1,231		
336-1	Remove and Replace Pavement	LS		1		
350-1	Remove Fencing	LM		1,045		
350-2	Removals and Replacements	LS		1		
350-3	Removal of Pipe	LM		279		
350-4	Miscellaneous Removals	LS		1		

BID SCHEDULE

**Contract FCD 97-30, Santan Outfall Channel Project
ADOT Project 600-7-502**

ITEM NO.	DESCRIPTION	UNIT	APPROX	UNIT AMOUNT	EXTENDED AMOUNT
			QTY.		
401-1	56th Street Traffic Control	LS	1		
401-2	I-10 Traffic Control	LS	1		
401-3	56th Street Detour	LS	1		
401-4	I-10 Detour	LS	1		
401-5	Miscellaneous Traffic Control	LS	1		
405-1	Monuments	EA.	35		
420-1	Chain Link Fences	LM	3,792		
505-1	Class "A" Concrete	CM	209		
505-2	RCBC 1 , Type I	LM	15.9		
505-3	RCBC 2 , Type IV (I-10 CROSSING ONLY)	LM	145.7		
505-4	RCBC 3 , Type I	LM	797.1		
505-5	RCBC 4 (Detail D 14) (AT RAILROAD)	LM	10.6		
505-6	RCBC 5 , Type I	LM	4.8		
505-7	RCBC 7 , Type I	LM	3		
505-8	Head Wall ,610mm CMP (Detail D13)	EA.	1		
505-9	Head Wall w/ Riprap (610mm) (Detail B5)	EA.	3		
505-10	Head Wall w/Trashrack (610mm) (Detail B4)	EA.	3		
505-11	Head Wall w/Trashrack (1370mm) (Detail B4)	EA.	1		
505-12	Gate Structure 101 (Detail B1)	EA.	1		
505-13	Gate Structure 102,103 (Detail B2)	EA.	2		

BID SCHEDULE

**Contract FCD 97-30, Santan Outfall Channel Project
ADOT Project 600-7-502**

ITEM NO.	DESCRIPTION	UNIT	APPROX	UNIT AMOUNT	EXTENDED AMOUNT
			QTY.		
505-14	Gate Structure 104 (Detail B3)	EA.	1		
505-15	Concrete Channel Lining	SM	34,729		
505-16	Concrete Spillway (Detail D11)	LM	11		
505-17	RCBC 7 Permanent Plug	EA.	1		
505-18	SRP Pecos Drain	LS	1		
520-1	Steel Handrail	LM	114		
602-1	Steel Casing	LM	18.3		
610-1	Gate Valves and Water Line	LS	1		
615-1	Vitrified Clay Pipe (381mm) (15")	LM	475		
615-2	Vitrified Clay Pipe (610mm) (24")	LM	61		
615-3	Ductile Iron Pipe (406mm) (16")	LM	26.7		
615-4	Ductile Iron Pipe (610mm) (24")	LM	20		
615-5	Steel Casing (910mm) (36")	LM	14		
615-6	Stubout and Plug	EA.	5		
618-1	Reinforced Concrete Pipe (610 mm , Class IV)	LM	119		
618-2	Reinforced Concrete Pipe (760 mm , Class IV)	LM	21		
618-3	Reinforced Concrete Pipe (910 mm , Class II)	LM	20		
618-4	Reinforced Concrete Pipe (910 mm , Class III)	LM	6		
618-5	Reinforced Concrete Pipe (610 mm , Class V)	LM	502		
618-6	Reinforced Concrete Pipe (1370 mm , Class V)	LM	231		

BID SCHEDULE

**Contract FCD 97-30, Santan Outfall Channel Project
ADOT Project 600-7-502**

ITEM NO.	DESCRIPTION	UNIT	APPROX	UNIT AMOUNT	EXTENDED AMOUNT
			QTY.		
618-7	Reinforced Concrete Pipe (1370mm)	LM	907.9		
618-8	Reinforced Concrete Pipe (2130mm)	LM	914.7		
618-9	Reinforced Concrete Pipe (1370mm) (I-10 Crossing Only)	LM	126.3		
618-10	Reinforced Concrete Pipe (2130mm) (I-10 Crossing Only)	LM	126.3		
618-11	PVC Pipe (76mm)	LM	1,041		
618-12	P-MIP Permanent Plug	EA.	2		
618-13	P-MIP Temporary Plug	EA.	2		
618-14	Siphon Clean-Out	EA.	2		
621-1	Pipe Corrugated Metal (610mm)	LS	1		
625-1	Irrigation Drop Manhole (Detail D20)	EA.	2		
625-2	Pressure Manhole (MAG 521 Modified) (Detail P1)	EA.	6		
625-3	Manhole, Sanitary Sewer (MAG 420)	EA.	8		
625-4	Reshape Manhole Floor	EA.	1		
625-5	Basin Manholes (No. 100, 101,102)	EA.	3		
TOTAL BID AMOUNT WRITTEN IN NUMBERS					
TOTAL BID AMOUNT WRITTEN IN WORDS					

IF BY AN INDIVIDUAL:

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

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

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

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

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

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

IF BY A CORPORATION

(Corporate Name) _____ (Corporation Address)

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

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

(President) _____ (Address)

(Secretary) _____ (Address)

(Treasurer) _____ (Address)

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

SUBCONTRACTOR LISTING

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

(Signature)

SURETY BOND

KNOW ALL MEN BY THESE PRESENTS:

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

WHEREAS, the said Principal is herewith submitting its proposal for Contract FCD- 97-30, Santan Outfall Channel, Phase 2.

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

Signed and sealed this _____ day of _____, A.D., 199__.

Agency of Record, State of Arizona

Principal

Agency Address and Phone Number:

By: _____
(Printed Name) (Signature)
Title: _____

Surety Name
By: _____
Title: _____

Bond Number: _____

ATTACH SURETY POWER OF ATTORNEY

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

STATE OF _____ }
County of _____ }SS

_____ being first duly sworn, deposes and says:

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

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

(Signature of Affiant)

Subscribed and sworn to before me this ___ day of _____, 1998

(Notary Public)

My Commission Expires

CERTIFICATION OF LICENSE

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

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

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

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

Signature of Licensee

Date: _____

Company: _____

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

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

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

_____ (the entity submitting the bid)

(CHECK ONE)

Will meet the **established** goal for participation by Minority/Women-Owned Business Enterprises.

Will provide the necessary documentation to Minority Business Office to establish that a good faith effort was made.

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

Name of Firm

By: _____
Signature

Title

STATE OF _____)
County of _____)ss

Subscribed and sworn to before me this ___ day of _____, 1998

Notary Public

My Commission Expires: _____

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
 MINORITY/WOMEN OWNED BUSINESS ENTERPRISE PROGRAM
ACTUAL MBE/WBE PARTICIPATION AFFIDAVIT

(NOTE: COMPLETED AFFIDAVIT MUST BE SUBMITTED WITHIN SEVEN CALENDAR DAYS
 FOLLOWING THE BID OPENING).

Name of Contractor _____ Project/Contract Number FCD 97-30 Total Amount of Contract _____
 Contract M/WBE Goal: 5 %

Contact Person _____

Street No. _____

City _____ State _____ Zip _____

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

TOTALS (Dollars/Percentage) _____

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

 Signature

 Title

STATE OF _____ }

}ss

County of _____ }

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

My commission Expires: _____

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

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

Date: _____

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

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

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

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

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

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

Total paid to this Subcontractor to date: \$ _____

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

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

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

CONTRACT AGREEMENT

THIS AGREEMENT, made and entered into this ___ day of _____, 1998 by and between the FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, hereinafter called the Owner, acting by and through its BOARD OF DIRECTORS, and _____, hereinafter called the Contractor.

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

ARTICLE I - SCOPE OF WORK: The Contractor shall construct, and complete in a workmanlike and substantial manner and to the satisfaction of the Chief Engineer and General Manager, a project for the Flood Control District of Maricopa County, designated as Contract FCD-97-30, Santan Outfall Channel, Phase 2 and furnish at its own cost and expense all necessary machinery, equipment, tools, apparatus, materials, and labor to complete the work in the most substantial and workmanlike manner according to the Plans and Construction Specifications on file with the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona, and such modifications of the same and other directions that may be made by the Flood Control District of Maricopa County as provided herein.

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

ARTICLE III - TIME OF COMPLETION: The Contractor further covenants and agrees at its own proper cost and expense, to do all work as aforesaid for the construction of said improvements and to completely construct the same and install the material therein, as called for by this agreement free and clear of all claims, liens, and charges whatsoever, in the manner and under the conditions specified within 450 calendar days following notice to proceed.

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

ARTICLE V - TERMINATION: The Owner hereby gives notice that pursuant to A.R.S. Section 38-511(A) this contract may be canceled without penalty or further obligation within three years after execution if any person significantly involved in initiation, negotiation, securing, drafting or creating a contract on behalf of the Owner is, at any time while the contract or any extension of the contract is in effect, an

employee or agent of any other party to the contract in any capacity or a consultant to any other party of the contract with respect to the subject matter of the contract. Cancellation under this section shall be effective when written notice from the Chief Engineer and General Manager of the Owner is received by all of the parties to the contract. In addition, the Owner may recoup any fee for commission paid or due to any person significantly involved in initiation, negotiation, securing, drafting or creating the contract on behalf of the Owner from any other party to the contract arising as a result of the contract.

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

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

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

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

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

Party of the First Part

By _____
(Printed Name) (Signature)

Title: _____

Date: _____

Tax Identification Number

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PARTY OF THE SECOND PART

RECOMMENDED BY:

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

Chairman, Board of Directors Date

ATTEST:

Clerk of the Board Date

LEGAL REVIEW

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

By: _____
District, General Counsel Date

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

KNOW ALL MEN BY THESE PRESENTS:

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

WHEREAS, the Principal has entered into a certain written contract with the Flood Control District of Maricopa County, dated the _____ day of _____, 1998 for **Contract FCD-97-30, Santan Outfall Channel, Phase 2**, which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

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

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

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

Witness our hands this _____ day of _____, 1998

Agency of Record, State of Arizona

Agency Address and Phone Number:

Principal

By: _____
Printed Name and Signature

Title: _____

Surety Seal

By: _____
Title: _____

ATTACH SURETY POWER OF ATTORNEY

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

KNOW ALL MEN BY THESE PRESENTS:

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

WHEREAS, the Principal has entered into a certain written contract with the Flood Control District of Maricopa County, dated the ____ day of _____, 1998, for **Contract FCD 97-30, Santan Outfall Channel, Phase 2**, which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

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

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

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

Witness our hands this _____ day of _____, 1998.

Agency of Record, State of Arizona

Agency Address and Phone Number:

BOND NUMBER: _____

ATTACH SURETY POWER OF ATTORNEY

Principal

By: _____
(Printed Name) (Signature)

Title: _____

Surety Seal

By: _____

Title: _____

INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Flood Control District of Maricopa County, Maricopa County, the Arizona Department of Transportation, the City of Chandler, the Salt River Project, the Gila River Indian Community, the Lone Butte Industrial Park, the Union Pacific Railroad, and the Pima-Maricopa Irrigation Project, their agents, representatives, officers, directors, officials, and employees from and against all claims, damages, losses and expenses (including but not limited to attorney fees, court costs, and the cost of appellate proceedings), relating to, arising out of, or resulting from the Contractor's work or services. The Contractor's duty to defend, hold harmless and indemnify the Flood Control District of Maricopa County, Maricopa County, the Arizona Department of Transportation, the City of Chandler, the Salt River Project, the Gila River Indian Community, the Lone Butte Industrial Park, the Union Pacific Railroad, and the Pima-Maricopa Irrigation Project, their agents, representatives, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, or injury to, impairment, or destruction of property including loss of use resulting therefrom, caused in whole or in part by any act or omission by the Contractor, anyone the Contractor directly or indirectly employs, or anyone for whose acts the Contractor may be liable, regardless of whether it is caused in part by a party indemnified hereunder, including the District.

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

For all other hazards, liabilities, and exposures: To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Flood Control District of Maricopa County, Maricopa County, the Arizona Department of Transportation, the City of Chandler, the Salt River Project, the Gila River Indian Community, the Lone Butte Industrial Park, the Union Pacific Railroad, and the Pima-Maricopa Irrigation Project, their agents, representatives, officers, directors, officials, and employees from and against all claims, damages, losses and expenses (including but not limited to attorney fees, court costs, and the cost of appellate proceedings), relating to, arising out of or resulting from the Contractor's work or services. Contractor's duty to defend, hold harmless, and indemnify the Flood Control District of Maricopa County, Maricopa County, the Arizona Department of Transportation, the City of Chandler, the Salt River Project, the Gila River Indian Community, the Lone Butte Industrial Park, the Union Pacific Railroad, and the Pima-Maricopa Irrigation Project, their agents, representatives, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, injury to, impairment or destruction of property including loss of use resulting therefrom, caused in whole or in part by any act or omission of the Contractor, anyone the Contractor directly or indirectly employs, or anyone for whose acts the Contractor may be liable, regardless of whether it is caused in part by a party indemnified hereunder, including the District.

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

INSURANCE REQUIREMENTS

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

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

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

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

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

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

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

The insurance coverage, except Workers' Compensation, required by this Contract shall name the Flood Control District of Maricopa County, Maricopa County, the Arizona Department of Transportation, the City of Chandler, the Salt River Project, the Gila River Indian Community, the Lone Butte Industrial Park, the Union Pacific Railroad, and the Pima-Maricopa Irrigation Project, their agents, representatives, officers, directors, officials, and employees as Additional Insureds.

General Liability. The Contractor shall maintain Commercial General Liability insurance with a limit of not less than \$1,000,000 for each occurrence with a \$2,000,000 Products and Completed Operations Limit and \$2,000,000 General Aggregate Limit, and include coverage for bodily injury, broad form property damage, personal injury, products/completed operations and blanket contractual covering, but not limited to, the liability assumed under the indemnification provisions of this Contract, which coverage will be at least as broad as the Insurance Service Office, Inc. Policy Form CG 00011093 or any replacements thereof. The coverage shall not exclude X, C, U.

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

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

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

If required by this contract, the Contractor subletting any part of the work awarded to the Contractor shall purchase and maintain, at all times during prosecution of the work under this Contract, an Owner's and Contractor's Protective Liability insurance policy for bodily injury and property damage, including death, which may arise in the prosecution of the work or Contractor's operations under this contract. Coverage shall be on an occurrence basis with a limit not less than \$1,000,000 per occurrence, and the policy shall be issued by the same insurance company that issues the Contractor's Commercial General Liability insurance.

Automobile Liability. The Contractor shall maintain Commercial/Business Automobile Liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence with respect to the Contractor's any owned, hired, and non-owned vehicles assigned to or used

in performance of the Contractor's work or services. Coverage will be at least as broad as coverage code 1, "any auto" (Insurance Services Office, Inc. Policy Form CA 00011293, or any replacements thereof). Such insurance shall include coverage for loading and off-loading hazards. If hazardous substances, materials, or wastes are to be transported, MCS 90 endorsement shall be included and \$5,000,000 per accident limits for bodily injury and property damage shall apply.

Workers' Compensation. The Contractor shall carry Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Contractor's employees engaged in the performance of the work or services; and Employer's liability insurance of not less than \$100,000 for each accident, \$100,000 disease for each employee, and \$500,000 disease policy limit.

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

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

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

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

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

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

Certificates of Insurance

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

Subcontractor: The Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. If a policy does expire during the life of the Contract, a renewal Certificate of the required coverage must be sent to the District at least fifteen (15) days

prior to the expiration date.

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

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

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

CONTRACT FCD 97-30

PROJECT TITLE Santan Outfall Channel, Phase 2

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

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

CO. LTR	TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE (MM/DD/YY)	EXPIRATION DATE (MM/DD/YY)	LIMITS	
	COMMERCIAL GENERAL <input checked="" type="checkbox"/> LIABILITY FORM <input checked="" type="checkbox"/> PREMISES OPERATIONS <input checked="" type="checkbox"/> CONTRACTUAL <input checked="" type="checkbox"/> BROAD FORM PROPERTY DAMAGE <input checked="" type="checkbox"/> EXPLOSION & COLLAPSE <input checked="" type="checkbox"/> PRODUCTS/COMPLETED OPERATIONS HAZARD <input checked="" type="checkbox"/> UNDERGROUND HAZARD <input checked="" type="checkbox"/> INDEPENDENT CONTRACTORS <input checked="" type="checkbox"/> PERSONAL INJURY				GENERAL AGGREGATE PRODUCTS/COMPLETED OPERATIONS BODILY INJURY AND PROPERTY DAMAGE PERSONAL INJURY EACH OCCURANCE	\$2,000,000 \$2,000,000 \$2,000,000 \$2,000,000 \$2,000,000
	COMPREHENSIVE AUTO <input checked="" type="checkbox"/> LIABILITY & NON-OWNED				Each Occurrence	\$2,000,000
	<input type="checkbox"/> EXCESS LIABILITY				NECESSARY IF UNDERLYING NOT ABOVE MINIMUM	
	<input checked="" type="checkbox"/> WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY each accident	\$500,000
	<input type="checkbox"/> ENGINEERS PROFESSIONAL LIABILITY				EACH CLAIM AND ANNUAL AGGREGATE	
	<input checked="" type="checkbox"/> OTHER	In addition to the Flood Control District of Maricopa County, add Maricopa County, Arizona Department of Transportation, City of Chandler, Salt River Project, Gila River Indian Community, Lone Butte Industrial Park, Union Pacific Railroad, and Pima-Maricopa Irrigation Project as additional insured.				

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

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

It is further agreed that:

The Contractor hereby agrees to indemnify and save harmless the **Flood Control District of Maricopa County, Maricopa County, Arizona Department of Transportation, City of Chandler, Salt River Project, Gila River Indian Community, Lone Butte Industrial Park, Union Pacific Railroad, and Pima-Maricopa Irrigation Project**, or any of their departments, agencies, officers or employees, from and against all loss, expense, damage or claim of any nature whatsoever which is caused by any activity, condition or event arising out of the performance or nonperformance of any of the provisions of this Agreement, with the exception of liability for loss resulting from the sole negligence of the Flood Control District, its agents, employees, or indemnities.

The **Flood Control District of Maricopa County, Maricopa County, Arizona Department of Transportation, City of Chandler, Salt River Project, Gila River Indian Community, Lone Butte Industrial Park, Union Pacific Railroad, and Pima-Maricopa Irrigation Project** shall, in all instances, be indemnified against all liability, losses and damages of any nature for or on account of any injuries to or death of persons or damages to or destruction of property arising out of or in any way connected with the performance or nonperformance of this Agreement, except such injury or damage as shall have been occasioned by the sole negligence of the **Flood Control District of Maricopa County, Maricopa County, Arizona Department of Transportation, City of Chandler, Salt River Project, Gila River Indian Community, Lone Butte Industrial Park, Union Pacific Railroad, and Pima-Maricopa Irrigation Project**.

The above cost of damages incurred by the **Flood Control District of Maricopa County, Maricopa County, Arizona Department of Transportation, City of Chandler, Salt River Project, Gila River Indian Community, Lone Butte Industrial Park, Union Pacific Railroad, and Pima-Maricopa Irrigation Project**, or any of their departments, agencies, officers or employees, or others aforesaid shall include in the event of an action, court costs, expenses for litigation and reasonable attorneys fees.

Firm: _____

Principal: _____

By: _____

Title: _____

Date: _____

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PHASE 2 - SANTAN OUTFALL CHANNEL AND P-MIP PIPELINES (2)

CONTRACT NO. FCD 97-30
PCN 4900132

SUPPLEMENTARY GENERAL CONDITIONS

SPECIFICATIONS

Except as otherwise amended in these Supplementary General Conditions and the Construction Special Provisions, this project shall be constructed in accordance with all applicable Maricopa Association of Governments (MAG) Uniform Standard Specifications and Uniform Standard Details, dated 1998, Arizona Department of Transportation (ADOT) Standard Specifications for Road and Bridge Construction, dated 1996, ADOT Stored Specifications included in this document, ADOT Standard Structure Drawings, dated June 1992, including all revisions and notices through 1997, and ADOT Construction Standard Drawings, dated June 1995, including all revisions and notices through 1997.

PRECEDENCE OF CONTRACT DOCUMENTS

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

Subsection 101.2 - Definitions and Terms:

1. Change the definition of the phrase "Board of Supervisors" to being the Board of Directors acting under the authority of the laws of the State of Arizona and in their capacity of the Board of Directors of the Flood Control District of Maricopa County.
2. Change the definition of the phrase "Budget Project" to being a project financed by funds set aside in the annual budget or otherwise approved by the Flood Control District of Maricopa County Board of Directors.
3. Add to the definition of the phrase "Contract Documents," the phrase "Supplementary General Conditions."
4. Change the definition of the term "Engineer" to being the person appointed by the Flood Control District of Maricopa County Board of Directors to the office of Chief Engineer and General Manager of the Flood Control District of Maricopa County acting directly or through its authorized representative, the Chief of the Flood Control District of Maricopa County Planning and Project Management Division.

5. Change the definition for the phrase "Notice of Award" to a letter from the Flood Control District of Maricopa County advising Contractor that it is the successful bidder and the Flood Control District of Maricopa County has accepted its proposal.
6. Change the definition of the term "Owner" to the Flood Control District of Maricopa County, acting through it's legally constituted officials, officers, or employees.
7. Whenever the word "District" is used in these Specifications, it shall mean the Flood Control District of Maricopa County.
8. Add the definition for Maricopa County Minority Business Office (MBO); the office responsible for administering the Maricopa County Minority and Women Owned Business Enterprise Program.
9. Add the definition for the Maricopa County Minority and Women Owned Business Enterprise Program as being the Program adopted by the Board of Supervisors effective January 1, 1992.
10. Add the definition for the Pima-Maricopa Irrigation Project (P-MIP) "P-MIP Representative" to be the person appointed by the Gila River Indian Community, through the director of the Department of Land and Water Resources.

Subsection 102.1 - Eligibility and Preference: Add the following:

A portion of this project is located on the Gila River Indian Community (Community). Contractors are advised that they **MUST** make themselves aware of any and all taxes, fees or any conditions and ordinances that may be imposed by the Community on work performed on the reservation. This may include but is not limited to the information provided in Appendix "D" of these specifications.

The Contractor shall comply with the "Indian Preference in Employment" provisions in Appendix "D". Specifically, the Contractor shall initiate a pre-job meeting with the Community Tribal Employment Rights Office (TERO), Joseph Manuel, Director, Ph. (520) 562-3364, set hiring goals, and meet other special provisions as indicated in Appendix "D".

Any federally debarred contractor cannot perform work on the Gila River Indian Community and is therefore ineligible for award of this contract, or employment as a subcontractor on this contract.

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

The soil boring logs (included on the plans set) and Geotechnical reports (Outfall Channel Report and P-MIP Report), including ground water conditions, are available for review at the Owner's office, and Contractors are encouraged to do so. Existing moisture conditions shall be no basis for claim for additional money or time extensions. The Contractor shall manipulate the existing soil as required to achieve stable soil conditions and the required densities, as well as safe and stable side slopes during construction activities.

Cross-sections plotted at 30 meter intervals for the Santan Outfall Channel are available for review, and also for purchase, at the Owner's office.

Subsection 102.5 - Preparation of Proposal: Add the following:

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

It shall be the responsibility of prospective bidders to determine, prior to submission of a bid, if any addenda have been issued by the Flood Control District. This may be accomplished by calling 602-506-1501. Any addendum issued, if not already bound into the Special Provisions, **must be**

attached and included as part of the Specifications and any quantities on the Bidding Schedule requiring change shall be adjusted to the new figure by pen and ink. **Bids which do not have appropriate addenda attached and show appropriate changes to the Bidding Schedule, and receipt of addenda acknowledged in the Proposal shall be invalid.**

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

Subsection 102.6 - Subcontractors' List: Add the following:

A list of subcontractors to be employed on the project shall be submitted with the bid, on the form provided in the Proposal. Following Notice of Award, no change of the subcontractors named therein will be made unless first approved in writing by Owner.

Subsection 102.7 - Irregular Proposals: Add the following:

- (F) If the Maricopa County Minority and Women-Owned Business Enterprises Assurances Affidavit is not completed and submitted.
- (G) If any addenda are not acknowledged and attached.
- (H) If the Owner's bond forms are not utilized.
- (I) If the entire specifications document is not returned.
- (J) If the Owner's provided Certificate of Insurance form is not utilized.

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

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

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

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

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

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

Subsection 104.1 - Work to be Done: Add the following to 104.1.1:

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

Add the following to 104.1.2:

The major facilities to be constructed include the outfall channel consisting of open channel and covered box culvert segments, piping in the detention basin complex, and a segment of the Pima-Maricopa Irrigation Project (P-MIP) pipeline. The project includes channel and pipeline crossings of the Union Pacific (formerly Southern Pacific) Railroad (UPRR) track, a channel crossing of 56th Street and pipeline crossing of Maricopa Road in relatively close proximity, and a combined channel and pipeline crossing of Interstate 10 (I-10).

The project mapping and the layout and alignment are in metric dimensions. Details on the plans are generally in metric, while referenced MAG and ADOT details may be in either metric or English units.

The Outfall Channel consists of an open channel from the Gila Drain at the detention basin outlet to 56th Street, a covered box culvert from 56th Street to the west side of I-10, and an open channel from there to the Gila Drain Floodway.

The P-MIP Pipeline segment is a dual pipeline running from the west side of I-10 to east of UPRR. The pipelines are owned by the Gila River Indian Community (Community). Because the pipelines parallel the Outfall Channel in fairly close proximity, the culvert and pipeline crossings of the UPRR track and 56th Street/Maricopa Road (a street name change at the reservation boundary) will be coordinated to minimize traffic disruption. The culvert and pipeline crossings of I-10 will be constructed in a single trench to minimize traffic disruption to the freeway.

Utility relocations to be constructed include the Salt River Project (SRP) Pecos Drain from I-10 to 56th Street and a City of Chandler Sanitary Sewer from 56th Street to the Gila Drain. The Pecos Drain must be temporarily diverted while the box culvert segment of the Outfall Channel is being constructed. This includes the temporary relocation and connection to the drain of all irrigation and storm drain pipes from the north which presently discharge into the Pecos Drain facility. After the box culvert is installed, the Pecos Drain will be replaced in its current alignment as a concrete-lined ditch, and all piping will be reconnected to the drain, in accordance with the SRP plans attached to and made a part of these plans.

The Contractor shall Protect-in-Place a "Memorial Cross" located along the east side of 56th Street and north of the Pecos Road alignment. The cross is to be moved approximately 150 feet to the north and out of the way of construction activities by the family prior to the start of construction. However, if it is determined that the cross remains in the way of any construction activities, the Contractor shall contact ADOT, Mr. Javier Guana at 255-8545 to have the cross relocated.

The contractor shall allocate the total trench excavation and backfill quantity and cost of the Santan Outfall Channel double box culvert and the P-MIP pipelines across I-10 in the following manner:

1. Allocate 50% to Bid Item 505-3 RCBC 2
2. Allocate 25% to Bid Item 618-9 Reinforced Concrete Pipe (1370 mm)
3. Allocate 25% to Bid Item 618-10 Reinforced Concrete Pipe (2130 mm)

Derivation of the estimated earthwork quantities for the I-10 crossing is included in Appendix "A", and the quantity is estimated to be 21,916 CM. Any other costs incidental to the construction in the common trench across I-10, such as for shoring and trench safety, shall be allocated in the percentages listed.

All existing irrigation delivery and tailwater systems, including those at the Broadacres lateral west of I-10, and the farm fields east of 56th Street to the Gila Drain, will be maintained in operating condition during construction. The construction of temporary facilities by the Contractor may be necessary, and the cost thereof shall be considered incidental to the construction activities for which the temporary facilities are required.

104.2.3 - Changes:

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

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

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

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

The Contractor shall diligently continue performance of this contract to the maximum extent possible in accordance with its provisions. Except as provided in this section, no order, statement, or conduct of the Owner shall be treated as a change or entitle the Contractor to an equitable adjustment. If any change under this section causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this contract, the Owner shall make an equitable adjustment and modify the contract in writing. The equitable adjustment shall not include increased costs or time extensions for delay resulting from the Contractor's failure to provide notice or to diligently continue performance. No proposal for the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

Subsection 104.2.4 - Cost Estimates or Price Proposals:

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

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

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

Subsection 104.2.6 - Value Engineering:

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

B) **Definitions.**

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

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

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

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

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

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

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

E) **Owner Action.**

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

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

F) **Cost Sharing.**

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

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

Subsection 105.1 - Authority of Engineer: Add the following:

105.1.1 - Engineer's Evaluation: Engineer will be allowed ten (10) working days within which to evaluate each proposal or submittal made pursuant to subsections 105.3.1 and 106.4. Engineer will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. Engineer will record time required by Engineer and Engineer's Consultants in evaluating substitutes proposed or submitted by Contractor pursuant to subparagraphs 105.3.1 and 106.4(B) and in making changes in the Contract Documents (or in the provisions of any other direct contract with Owner for work on the project) occasioned thereby. Whether or not Engineer accepts a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer and Engineer's Consultants for evaluating each such proposed substitute item.

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

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

Subsection 105.5 - Cooperation of Contractor: Add the following:

105.5.1 - Partnering

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

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

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

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

ITEM 105-1 - PARTNERING

105.5.2 – Pre-Construction Meeting

After award of the contract, a pre-construction meeting shall be scheduled at a location and time (prior to mobilization and start of construction) to be agreed upon between the Owner and the Contractor. The Contractor shall make all necessary arrangements to have key personnel of his company and of his principal subcontractors present at the meeting. Each representative shall have authority to make commitments and act for his firm. The purpose of the pre-construction meeting is to discuss any specific concerns or potential problems that the Contractor is aware of, to provide general information appropriate to the contract, to identify responsible individuals for various functions within each organization, and to develop tentative dates for the start of construction. There are submittals identified within the contract documents which are required to be prepared for the pre-construction meeting.

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

105.5.3 –Construction Progress Meetings

Construction progress meetings shall be scheduled weekly, or as considered necessary by the Owner. The Contractor shall make all arrangements to have key personnel of his company and of his principal subcontractors present at all progress meetings; representatives shall have authority to make commitments and act for their firms. The Contractor shall assume full responsibility to act for and commit any

subcontractor employed by the Contractor, whether or not such subcontractor is represented at the meeting.

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

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

Subsection 105.6 - Cooperation with Utilities: Add the following:

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

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

Arizona Public Service Company (APS) 230KV OHE	
Mr. Steve Goodman, Project Design Leader	(602) 371-6965
City of Chandler (COC) Water and Sewer	
Mr. Allen Billings, Water	(602) 786-2340
Mr. Alvin Robertson, Sewer	(602) 786-2481
Cox Communications (COX)	
Mr. Carl McKay, Utility Liaison	(602) 352-5860, ext. 155
El Paso Natural Gas (EPNG) High Pressure mains throughout the project area.	
Mr. Bill Ward, Phoenix District Superintendent	(602) 438-4224
Mr. John McNeely, Principal Engineer	(915) 496-5562
Gila River Displays Two Billboards	
Mr. Bill King, President, King Acquisitions, Inc.	(602) 938-6885
Gila River Telecom, Inc. (GRTI) Fiber Optic & Other	
Mr. Wallace Jones	(602) 796-8880

Lone Butte Industrial Park (LBIP) Mr. Duane Stewart	(520) 796-1033
City of Phoenix (COP) Water and Well Sites Mr. Jerry Arakaki, Senior Engineer	(602) 261-8229
Salt River Project Irrigation (SRP) Pecos Drain, Gila Drain, etc. Mr. Charles J. Kissel, Senior Engineer	(602) 236-4619
Salt River Project Power Distribution (SRPPD) 15KV lines, etc. Mr. Richard Seminara, Project Leader	(602) 236-6237
Salt River Project Power Transmission (SRPPT) 500KV Trans. Mr. Bill Phillips, Senior Engineer	(602) 236-8092
San Carlos Indian Irrigation Project (SCIIP) Distribution Line. Mr. Dave Hedquist	(602) 253-2210
Santa Fe Pacific Pipeline Partners (SFPPP) 8" Fuel Pipeline (Now Kinder Morgan Energy Partners, L.P.) Mr. Dan Tarango	(602) 278-2320
Southwest Gas Corporation (SWG) 1- 3/4" pipeline in Weber Drive Mr. Wade Patrick	(602) 484-5306
Union Pacific Railroad Company (UPRR) Culvert and Pipeline Crossings Mr. Gary Houk, Manager of Track Maintenance Mr. Sam Kephart, Manager of Train Operations	(602) 257-2505 (602) 257-2531
U.S. West Communications (USW) Fiber Optic Line Mr. John Aker, Public Works Project Manager	(602) 831-4707

Many overhead and underground facilities have been relocated in advance of construction to avoid conflicts. However, it shall be the responsibility of the Contractor to verify the location of all utilities prior to any construction activities in a particular area where such facilities may exist. All existing overhead and underground utilities shall be Protected-in-Place (P.I.P.) unless noted otherwise on the plans, these Supplementary General Conditions, and the Special Provisions.

APS and SRPPT:

Both APS and SRP maintain high voltage (230kV and 500kV) overhead electric transmission lines in the vicinity of the project. The project does not directly impact the APS line. The SRP line is in close proximity to the project.

At all times during construction, the Contractor shall comply with all laws, ordinances, rules, regulations, and safety requirements, including but not limited to the National Electric Safety Code, and the Occupational Safety and Health Standards for General Industry when working in the vicinity of these high voltage lines.

NOTE: At the northwest corner of 56th Street and Pecos Road, the south most foundation of an existing SRPPT transmission tower is approximately 9.3 M from the centerline of the box culvert. The Contractor shall exercise extreme caution when working near this transmission tower foundation, including the following restrictions and conditions:

- 1) The Santan Outfall Channel box culvert trench shall not be closer than 2.1 meters south of the south most foundation of the transmission tower.
- 2) Prior to any construction activities near these high voltage lines, the Contractor shall schedule a pre-construction safety meeting with the SRP Public Safety Dept. at 236-8427.
- 3) The north edge of the Santan Outfall Channel box culvert trench shall not be excavated outside the Pecos Road north R/W line.

City of Chandler (COC) Water Line, Sanitary Sewer, and Storm Drains:

An existing COC 8" ACP water line parallels the Santan Outfall Channel alignment from approximately Weber Drive to 54th Street. Gate valves shall be installed at Weber Drive and at 54th Street, per plans to isolate the line during construction activities. Portions of this water line not affected by construction activities shall be protected-in-place throughout construction of the channel.

A portion of the existing COC 15" VCP sewer line paralleling the Santan Channel alignment from 56th Street to the Gila Drain shall be removed including pipe, manholes and appurtenances. The limits of removal are from Sta. 1+991.390, 11.9 m Lt. to the manhole at Sta. 2+253.292, 7.2 m Rt. as shown on the plans. The manhole at this location, along with the remaining portion of existing sewer line to the east and all other connecting lines, shall remain and be protected-in-place throughout project construction. The sewer line will be replaced in this contract as shown elsewhere in these plans and specifications.

There are at least three storm drain connections to the Pecos Drain, two at Weber Drive and one midway between Weber and 54th Street. These connections must be maintained at all times during the project construction, including during times that the Pecos Drain is either temporarily diverted, or is being reconstructed per plans. The contractor is to maintain a capacity equivalent to the existing capacity of the Pecos Drain, approximately 20 cfs, to convey storm water to the Gila Drain during construction. The existing storm drains must be reconnected to the reconstructed Pecos Drain prior to the completion of the project per SRP Lateral 2.6 & 2.7 Tail Water Drain (Pecos Drain) plans.

NOTE: The Contractor shall exercise extreme caution when working on or near sanitary sewer lines to avoid spills or off-site discharges. The contractor shall comply with conditions of the Sewage Discharge Prevention Program, as follows:

SEWAGE DISCHARGE PREVENTION PROGRAM:

The objective of this program is to prevent any accidental sewage discharges as result of construction activities on this project.

The program includes the following components:

- Sewage Control Plans,
- Location and Protection of New and Existing Lines, and
- Handling Private Lateral Service Connections

These components are described in more detail below.

Sewage Control Plans:

Purpose:

A sewage control plan (SCP) will be submitted at least one week in advance to the Engineer whenever the Contractor intends to:

- excavate near, brace, or tie into a sewer line or service connection, or
- interrupt, divert, relocate, plug, or abandon a sewer line or service connection.

The intent of the plan is to ensure that any work done in or near any sewer line containing raw sewage is performed in a safe and controlled manner resulting in no accidental discharges.

Required Elements of the SCP:

The following elements shall be contained/addressed in every SCP.

1. Describe the proposed work in general including the purpose, scope, objectives, reasons for the work, locations, dates and estimated times the work will be conducted. Include project plan sheets detailing the proposed work.
2. List the proposed foreman or forewoman, superintendent, manager and field office performing the work (include phone numbers). Describe proposed crew, size, and classification of each crew member.
3. Describe the work in step-by-step detail including excavation plans and how both the new and existing structures and utilities will be identified and protected.
4. Provide a detailed description of any hardware, fittings, tools and materials needed to accomplish the work, and note the status of these items (on-hand, to be fabricated, on order with expected delivery date, etc.). Include any manufacturer's specifications or recommendations, especially for any pipe plugs, sewer line fittings and patching materials.
5. List major equipment to be used to perform the work. Include in this item any pumps that will be used to perform the work and the rated capacity of the pumps at the anticipated suction head. Also include standby pumps in this item.
6. List the safety equipment to be used and describe any unique safety procedures. Cite the applicable OSHA standards covering the work.
7. Describe any contingency plans the contractor will implement in the event of accidental releases and/or damage to existing facilities.
8. Describe how the public will be protected during the work and include or cite any applicable traffic control plans.
9. Describe the quality control procedures that will be used in the field.
10. Discuss how temporary plugs or flow control devices will be secured and monitored.

The plan shall be in written form and include any diagrams or sketches necessary for clarity. When possible, diagrams and sketches should be shown using the applicable project plan sheets.

Plan Approval:

The plan including all hardware, materials, and plugs to be used shall be approved by the owner-operator of the sanitary sewer system. Plan approval is required before beginning any work in or near any sewer line containing raw sewage. The Engineer will review the plan and oversee the work to ensure it complies with the approved plan.

Location and Protection of New and Existing Sewer Lines:

Normal blue staking procedures shall be followed first for any work on the project. The City of Chandler will "blue stake" all sewer mains within the project limits that were in existence before award of the project. Sewage control plans shall be required when the work is near or involves any sewer line containing raw sewage.

The Contractor will brief and coordinate with others working near new or existing sewer lines or other utilities on the procedures to be followed to prevent damaging of these utilities.

The Engineer will coordinate the locating of existing and newly constructed sewer lines and laterals with the City of Chandler and the Contractor prior to any on-site work by utility companies or other agencies.

The Contractor will immediately report in writing to the Engineer any work performed by itself or subcontractors that damages an existing or newly installed sewer line or manhole.

Handling Private Lateral Service Connections:

The Contractor to the satisfaction of the City of Chandler and the Engineer will protect unidentified service connections encountered during excavation that are not damaged. The Contractor will immediately notify the Engineer when an unidentified service connection is encountered.

The Contractor will immediately repair unidentified service connections that are damaged during excavating to the satisfaction of the Engineer and the City of Chandler. Any damaged service connections shall be reported to the Engineer, including all remedial actions taken.

Sewage Discharge Penalties:

Any and all civil or criminal penalties, fines, damages, or other charges ("penalties") imposed by any regulatory agency or court for sewage discharges that are in violation of applicable statutes and laws and that are a result, direct or indirect, of work performed under this Contract, whether imposed on Contractor or the Owner, or either of their subcontractors, or the City of Chandler, shall be paid for by the Contractor, and the Contractor shall defend and indemnify the City against such penalties. These regulatory agencies may include, but are not limited to, the Arizona Department of Environmental Quality (ADEQ) and the United States Environmental Protection Agency (USEPA). As an example, ADEQ may assess civil penalties up to \$25,000 per day per violation for sewer discharges.

Contractor's Qualifications:

The Contractor, or the water and sewer utility Subcontractor, shall have at least five years of experience in the construction of underground large diameter (460 mm or above) water and sewer improvements. This experience shall include working with and around water and sewer utility lines that are in service. The water and sewer utility Contractor/Subcontractor shall submit the necessary documentation to the Engineer for review and approval of their qualifications.

1. A list of water and sewer work completed over the past 3 years. List the dates of work, type of work, description of the project, amount of work performed by the Contractor/Subcontractor, and the name and phone number of a contact with the owning company or agency for which the work was completed.
2. List of equipment that will be used for this project. The list shall include, as a minimum, equipment type, date of manufacture, and if contractor-owned or rented.

3. List of key personnel, minimum three, who will perform the actual water and sewer utility work and have at least 5 years of experience in the installation and construction of underground large diameter water and sewer lines. The list shall be accompanied with resumes for each of the key personnel. The resumes shall include the following information and demonstrate compliance with any requirements requested:
 - a) Education.
 - b) Level of applicable formal training.
 - c) Number of years of relevant experience in performing like construction.
 - d) Detailed relevant experience, minimum two projects, and containing project description, date of work, actual work performed by the individual, and references (one for each project, minimum).
4. A list of all violations in the past five years of applicable water and wastewater laws and statutes. State all fines, penalties, lawsuits, and judgements rendered against water and sewer utility Contractor/Subcontractor as a result of violations of applicable water and wastewater laws and statutes.

This documentation shall be submitted to the Engineer at the Pre-Construction Conference.

City of Phoenix (COP) Water Line, Well Discharges (2), Well Site Access

An existing COP 20" RCP water pipeline in Pecos Road parallels the Santan Outfall Channel alignment from I-10 to 54th Street. The pipeline is in close proximity to the channel construction, but is not in direct conflict with the construction. Protect-in-Place this water pipeline.

The COP has two well pump discharge lines that connect to the SRP Pecos Drain: one near I-10 and the other between Weber Drive and 54th Street. These connections must be maintained at all times during the project construction, including during times that the Pecos Drain is either temporarily diverted, or is being reconstructed per plans. Connections may be removed for short periods of time if approved in advance by the City of Phoenix. The well discharge lines must be reconnected to the reconstructed Pecos Drain prior to the completion of the project per SRP Lateral 2.6 & 2.7 Tail Water Drain (Pecos Drain) plans.

Access to both well sites along Pecos Road must be maintained at all times during construction. Temporary exceptions for specified periods of time may be allowed if approved in advance by the City of Phoenix.

El Paso Natural Gas (EPNG)

EPNG has high pressure gas mains throughout the project. Pre-project direct conflicts have been relocated. The Contractor shall verify the location of the relocated lines and shall protect in place all gas lines. Specifically:

1. Maintain a minimum of 1.5 M (five (5) feet) of cover over EPNG's 20-inch pipeline at any location the line is crossed.
2. The top of slope on the north side of the P-MIP trench excavation may not be closer than twenty (20) feet to the EPNG 20-inch pipeline.
3. The Contractor will contact EPNG a minimum of 14 calendar days in advance of any construction activities near these lines. EPNG will have a representative on site as they deem necessary.

EPNG plans to make upgrades and relocate its existing 20" line that crosses Maricopa Road while the 56th Street detour is in place. The Contractor shall coordinate with EPNG to allow this work to be done without interruption to the project construction.

Gila River Displays

Two billboard signs on the west side of I-10 have been relocated to reduce construction impacts. The signs are still in close proximity to the construction and must be protected-in-place. Care must be exercised when working near these sign structures and the overhead power lines which service the signs.

NOTE: Any damage to the signs shall be repaired by the Contractor to the satisfaction of the owner of the signs and at no cost to the project. Any loss of billboard revenue which is in any way caused by the Contractor's actions shall be the sole responsibility of the Contractor, and shall be corrected to the satisfaction of the owner solely at the Contractor's expense and at no cost to the project.

Gila River Telecom (GRTI)

GRTI maintains a communications network for the Gila River Indian Community. A fiber optics line connects to a US West fiber optics line at the reservation boundary on the west side of 56th Street. The existing line has been relocated to pass under the Outfall Channel and the SRP cross-culvert at this location. The existing abandoned concrete-encased fiber optics conduit shall be removed as required when installing the Santan Outfall Channel box culvert across 56th Street. There is also a GRTI underground telephone line that crosses the P-MIP Pipelines on the west side of Maricopa Road. The Contractor shall verify the location of and shall support and protect-in-place this underground line.

NOTE: The Contractor shall exercise extreme caution and care when working around or near the underground fiber optics cable. The costs for the repair of any damage to the fiber optics cable, and any loss of revenue by GRTI or US West due to the loss of service of the underground cable which is in any way caused by the Contractor's actions shall be the sole responsibility of the Contractor at no cost to the project.

GRTI also has several existing underground lines on the west side of I-10 that have been abandoned prior to construction. This must be verified by the Contractor. Any buried cable encountered during construction shall be removed and discarded off site.

Lone Butte Industrial Park (LBIP)

LBIP parallels the project south of the Pecos Road alignment and is part of the Gila River Indian Community. LBIP has a number of facilities, such as light poles and sidewalk that must be removed, salvaged and replaced by the Contractor primarily for the installation of the 56th Street Detour. (See ITEM 401-3 - 56th STREET DETOUR). Contractor shall notify LBIP at least 14 days in advance of construction that affects any LBIP facilities.

Salt River Project Irrigation (SRP):

Salt River Valley Water Users Association has several facilities that are impacted by the project. The Gila Drain is a major regional drain and flows must remain uninterrupted throughout the construction period. The Pecos Drain must be diverted during construction and will be reconstructed as a concrete-lined ditch in its present location after the Outfall Channel is installed. The reconstruction of this ditch is included in this project as shown on the SRP prepared plans included and made a part of these construction documents. The Pecos Drain must also remain functioning and uninterrupted during construction, either in-place or relocated to the south. A capacity of approximately 20 cfs must be maintained at all times to convey irrigation drain and storm drain water to the outlet at the Gila Drain near Maricopa Road. Existing north/south irrigation laterals, COP well pump discharges and City of Chandler storm drains that presently discharge into the drain must be maintained during construction. The Pecos Drain outlet crossing under Maricopa Road and discharging into the existing irrigation ditch along the east side of Maricopa Road must also be maintained during construction.

Prior to any construction activities relating to the removal and to the reconstruction of the Pecos Drain, the Contractor shall contact SRP to schedule a pre-construction meeting. The meeting will be used to

identify what role SRP will have during construction including the possible use of SRP surveyors for layout of project control. Contractor shall be prepared to discuss proposed construction, survey and irrigation outage schedules, along with executing a TEMPORARY OUTAGE AGREEMENT and obtaining the necessary construction clearance using the instruction sheet included in Appendix "C". Construction of the SRP facilities shall not commence until the Contractor attends the SRP Pre-Construction Conference.

The Contractor shall restore the area of the temporary drain location to as good as or better than pre-existing conditions, including backfilling any temporary ditches and removing any temporary berms and pipes. The cost of the temporary drain relocation and the restoration work shall be considered incidental to the construction of the permanent lined drain in accordance with the SRP plans.

NOTE: The Contractor shall exercise caution and care when working around these facilities, in particular, when diverting the Pecos Drain flow. The Contractor shall protect in place the SFPPP fuel line when constructing the temporary Pecos Drain. The costs for the repair of any damage to neighboring property, and any loss of water conveyance or revenue by the SRP that is in any way caused by the Contractor's actions shall be the sole responsibility of the Contractor, and shall be corrected to the satisfaction of the SRP solely at the Contractor's expense and at no cost to the project. The Contractor is cautioned that the Pecos Drain currently intercepts a significant amount of off-site storm water that must be conveyed to the Gila Drain. The Contractor must make provisions to maintain the existing capacity at all times during construction.

Salt River Project Power Distribution (SRPPD)

Salt River Project has overhead and underground electric distribution facilities throughout the project area that cross the construction sites or are in very close proximity. These are along Pecos Road for the entire channel alignment, near the 56th Street/Maricopa Road crossing of Pecos Road, at various locations within the Lone Butte Industrial Park, and along the Santan Outfall Channel/P-MIP Pipeline alignment on the west side of I-10.

The 15 KV lines along Pecos between 56th Street and I-10 have been temporarily relocated to the south and raised in some locations to reduce conflict with construction activities. The overhead lines along the west side of I-10 service the billboards. The excavation limits for the P-MIP pipelines may be in conflict with these lines and poles. These lines and poles shall be protected-in-place, and if necessary shall be braced by SRP at the request of the Contractor. The cost of the bracing is the responsibility of the Contractor, and shall be considered incidental to the cost for the installation of the P-MIP pipelines.

At all times during construction, the Contractor shall comply with all laws, ordinances, rules, regulations, and safety requirements, including but not limited to the National Electric Safety Code, and the Occupational Safety and Health Standards for General Industry when working in the vicinity of electrical lines.

NOTE: The cost for the repair of any damage to these facilities, and any loss of revenue by SRP due to the loss of service of the overhead or underground electric cables that is in any way caused by the Contractor's actions shall be the sole responsibility of the Contractor at no cost to the project.

San Carlos Indian Irrigation Project (SCIIP)

There are SCIIP overhead power lines in the vicinity of the project near 56th Street. Poles in conflict with the project, primarily at the 56th Street detour, have been relocated prior to construction. The relocated lines shall be protected-in-place.

NOTE: The cost for the repair of any damage to these facilities, and any loss of revenue by SCIIP due to the loss of service of the overhead or underground electric cables that is in any way caused by the Contractor's actions shall be the sole responsibility of the Contractor at no cost to the project.

Santa Fe Pacific Pipeline Partners/Kinder Morgan Energy Partners (SFPPP)

SFPPP has a 6" fuel line parallel to the Santan Outfall Channel for its entire alignment along Pecos Road. Extra protection is required wherever heavy construction equipment is working within the SFPPP pipeline easement. No heavy construction equipment shall pass over the pipeline where there is less than four (4) feet of cover unless extra protection, such as steel plate, timber, or additional fill, is provided. When providing additional fill, it must be placed with light equipment and hand-compacted until four (4) feet of cover is attained.

The pipeline will be exposed and must be supported in place in accordance with the plans for the construction of the box culvert along the east side of I-10. Specific instructions for the fuel line crossing of the channel on the east side of I-10 are shown on Plan Sheet C-2.5. Contractor shall notify SFPPP 14 days in advance of any construction activities near this line. SFPPP (Kinder Morgan) will have a representative on site as it deems necessary.

SFPPP has a petroleum spill remediation site known as the Lone Butte Remediation Project that is identified on Plan Sheet C-2.7. The remediation site does not directly impact the Santan Channel Project. Soil samples from Soil Boring No. 15, as indicated in the Santan Channel Project Geotechnical Report, did not indicate concentrations of petroleum hydrocarbons that would require special disposal methods. SFPPP also has not found petroleum hydrocarbons north of the Pecos Road alignment as indicated in a letter to ADOT (Mr. Al Field, April 7, 1998). Contractor shall notify Owner immediately if soils excavated in this area have odors or stains indicating presence of petroleum products.

US West (USW) and Southwest Gas Company (SWG):

Both US West and Southwest Gas maintain underground facilities in the project area. The Contractor shall exercise extreme caution when working near these facilities. The Contractor shall contact US West and Southwest Gas a minimum of 14 calendar days in advance of any work to be done in the vicinity of these facilities. An inspector will be provided by the utilities on site as required during these construction activities to monitor the work.

US West facilities parallel and are in close proximity to the Santan Channel from 56th Street to I-10 and must be protected-in-place. An SWG 1.75" gas line ends near the channel at the intersection of Weber Drive and Pecos Road. It must be protected-in-place.

Subsection 105.6.2 - Work Within a Railroad Right-of-way: Add the following:

Union Pacific Railroad Company (UPRR)

UPRR owns the former Southern Pacific spur track that will be crossed by the Santan Outfall box culvert, two water pipelines and a communications pipe sleeve for P-MIP, and a Sanitary Sewer pipeline for the City of Chandler. ADOT, P-MIP and Chandler have applied for a total of five License agreements from the UPRR that will allow the crossings to be installed. The Contractor will be required to obtain Right-of-Entry (ROE) agreements with the UPRR as a condition of each of the License agreements as defined in Section 107.2. Owner must receive the executed agreements from the UPRR before Contractor's ROE applications can be submitted and any construction is commenced within the UPRR Right-of-Way. The Contractor shall delay making application for the ROE permits until notification is received from the Owner that the all License agreements have been approved. The Contractor shall prepare the bid assuming that construction will not proceed on the UPRR culvert and pipeline open-cut crossings of the track, as described in the following specifications, until after October 1, 1998. Construction will either

proceed after October 1, 1998, or the Owner may further delay or cancel the UPRR bid items depending upon the status of the Licenses.

The Project's culvert and pipeline crossings of the railroad include Items 505-5 (RCBC 4), portions of 618-7 (1370 mm RCP) and 618-8 (2130 mm RCP) and a 3" P-MIP PVC pipe sleeve that shall be installed in the track R/W by open-cut methods. By prior agreement between the UPRR and the Owner, the Contractor will have 72 hours to install the box culvert, two water pipelines and the pipe sleeve across the track R/W as shown on the plans. The 72 hours does not include the time that the UPRR requires to remove the track before installation of the box culvert and pipelines and to replace the track after the installation.

The Contractor shall provide labor, equipment, and materials to assist the UPRR in operations to remove and replace the track. These activities include providing equipment, operators and riggers to lift the track and to remove and replace ballast material under the track in accordance with these specifications. Equipment and operators to be provided, as a minimum, are a track hoe(1), front-end loader(1) and grader(1). The Contractor shall assist the UPRR during track and ballast removal (1-2 hours duration), and ballast and track replacement(6-8 hours duration). The Contractor will dispose of all material removed. There will be no salvage. The UPRR will remove, and the Contractor shall assist in removing, two 39-foot long sections of track to allow the open-cut installations. The Contractor must supply sufficient ballast, stockpiled on-site, and assist the UPRR in replacing the ballast and track after the Contractor has completed the installation of culvert and pipes. The Contractor shall obtain the ballast from an approved UPRR supplier. The UPRR will supply all other track replacement material, including such items as rail, plates, ties and spikes.

The Contractor shall coordinate with the UPRR train operations manager, Mr. Sam Kephart, to schedule the time period that train operations will cease to allow installation of the culvert and pipelines. The Contractor shall coordinate with and assist, as required, the UPRR track maintenance manager, Mr. Gary Houk, for track removal and replacement operations. A preconstruction meeting shall be held at least 45 days prior to the date that the Contractor plans to install the railroad crossings to arrange for the 72 hour shut-down. The dates for the 72 hour shut-down of the railroad must be approved by all parties at least 30 days in advance of the construction. **All four (4) of the open-cut installations shall be installed in one 72-hour period.**

The Contractor shall coordinate with the UPRR for the installation of a permanent private at grade crossing of the UPRR track. The crossing is to be installed by UPRR in accordance with the Private Crossing Permit obtained by ADOT. The Contractor shall provide minor grading of the approaches within 20 feet of either side of the track to provide a smooth transition across the track. The approaches shall be scarified and recompacted to 95% relative compaction. The Contractor may wish to use this permanent crossing as a temporary crossing during construction. The Contractor is required to obtain a permit from the UPRR for this purpose, as discussed in Subsection 107.2.

The Contractor may be required by the UPRR to provide flagging services. The UPRR will supply the flagging services, as required, at rate of approximately \$500 per day. Flagging is generally required whenever the Contractor is working within 25 feet of the track centerline. The Contractor shall notify the Engineer and the UPRR at least 24 hours in advance of any time the Contractor will have equipment or personnel working within 25 feet of the track.

If the Contractor obtains a temporary crossing permit, flagging will normally be required when the Contractor's vehicles and equipment are crossing the track. However, the trains for this spur line only operate from 5:00 pm to 5:00 am at the time of preparation of this document. The UPRR has indicated that it may close the track during the day when the trains are not operating, and therefore flagging would not be required from 5:00 am to 5:00 pm. The flagging allowance, Item 105-4, is based upon flagging

services not normally being required except when the Contractor is actually working within 25 feet of the track.

NOTE: Any loss of service or revenue to the UPRR beyond that covered by these Specifications that is in any way caused by the Contractor's actions shall be the sole responsibility of the Contractor at no cost to the project. This includes, but is not limited to the Contractor not completing all construction activities and required installations of the Santan box culvert and the three P-MIP pipelines by open-cut methods within the allotted 72-hour time period.

All Contractor's costs for coordination with the UPRR and work within the UPRR right-of-way, including provision of labor, equipment, materials, flagging services, and others, shall be paid for as allowances.

Payment for providing Contractor support to the UPRR for the removal and replacement of track and ballast and to prepare the approaches for the permanent at-grade crossing, shall be made according to the allowance in the Bidding Schedule, with payment to be made based on actual invoices for time, material, labor, and equipment for such removal and replacement activities as required by the UPRR.

ITEM 105-2 - UPRR CONTRACTOR SUPPORT ALLOWANCE

Payment for labor, equipment and materials provided by the UPRR for the removal and replacement of track shall be made according to the allowance in the Bidding Schedule, with payment to be made based on actual invoices from the UPRR for time, material, labor, and equipment for such removal and replacement activities as required by the UPRR.

ITEM 105-3 - UPRR REMOVE/REPLACE TRACK ALLOWANCE

Payment for the UPRR Flagman shall be made according to the allowance in the Bidding Schedule, with payment based on Flagman usage as required only by the UPRR and as approved by the Engineer, and based on actual invoices from the UPRR for such Flagman usage.

ITEM 105-4 - UPRR FLAGMAN ALLOWANCE

Subsection 105.7 - Cooperation Between Contractors: Add the following:

A Contractor(s) for the development of the property east of 56th Street and north of the Pecos Road alignment may be working in or near the project Temporary Construction Easement (TCE) located along the north and west side of the channel from 56th Street to and along the Gila Drain. The project Contractor shall cooperate as necessary with this Contractor(s) and coordinate his work accordingly, to the extent that such cooperation and coordination does not adversely affect project schedule and cost. Contact Robert Long, V.P., Phoenix Investment Office, Conning Asset Management Company at 483-8817.

Construction of Phase 2 of the P-MIP project may be underway at the time of construction of this project. The western limit of Phase 2 of the P-MIP project is the eastern limit of the P-MIP construction being undertaken by this project. The Contractor will coordinate and cooperate with the P-MIP Phase 2 Contractor as required to minimize impacts to either project.

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

- A) The Engineer will furnish a Benchmark which the Contractor will use to set line and grade for all construction. All other surveying required for the project shall be the Contractor's responsibility. The Engineer will not set any construction stakes.
- B) Before any construction work is started, the Contractor shall perform all base surveys and cross sections of existing conditions that may be required as a basis for quantity determination.

- C) The Contractor shall submit original construction surveyor's notes duly signed by a Registered Land Surveyor to the Engineer at the end of the project. Copies of the survey notes shall be submitted to the Engineer during construction as and when requested.
- D) As-built plans sealed by an Engineer registered in the State of Arizona shall be provided by the Contractor to the Engineer prior to project close out.

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

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

The Contractor shall obtain materials whenever possible from Gila River Indian Community recognized Indian-owned or operated commercial sources in accordance with the requirements and guidelines provided in Appendix "D".

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

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

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

application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other Contractors affected by the resulting change, all of which will be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish additional data about the proposed substitute.

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

Subsection 106.5 - Contractors Marshaling Yards: Add the following:

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

In particular the Contractor shall not access or use the property along the north side of Pecos Road and between 54th and 56th Street without written permission from SRP. SRP is the fee owner of the property on which is located the high voltage transmission towers. The Contractor shall contact the SRP Lands Dept., Linda Taylor at 236-8170, to obtain the necessary written permission. Such written permission shall be provided to the Engineer prior to any access to this property.

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

Subsection 107.1 (B) - Laws to be Observed: Replace paragraph (B) in its entirety with the following:

The prevailing basic hourly wage rates and fringe benefits as determined by the U.S. Secretary of Labor pursuant to the provisions of the Davis-Bacon Act for "heavy highway construction" shall be the minimum wages paid to the classes of laborers and mechanics employed to perform on this contract. The reporting requirements identified by the Davis-Bacon Act are hereby waived for this contract, however, wage scales will be subject to audit and review by the Gila River Indian Community Tribal Employment Rights Office. The Contractor shall have the minimum records in place to support such an audit.

Subsection 107.2 - Permits: Replace with the following:

Contractor shall obtain all permits and licenses, including those required by Gila River Indian Community, ADOT, the City of Chandler, Maricopa County and the Union Pacific Railroad Company, and shall pay all charges, fees, taxes, and provide all notices necessary and incidental to the due and lawful prosecution of the work.

Such requirements by the Gila River Indian Community (Community) include but are not limited to the information provided in Appendix "D". Community requires that the contractor obtain a Community Business License and an access permit. Contact:

Ms. Elaine Notah
Department of Land and Water Resources
Gila River Indian Community
Post Office Box E
Sacaton, Arizona 85247
502-562-3301

It is the Contractor's responsibility to ascertain and comply with the laws, rules, regulations and directives of the Community. The Contractor will not be entitled to additional compensation due to any laws, rules,

regulations or directives imposed by the Community before, during or after the performance of the contract. Refer to Appendix "D".

The Contractor shall submit Contractor's Right-of-Entry (ROE) agreements to the UPRR for each of the five (5) licensed crossings of the UPRR track, including the Santan Outfall box culvert, three P-MIP related pipeline crossings and the City of Chandler sewer crossing. The fee for each crossing is \$500, and is to be attached to the ROE agreement. Owner will provide the Contractor with the necessary application forms. A sample agreement form is included in Appendix "F". Contractor's ROE permit applications are subject to timing restrictions discussed in Subsection 105.6.2.

Payment for the UPRR Right-of-Entry permits shall be made on the basis of the actual cost of the permits based upon evidence that the required permits have been obtained.

ITEM 107-1 - UPRR ROE PERMIT ALLOWANCE

If the Contractor desires to cross the UPRR track at other than existing public crossings, such as for hauling equipment and material across the tracks, the plan must be approved by the Engineer and a separate agreement must be made with the UPRR. A sample Contractor's Application for Private Road Crossing is included in Appendix "F" for reference. The UPRR contact for these arrangements is Mr. Bob Prince (817) 878-1011. UPRR requirements may include improvements to the track to allow equipment to cross, temporary security fencing and others. The cost associated with these activities, including the \$500 application fee and any cost for the UPRR to install and remove the temporary crossing, is considered incidental to the construction and included in ITEM 202-1 MOBILIZATION. The Contractor may utilize the permanent crossing that will be installed by the UPRR as shown in the plans. However, the Contractor is required to obtain a permit from the UPRR for temporary use of the permanent crossing. The Contractor may be required to have UPRR provided flagging services when equipment is crossing the track, as discussed in Subsection 105.6.2. Flagging services will be reimbursed under ITEM 105-4 in accordance with the conditions and restrictions discussed in Subsection 105.6.2.

Subsection 107.2.1 - NPDES Permit Requirements: Add the following:

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

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

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

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

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

James Weiss, Current Planning
Environmental Coordinator
City of Chandler
25 South Arizona Place, Suite 305
Chandler, Arizona 85225

Gila River Indian Community
Department of Environmental Quality
Post Office Box 97
Sacaton, Arizona 85247

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

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

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

- F. Upon project completion, acceptance and demobilization, Contractor shall submit its completed, duly executed NOT form to the EPA, with a copy to the Arizona Department of Environmental Quality and the Gila River Indian Community Department of Environmental Quality, at the address listed in Section (C) above, thereby terminating all NPDES permit coverage for the project.

Contractor shall then surrender to Owner copies of the SWPPP, inspection information and all other documents prepared and maintained by the Contractor in compliance of the NPDES General Permit. Contractor shall retain the originals of such documents for a period of three (3) years following the completion of the project.

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

Payment for NPDES/SWPPP permit requirements shall be made on the basis of lump sum for all work described in Subsection 107.2 .1 for both the SEVRDS Outfall Channel portion of the project and for the P-MIP pipeline portion of the project, for:

ITEM 107-2 - NPDES/SWPPP PERMITS

Subsection 107.4 - Archeological Reports: Add the following:

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

In addition, historic or prehistoric sites or objects discovered by the Contractor, while working on the Gila River Indian Reservation shall be reported to:

John Ravesloot
Director, Cultural Resources Management Program
Department of Land and Water Resources
Post Office Box E
Sacaton, Arizona 85247
(520) 562-3301

The Contractor shall comply with the Gila River Indian Community Policy on the "Discovery, Treatment and Documentation of Human Remains" included in Appendix "D".

Subsection 107.5: Add the following:

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

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

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

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

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

Subsection 107.5.4 - Contractor Health and Safety Provisions: Add the following:

Santan Outfall Channel Soil Boring No. 15, shown on the plans, is in the vicinity of a known SFPPP petroleum spill. The soils from this boring were tested for Total Petroleum Hydrocarbons (TPH). Test results included in the Geotechnical Report indicate that TPH concentrations are low and well below levels that would require special handling or disposal methods. The Contractor shall visually observe the excavation of soils in this vicinity for staining or odors that would indicate the presence of petroleum products. Any observance of petroleum shall be reported to the Engineer immediately.

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

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

1. Distributing a preconstruction information letter to all residents, business, etc. within an area bounded Frye Road on the north, Willis Road on the south, I-10 on the west, and by Beck Avenue extended on the east. In particular the Lone Butte Industrial Park and the Gila River Indian Community (Community) shall be notified on all mailings.
2. Notification to the Community shall be through Fred Ringlero at 520-562-3301.
3. Printing and distribution of public notices and/or newsletters.

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

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

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

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

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

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

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

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

ITEM 107-3 – PUBLIC INFORMATION AND NOTIFICATION ALLOWANCE

Subsection 107.6.4 - Project Signs:

Contractor shall provide and install five project information signs, at locations to be determined by the Engineer, before beginning construction to inform the public of the forthcoming project, construction dates, and suggested alternate travel routes. Project signs shall include the names of all agencies participating in the project. The signs shall also include the 24-hour hot line complaint telephone number. Signs shall be constructed in accordance with the "Project Sign Information" drawing to be provided to the Contractor at the pre-construction meeting. The signs shall be installed at the location(s) approved by the Engineer. The Contractor shall maintain the signs as necessary, and update the information as requested by the Engineer. Payment shall be made according to the allowance in the Bidding Schedule in installments of 50% upon installation, and the remaining 50% upon final payment for the work.

ITEM 107-4 - PROJECT SIGNS ALLOWANCE

Subsection 107.9 - Protection and Restoration of Property: Add the following:

The Contractor shall protect-in-place all existing structures and other features as identified on the plans, including but not limited to irrigation facilities, roadways, fencing, signs, railroad, and other structures and features near construction activities, including but not limited to along the Pecos Road alignment and in the Lone Butte Industrial Park.

The Contractor shall limit all construction activities to the right-of-way limits shown on the plans including dedicated street right-of-way such as 56th Street and Pecos Road, and shall not disturb any areas other than as required for construction as shown on the plans.

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

The Contractor shall restore the area of the temporary drain location to as good as or better than pre-existing conditions, including backfilling any temporary ditches and removing any temporary berms and pipes. The cost of the temporary drain relocation and the restoration work shall be considered incidental to the construction of the permanent lined drain in accordance with the SRP plans.

The Contractor shall Protect-in-Place a "Memorial Cross" located along the east side of 56th Street and north of the Pecos Road alignment. The cross has been moved approximately 150 feet to the north and out of the way of construction activities. However, if it is determined that the cross remains in the way of any construction activities, the Contractor shall contact ADOT, Mr. Javier Guana, (602)255-8545 to have the cross relocated.

NOTE: Under no circumstances shall the Contractor in any way disturb this "Memorial Cross".

The Contractor will be responsible for the removal and replacement in kind of any existing metal fencing, block wall fencing, asphalt paving, light standards and associated landscaping located within the Arizona Block Windows facility. In addition, a temporary security fence shall be furnished and installed to provide security for the business and warehouse operation during construction and until all existing fencing is replaced. The contractor will provide at least two weeks advance notice to Arizona Block Windows prior to the commencement of construction within their facility. Arizona Block Windows access to their loading dock will not be disrupted for more than five (5) working days at any one time. The Contractor shall contact Mr. Bob Martsof Arizona Block Windows Plant Manager, at 1-888-256-2599 to coordinate activities. Payment for this work will be as noted in Special Provisions Section 336 and 350.

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

- A) Contractor is advised that the work will be subject to flows of water of varying amounts. Owner assumes no responsibility for notifying Contractor of any anticipated flows, nor for any damages incurred by Contractor to its equipment or to any of the Contractor's work as a result of any flows of water.
- B) No payment will be made for providing excavation protective works for such things as dewatering. The cost thereof shall be included in the bid price for the construction or installation of the items to which said excavation protective works are incidental or appurtenant.
- C) Storm water runoff generally flows to the south through the project area, potentially ponding along and discharging into the Gila and Pecos Drains. The Contractor shall take all necessary precautions to protect his work and the irrigation drains from damage that may be caused by such runoff and ponding.
- D) The Contractor shall take all necessary action to protect the public from the construction work area.
- E) At the northwest corner of 56th Street and Pecos Road, the south most foundation of an existing SRPPT transmission tower is approximately 9.3 M from the centerline of the box culvert. The Contractor shall exercise extreme caution when working near this transmission tower foundation; including the following restrictions and conditions:
 - 1) The Santan Outfall Channel box culvert trench shall not be closer than, 2.1 meters south of the south most foundation of the transmission tower.

- 2) Prior to any construction activities near these high voltage lines, the Contractor shall schedule a pre-construction safety meeting with the SRP Public Safety Dept. at 236-8427.
- 3) The north edge of the Santan Outfall Channel box culvert trench shall not be excavated outside the Pecos Road north R/W line.

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

- (A) Contractor shall commence work within seven (7) calendar days after the date of the Notice to Proceed and complete all work within **four hundred fifty** (450) calendar days beginning the day following the effective date specified in the Notice to Proceed.

Subsection 108.2 - Subletting of Contract: Add the following:

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

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

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

Subsection 108.4.1 - Contractor's Billing Schedule: The Contractor shall furnish the Engineer an Estimated Billing Schedule which shall include the estimated amount of each billing for the total project at the pre-construction conference, and thereafter at monthly intervals as agreed to between the Contractor and Engineer.

Subsection 108.5 - Limitation of Operations: Add the following:

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

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

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

Subsection 109.2 - Scope of Payment: Add the following:

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

Subsection 109.7 - Payment for Bond Issue and Budget Projects:

- (A) To third paragraph, add:

Payment or release of retained funds shall be made to the Contractor within thirty (30) days following final payment to the Contractor [reference (B) following], and Contractor furnishing to Engineer satisfactory receipts for all labor and material billed and waivers of liens from any and all persons and Subcontractors holding claims against the work. Additionally, Contractor shall furnish

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

- (B) Delete second and third paragraphs and replace with the following:
The final payment will be made to Contractor by Owner within thirty (30) days following receipt of Engineer's final estimate and receipt by Owner of Consent of Contractor's Surety to said final payment. If payment will be longer than thirty (30) days as aforesaid, Owner will provide Contractor specific written findings for reasons justifying the delay in payment.
- (C) Contractor's pay estimates will be initially processed by Owner's Construction Branch on the week prior to the last day of the month.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PHASE 2 - SANTAN OUTFALL CHANNEL AND P-MIP PIPELINES (2)

CONTRACT NO. FCD 97-30
PCN 4900132

SPECIAL PROVISIONS

SECTION 201 - CLEARING AND GRUBBING

Clearing and grubbing shall conform to Section 201 of the MAG Uniform Standard Specifications.

Subsection 201.5 - Payment

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

SECTION 202 - MOBILIZATION

Subsection 202.1 - Description

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

Field Office:

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

The office shall be a building or mobile trailer erected at a location convenient to the project. The Contractor's and the Engineer's offices shall not be in the same building or mobile trailer although the offices shall be located next to each other or within reasonable walking distance.

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

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

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

- b. Heating & Cooling - Adequate electrically powered equipment to maintain an ambient air temperature of 72 degrees F plus or minus 8 degrees.
- c. Telephone, answering, paper FAX machine, and copying machine - Two (2) telephones with two (2) outside lines for the exclusive use of the Engineer. The Contractor will pay for the cost of the line and local calling charges. Long distance charges made on one telephone line will be paid for by the District. Long distance charges made on the other telephone line will be paid for by the Gila River Indian Community.
- d. Toilet - A commode and wash sink in a separately enclosed room within the building or mobile trailer, properly ventilated and complying with applicable sanitary codes. Contractor shall provide water and sewer service.
- e. Maintenance - The contractor shall maintain all facilities and furnished equipment in good working condition.
- f. Fire Extinguisher - Two non-toxic, dry chemical, fire extinguishers meeting Underwriters Laboratories, Inc. approval for Class A, Class B, and Class C fires with a minimum rating of 2A: 20B: 10C.
- g. Electricity - Contractor shall provide electric power and pay for all electric services.
- h. Furnishings - Five office desks with drawers, five office chairs (padded, swivel type), one drafting table (adjustable height 1 meter by 2 meter), one eight foot (8') conference table, twelve folding chairs, and one draftsman's stool.
- i. First Aid Kit
- j. Potable water supply or service

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

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

Subsection 202.1 - Payment

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

ITEM 202-1 - MOBILIZATION

SECTION 206 - STRUCTURE EXCAVATION AND BACKFILL

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

Subsection 206.1 - Description

Add the following:

Work specified in this item includes excavation and backfill required to construct structures such as headwalls, wingwalls, channel, retaining walls and culvert as shown on the plans. Included is also the common excavation through Interstate 10 Eastbound and Westbound. Appendix A shows cross sections for this area and the common quantities for earthwork included in this section of the project.

Subsection 206.2 - Foundation Material Treatment

Add the following:

Foundation bearing surfaces shall be free of debris and water softened materials prior to placing concrete and reinforcing steel. All foundation excavations shall be inspected and approved by the Engineer prior to placing the reinforcing steel and all trench excavations shall be inspected prior to placing bedding material. Any loose or disturbed zones should be removed and replaced with compacted fill or lean concrete as directed by the Engineer.

Below culvert/pipeline bottom the moisture content of existing site soils should be maintained between optimum and optimum plus 3 percent (ASTM D698) during and subsequent to site grading to reduce expansive potentials. At these conditions, some pumping may be experienced under dynamic loading if the compaction is done by very heavy equipment (i.e., loaded scrapers, water-pulls, etc.) Some pumping is not considered detrimental in areas below the culvert/pipeline bottom (i.e., static loading conditions) provided specified densities are obtained. Lighter compaction equipment and/or drying of wet soils may be used to reduce pumping if this condition becomes severe.

The Santan and P-MIP Geotechnical Reports are available from the District and may be used by the Contractor in developing plans for temporary construction slopes. Questions regarding the P-MIP Geotechnical Report should be addressed to the Land and Water Resources office at the Gila River Indian Community.

Subsection 206.4 - Structural Backfill

Add the following:

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

Compaction operations shall be accomplished by mechanical methods. Water settling or jetting shall not be permitted. Compaction against culverts, wing walls, or channel lining within 1 meter of the walls or lining shall be accomplished using manual or remote control compaction equipment only.

Backfill behind subsurface walls designed to support utilities, pavement, channels, or other facilities should be compacted to density criteria from Section 211 of these Special Provisions. Backfills should consist of granular soils, free of vegetation, debris, organic contaminants, and fragments larger than 75 mm in size, which exhibit low expansive potentials and a PI less than 5. On-site soils may be used in structural fills or backfills more than 1 meter below the final grade. High plasticity on-site soils with PI > 25 may not be used in structural fills or backfills.

Imported soil used for fills below box culverts or backfills around box culverts or under pavements, or channels should be granular soils conforming to the following requirements:

Maximum Particle size:	75 mm*
Maximum percent expansion:	1.5**

* Maximum size may be reduced at the Engineer's direction to satisfy trenching and landscape requirements, etc.

** Performed on sample remolded to 95 percent of the maximum ASTM D698 density and 2 percent below optimum moisture under a 4788-Pa surcharge pressure.

The Westbound and Eastbound lanes of I-10 will be detoured to allow open-cut installation of the Santan box culvert and the P-MIP pipelines in a common trench. The trench excavations will be split into two separate operations, west half and east half, corresponding to the detour and traffic control phasing plan. The trenches may be up to 13 meters deep and installation of the culvert and pipelines will require construction to within approximately two meters of the traveled lanes. Trench excavations, however, shall not be closer than two-meters from detour traveled lanes. Since vertical, or near vertical trench walls will be required to install the culvert and pipelines in the vicinity of the detour lanes, shoring may be required to provide for trench and adjacent detour road stability. The design of such temporary structures for the trench is the responsibility of the Contractor, and plans for such structures shall be sealed by an Arizona Registered Engineer and submitted to the Engineer.

For the common area of excavation and backfill for construction of the box culvert and the P-MIP pipelines across I-10, the contractor shall allocate the total trench excavation and backfill quantity, and the cost for any temporary shoring structures of the Santan Outfall Channel Double Box culvert and the P-MIP pipelines in the following manner:

1. Allocate 50% to Bid Item 505-3 RCBC 2
2. Allocate 25% to Bid Item 618-9 Reinforced Concrete Pipe (1370 mm)
3. Allocate 25% to Bid Item 618-10 Reinforced Concrete Pipe (2130 mm)

Derivation of the estimated earthwork quantities for the I-10 crossing is included in Appendix "A", and the quantity is estimated to be 21,916 CM.

Subsection 206.5 - Payment

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

SECTION 211 - FILL CONSTRUCTION

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

Subsection 211.1 - Description

Add the following:

The work under this section shall consist of fill necessary adjacent to the top of the channel lining to match natural ground. The limits of fill are delineated on the plans by a fill line.

Subsection 211.2 - Placing

Add the following:

Highly plastic soils, PI >25, removed from the excavation shall not be used in any required fills or structural backfills.

Subsection 211.3 - Compacting

Add the following:

Compaction of exposed site soil, backfill, fill, and base course materials shall be accomplished to the following density criteria:

<u>Material</u>	<u>Minimum Percent Compaction (ASTM D698)</u>
Subgrade Soil:	
Below structural elements	95
Below Pavement	95
Backfill:	
Below channel lining	95
Channel berms	95
GRIC Access Road	90
Aggregate base course:	
Below channel lining	95
Below pavement	100
O&M Road	95

Compaction of on site soils in scarified zones or in new fills more than 1 meter below final grade should be accomplished at a moisture content between optimum and optimum plus 3 percent. Compaction of granular imported soil below the channel lining, box culverts, or footings should be accomplished at a moisture content between optimum minus 3 percent and optimum plus 3 percent. Compaction of exposed soil and fill material within 1 meter of asphalt pavement should be accomplished at a moisture content 2 percent below optimum or lower.

On site undisturbed soils or compacted soils subsequently disturbed or removed by construction operations should be replaced by materials compacted as specified above.

Subsection 211.6 - Payment

Payment will be made for channel fill construction on the basis of price bid per Cubic Meter in place.

ITEM 211-1 - CHANNEL FILL CONSTRUCTION

SECTION 215 - EARTHWORK FOR OPEN CHANNELS

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

Subsection 215.1 - Description

Add the following:

The work in this section consists of excavation, over-excavation, fill, grading, and disposal of excavated and removed material for the construction of the open channel, spillways, O&M roads, and small drainage ditch at the Gila Floodway.

Subsection 215.7 - Measurement

Add the following:

Measurement for excavation will be made according to the quantity of material excavated from natural ground to the finished sub-grades shown on the plans. The Engineer will verify the quantities of excavation by a method which in his opinion is best suited to obtain an accurate determination.

Subsection 215.8 - Payment

Payment for excavation for the open channel, spillways, O&M roads and small drainage ditch at the Gila Drain Gila Drain Floodway, shall be made on the basis of the price bid per cubic meter, and shall include disposal of excess material.

ITEM 215-1 - DRAINAGE EXCAVATION

SECTION 220 - RIPRAP CONSTRUCTION

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

Subsection 220.1 - Description

Add the following:

The construction of plain riprap (no grout) shall consist of furnishing and placing stone as shown on the plans (Detail D12 and Detail B5) and these specifications. Sacked concrete riprap shall not be allowed.

There is no grouted riprap in the project.

Subsection 220.2 - Materials:

Add the following:

In order to maintain slope stability where plain rip rap is constructed, stones shall be angular in shape and conform to the requirements set forth in Section 703. A geotextile fabric underlay shall be provided per ADOT Standard Specifications 913-2.05.

Subsection 220.8 - Payment

Payment for riprap construction shall be made at the price bid per cubic meter to the neat lines shown on the plans, and shall include full compensation for furnishing all labor, materials, tools, and equipment, and doing all the work involved in constructing the riprap structures complete in place as specified on the plans, and in the special provisions. This includes, but is not limited to, preparation of ground surfaces, furnishing and placing of geotextile fabric and riprap, and cleanup.

ITEM 220-1 - PLAIN RIPRAP - GRADATION NO. 1

ITEM 220-2 - PLAIN RIPRAP - GRADATION NO. 2

SECTION 225 - WATERING

Watering shall conform to Section 225 of the MAG Uniform Standard Specifications except as modified herein.

Subsection 225.1 - Description

Add the following:

Material to be excavated between the existing ground surface and the finished grade shall be pre-wet immediately prior to its removal. The contractor shall rip or scarify the upper 0.5 meters of soil in the excavation area concurrently with the application of water. Dust shall be kept to a minimum. The moisture shall be kept at a content sufficient to insure that dust will be kept at a minimum for the excavation, hauling, and disposal or placement of soil.

Subsection 225.2 - Water Supply

Add the following:

Water used for construction purposes such as pre-wetting, excavation, dust control, etc. may be obtained from the Salt River Project (SRP). Permits must be obtained from SRP for the use of this water. The Contractor should contact the Shareholder Service Department, Anita Jasper at 236-3368 or Linda Montanez at 236-3391. The Contractor may also contact Lisle Tollefson at 236-5011. The permit paperwork can be obtained at the SRP offices located at 1521 Project Drive.

Subsection 225.5 - Payment

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

SECTION 301 - SUBGRADE PREPARATION

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

Subsection 301.1 - Description

Add the following:

The work under this section shall consist of scarifying and re-compaction of the Gila River Indian Community (GRIC) access road to 90% relative compaction per Detail D2. The GRIC access road extends from the South right of way line at the Gila Floodway at approximately Station 0+000 to the North P-MIP TCE at approximately Station 1+100.

Subsection 301.8 - Payment

Payment will be made for compaction of the GRIC Access Road on the basis of the price bid per square meter in place.

ITEM 301-1 - GRIC ACCESS ROAD COMPACTION

SECTION 310 - UNTREATED BASE

Untreated base shall conform to Section 310 of the MAG Uniform Standard Specifications except as modified herein.

Subsection 310.1 - Description

Add the following:

This work includes the placement of aggregate base course for Santan Outfall Channel operations and maintenance (O&M) road per Detail D1 and typical channel cross-sections.

The aggregate base course for the maintenance roads shall conform to:

Percent Passing Sieve								
Class of Aggregate	75 mm	37.5 mm	25.0 mm	19.0 mm	6.3 mm	2.36 mm	75 µm	PI, Max
2	--	100	90-100	--	--	35-55	0-8.0	3

Notes:

- 1) The percentage, by weight, passing each sieve will be determined in accordance with the requirements of Arizona Test Method 201.
- 2) The PI (Plasticity Index) will be determined in accordance with the requirements of AASHTO T90.
- 3) For Class 1 through Class 4 aggregate, the amount of fractured particles shall be at least 30 percent, when tested in accordance with the requirements of Arizona Test Method 212.
- 4) Resistance to abrasion for Class 1 through Class 4 aggregate will be determined in accordance with the requirements of AASHTO T 96 and shall meet the following requirements:

Maximum loss of 9 percent at 100 revolutions
Maximum loss of 40 percent at 500 revolutions

Subsection 310.4 - Payment

Payment for untreated base shall be made on the basis of the price bid per cubic meter.

ITEM 310-1 - AGGREGATE BASE**SECTION 336 - PAVEMENT MATCHING AND SURFACING REPLACEMENT**

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

Subsection 336.1 - Description

Add the following:

Loading and truck parking area pavement at the Arizona Block Windows Company, near Station 0+320, removed during construction of the P-MIP pipeline installation shall be replaced in a manner so as to match the existing pavement. Approximately 371 square meters of pavement will be removed and replaced. Pavement thickness of the replaced pavement shall be three inches (3") asphalt over six inches (6") aggregate base course meeting the material and construction specifications of Section 401.

~~**ITEM 336.4 - Measurement**~~

Add the following:

Measurement for the pavement replacement shall be done on a lump sum basis.

~~**ITEM 336.5 - Payment**~~

Payment for the removal and replacement of the existing asphalt concrete pavement will be made on the basis of the lump sum price bid, and shall include all material, equipment, and labor necessary to remove and replace the existing pavement.

ITEM 336-1 - REMOVE AND REPLACE PAVEMENT**SECTION 350 - REMOVAL OF EXISTING IMPROVEMENTS**

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

Subsection 350.1 - Description

Add the following:

The work includes the removal and disposal of existing structures, pavement, and any other obstacles to construction. Holes, cavities and trenches resulting from the removal of structures shall be backfilled in accordance with Sections 206 and 211.

The work also includes the removal of the existing fence along the ADOT right-of-way as shown on the plans. The work includes removal and replacement of Arizona Block Windows fencing, lighting and landscaping in accordance with Section 107.9 of these Special Provisions and as shown on the plans.

The work also includes the removal and reinstallation of two existing Lone Butte Industrial Park street lights and approximately 400 feet of 5-foot wide sidewalk in conflict with the installation of the 56th Street Detour and the P-MIP pipelines. These items are considered incidental to and included in the bid price for the ITEM 401-3 - 56th STREET DETOUR.

The disposal of all waste material removed under this item shall be the responsibility of the Contractor. The disposal site shall be approved by the Engineer.

If a Maricopa County landfill is selected for disposition of waste materials and/or debris, a Maricopa County Landfill Use Permit will be required. Application for permit can be made at the Maricopa County Landfill Office, located at 2801 West Durango Street, Phoenix, Arizona 85009 (telephone (602) 269-2661). Charges will be levied on a volume basis for each load delivered to the landfill in accordance with the current fee schedule.

The project construction limits shall be cleared of all trash and construction debris. Such material as collected shall be disposed of at an approved landfill site and shall be subject to landfill fees so assessed, which will be included in the unit price bid for this item.

Weigh tickets from all landfill disposal must be furnished to the Engineer.

The existing City of Chandler 15" sanitary sewer pipe that parallels the Santan Channel alignment shall be removed as shown on the plans. Work includes plugging of existing pipe connections to existing manholes and other modifications and adjustments to the existing manholes that will remain in place, as shown on the plans.

Track removal and replacement for the box culvert and pipeline installation across the Union Pacific Railroad Company (UPRR) track. The track removal and replacement shall be done by UPRR forces. The contractor shall be required to assist the UPRR in the track removal and replacement as requested by the UPRR and the Engineer, and in accordance with Sections 105.6 and 107.2.

Subsection 350.4 - Payment

Payment for the removal of the existing fencing along the ADOT right-of-way, shall be made on the basis of the price bid per linear meter.

ITEM 350-1 - REMOVE FENCING

Payment for the removal and replacement of ARIZONA BLOCK WINDOWS fencing, block wall, lights, and landscaping shall be made on the basis of the lump sum price bid.

ITEM 350-2 - REMOVALS AND REPLACEMENTS

Payment for the removal of the City of Chandler 15" pipe shall be made on the basis of the price bid per linear meter, including modifications and adjustments to existing manholes that will remain in place.

ITEM 350-3 - REMOVAL OF PIPE

Payment for all miscellaneous removals required for construction of the project shall be made on the basis of the lump sum price bid, and including but not limited to, removal and disposal of headwalls, irrigation ditches and boxes, riprap, curb and gutter, fencing, miscellaneous utilities and remnants abandoned within the area of construction, and other items as required.

ITEM 350-4 - MISCELLANEOUS REMOVALS

SECTION 401 - TRAFFIC CONTROL

Modify MAG Section 401 as follows:

Traffic control for the Interstate 10 and 56th Street Detours shall conform to Section 701 of the Arizona Department of Transportation (ADOT) Stored Specifications included In Appendix "E". For the purposes of this Contract, reference to the "Department" in Appendix "E" shall be understood to be Flood Control District of Maricopa County acting on behalf of ADOT.

Subsection 401.1 - Description

Add the following:

All traffic control shall conform to the Construction Specifications for this project, including Part VI of the "Manual On Uniform Traffic Control Devices For Streets And Highways" (U.S. Department of Transportation, Federal Highway Division) and the associated ADOT supplement.

It shall be Contractor's responsibility to provide, erect and maintain and remove after completion of the work all necessary signs, barricades, barriers, berms, lights, high level warning devices, delineators, and any other required devices, uniformed officers, and flagman, necessary to properly mark and control the construction area for the safe and efficient movement of traffic. Temporary traffic control devices shall be

installed prior to the start of any work. It shall be Contractor's responsibility to construct the required detour lanes in order to make the road available to traffic.

When working within Maricopa County right-of-way, all traffic signs that have been removed shall be stockpiled on the project site and the Contractor shall notify the Owner when all signs have been removed. All Maricopa County signs will be installed by Maricopa County Department of Transportation (MCDOT) crews. All pavement marking and signing work within Maricopa County right-of-way will be inspected by and must be approved by MCDOT.

When there is no curb, Contractor shall mark all structures such as manholes and valve boxes outside of the traveled way and within the right-of-way with at least two reflectorized yellow posts.

Approval of the Contractor's traffic control method by ADOT, the County (MCDOT), or the City of Chandler (COC) shall not relieve Contractor of its responsibility to protect the work, the Contractor's personnel, or the general public.

Contractor shall provide and maintain all necessary signs, barricades and centerline vertical panels for five (5) working days beyond the concrete cure time or acceptance of the project by the Engineer, whichever period is greater.

Contractor shall notify Maricopa County Department of Transportation at 24 hours in advance of any construction within Maricopa County right-of-way.

Subsection 401.5 General Traffic regulations

Add the following:

Road closures for the convenience of the Contractor will not be authorized, except as specified in these Special Provisions, without the prior approval of the controlling jurisdiction (ADOT, MCDOT, COC). Traffic restrictions are not permitted on major or collector streets during peak traffic hours of 6:00 a.m. to 8:30 a.m. and 4:00 to 7:00 p.m. weekdays.

Channelization, including "KEEP RIGHT" signs, shall be provided whenever traffic is moved across the street center line, the existing center line is removed or opposing traffic is maintained in other than the normal traffic lanes.

All temporary traffic control devices shall be ballasted with sandbags or other approved ballast.

For construction or trenching diversions that require movement of traffic from the normal through lanes, temporary bypasses shall be utilized only during daylight hours and the normal traffic shall be restored during nighttime hours. Traffic plates and temporary pavement shall be used to restore traffic lanes. Exceptions may be authorized by the Engineer under unusual conditions.

The "SPEED LIMIT 25" sign shall be used where traffic is maintained on unpaved shoulders, on temporary detour roads, on road sections where the existing pavement has been removed, or on traffic lanes that are severely restricted.

Access to all adjacent properties shall be maintained at all times. When access cannot be maintained, Contractor shall notify the adjacent residents at least 48 hours in advance of the access closure.

Contractor shall maintain or relocate all existing signal indications, warning signs, STOP, YIELD, and street name signs erect, clean and in full view of the intended traffic at all times. Portable signs should be used to supplement blocked or removed signs. Contractor shall reset all disturbed signs to permanent locations when construction is completed. Unnecessary or surplus ADOT signs shall be removed and

delivered to the ADOT warehouse. Unnecessary or surplus COC signs shall be removed and delivered to the COC. Contractor is responsible for the cost of replacing lost or damaged traffic warning signs.

Contractor shall erect portable jersey barriers as shown on plans or when deemed necessary by the Engineer. The approach ends of all portable barriers shall be flared a minimum of three meters away from the travel lane, or as otherwise shown on the plans in order to lessen the severity of an accidental impact.

Rope, flagging, fencing and woven plastic tape may be used between barricades and channeling devices to provide additional safety.

Contractor shall install deceleration sand berms in the blocked traffic path or at other hazardous sites, if required by the Engineer, in order to prevent vehicles from entering the construction and/or hazard area. The deceleration sand berms shall be constructed of washed sand and shall be approximately 1.5 meters high.

Subsection 401.5.1 - Special Traffic Regulations

Add the following:

No road closures will be permitted with the exception of Pecos Road west of 56th Street. Access to existing City of Phoenix well sites along Pecos Road must be maintained at all times for City access.

Construction shall not commence or proceed without an approved Traffic Control Plan. At the pre-construction conference, the Contractor shall submit for review his plan for the sequence of construction and the planned road closure (for Pecos Road) signing for construction and the traffic flow when the road is opened. A Traffic Control Plan (TCP) covering the signing and staging shall be submitted and approved prior to the start of each stage of construction. The Traffic Control Plans shall address all construction staging and special provisions requirements.

At the time of the Pre-Construction conference, the Contractor shall designate an employee, other than the Project Superintendent, who is well qualified and experienced in construction traffic control and safety, to be available on the project site during all periods of construction to set up, maintain and coordinate safe barricading whenever construction restricts traffic. This individual shall be authorized to receive and fulfill instructions from the Engineer and shall supervise and direct the work. Instructions and information given by the Engineer to this individual shall be considered as having been given to the Contractor.

Detour Construction

Fully paved detours for 56th Street and I-10 shall be constructed, signed and striped in accordance with ADOT Standard Specifications as shown on the plans and modified herein.

The construction of the 56th Street detour also includes the removal, salvaging and reinstallation of two existing Lone Butte Industrial Park street lights and the removal and reinstallation of sidewalk per Subsection 350.1. The Contractor shall contact Duane Stewart at Lone Butte Industrial Park, Ph. (520) 796-1033 at least 30 calendar days in advance of the removals of the street lights and sidewalk to coordinate the removal and reinstallation.

Section 409 of the ADOT Standard Specifications is revised to read as follows:

The asphaltic concrete shall be as specified in Section 409 of the ADOT Standard Specifications for Road and Bridge Construction. For estimating purposes, the unit weight of the bituminous mix is 2,355 kilograms per cubic meter, and the haul distance is 15 kilometers.

BITUMINOUS MATERIAL

Asphalt cement shall be an asphalt binder performance grade (PG) 70-10 when the average elevation of the project is below 1067 meters, or grade PG 64-16 when the average elevation is 1067 meters and above. The asphalt cement shall conform to the requirements of Section 1005 of the ADOT Standard Specifications. The pressure aging temperature shall be 110 degrees Celsius (C).

The binder supplier shall provide the laboratory mixing and compaction temperature ranges for each PG asphalt binder used for mix design purposes. The mixing temperature range is defined as the temperature range within which the unaged asphalt binder has a rotational viscosity of 0.17±0.02 Pascal-seconds (Pa-s) measured in accordance with ASTM D4402. The compaction temperature range is defined as the temperature range within which the unaged asphalt binder has a rotational viscosity of 0.28±0.03 Pa-s, measured in accordance with ASTM D4402. ASTM D4402 shall be performed at 135 degrees C, and the results plotted on a semi-log graph with viscosity (logarithmic scale) versus temperature (arithmetic scale). PG asphalt binders that are polymer-modified shall have mixing and compaction temperature ranges in accordance with the manufacturer's recommendations, if the mixing temperature range exceeds 163 degrees C and/or the compaction temperature range exceeds 149 degrees C as determined by the ASTM D4402 procedure. The laboratory mixing and compaction temperature ranges shall be reported for the mix design.

ASPHALT CEMENT

Asphalt cement shall be a PG asphalt binder conforming to the requirements of AASHTO Provisional Standard MP1.

A minimum of five working days prior to the start of asphaltic concrete production, the contractor shall provide to the Engineer a four-liter preconstruction sample of the proposed asphalt binder and a Certificate of Analysis showing complete AASHTO Provisional Standard MP1 asphalt binder testing. Asphaltic concrete production shall not begin until the Engineer determines the acceptability of the proposed asphalt binder.

If it is determined by testing that asphalt cement fails to meet the requirements of AASHTO Provisional Standard MP1 for the specified grade, the asphaltic concrete represented by the corresponding test results shall be evaluated for acceptance. When test results for the asphalt cement are not in compliance with specification requirements, the contract unit price will be adjusted by the percentage shown in the following table, when the asphaltic concrete is allowed to remain in place. Should the asphalt cement be in reject status, the contractor shall, upon request by the Engineer, supply an engineering analysis of the expected performance of the asphaltic concrete in which the asphalt cement is incorporated. The engineering analysis shall detail any proposed corrective action and anticipated effect of such corrective action on the performance. Asphaltic concrete not allowed to remain in-place will be removed at the contractor's expense and replaced with asphaltic concrete meeting the requirements of the applicable specifications.

Asphalt Binder Pay Adjustment Table		
Test Property	Test Value	Percent of Contract Unit Price Allowed
Dynamic Shear of Original Binder G*/sin (delta), kPa	0.90 - 1.00	100
	0.70 - 0.89	85
	less than 0.70	70**
Dynamic Shear of TRFO Binder G*/sin (delta), kPa	2.00 - 2.20	100
	1.60 - 1.99	85
	less than 1.60	70**

Asphalt Binder Pay Adjustment Table		
Test Property	Test Value	Percent of Contract Unit Price Allowed
Dynamic Shear of PAV Binder G*/sin (delta), kPa	5,000 - 5,500	100
	5,501 - 7,000	85
	7,001 - 8,000	75
	more than 8,000	65**
Creep Stiffness of PAV Binder S, Maximum, MPa	300 - 330	100
	331 - 450	85
	451 - 600	75
	more than 600	65**
m-value at 60 sec.	0.28 - 0.30	100
	0.23 - 0.27	80
	less than 0.23	65**

**Reject Status: The price adjustment applies if the asphaltic concrete is allowed to remain in-place.

Notes:

- (1) Specified properties for flash point, viscosity at 135 degrees C and mass loss are not considered performance-related. Specification deficiencies for these properties shall be cause for a work stoppage until the specified properties are met, but shall not be cause for a pay adjustment.
- (2) Should the bituminous material be deficient in more than one property, the price adjustment will be the greatest adjustment possible considering individual test results.

Subsection 401.7 - Payment

Payment for traffic control shall be made on the basis of the lump sum price bid and shall be full compensation for all work, including mobilization, placing, storing, removal and maintenance of all traffic control devices, signing and striping, flag persons, and other activities incidental to the implementation of the approved traffic control plan. The Contractor shall provide a detailed cost breakdown to document the basis for the lump sum bid price in accordance with the bid items shown on the plans. Section 701 shall be used as a basis to generate the detailed cost breakdown and the unit prices therein will be used as a basis for determining percentage of completion.

The Contractor is solely responsible for estimating the duration of the "EA-DAY" items included as part of the bid. The Contractor shall provide to the Engineer at the pre-construction conference the assumed durations for each "EA-DAY" item considered in the bid. Plan Sheet T-1.2 includes an estimate of the quantity of "EA-DAY" items required per day.

The Contractor shall be solely responsible for the identification of all work items and durations for temporary traffic control used to place the traffic control plan shown on the plans. The plan concept, the identification of work items and durations shall be included as part of the details provided as back up in the Contractor's lump sum bid for Traffic Control.

ITEM 401-1 - 56th STREET TRAFFIC CONTROL

ITEM 401-2 - I-10 TRAFFIC CONTROL

Payment for the roadway detours shall be made on the basis of the lump sum price bid and shall be full compensation for all work required for the construction of the detours including, but not limited to subgrade preparation, asphalt concrete, earthwork, drainage and the complete removal of all temporary

construction and the restoration of all pavement, median and shoulders, sidewalk and street lights to pre-project conditions. The Contractor shall provide to the Engineer at the pre-construction conference a detailed cost breakdown to document the basis of the lump sum price bid for each detour according to the bid items shown on the prepared plans, and including the sidewalk and street light removals and replacements incidental to ITEM 401-3.

ITEM 401-3 - 56th STREET DETOUR

ITEM 401-4 - I-10 DETOUR

Payment for miscellaneous costs of traffic control along Pecos Road, 56th Street, Weber Drive and other locations, including all costs for placing, storing, and removing all maintenance of traffic control devices, signing, barricades and other items incidental to the traffic control requirements, shall be made on the basis of the lump sum price bid.

ITEM 401-5 - MISCELLANEOUS TRAFFIC CONTROL

SECTION 405 - MONUMENTS

Modify MAG Section 405 as follows:

Contractor shall install ADOT right-of-way markers in accordance with ADOT Standard Specifications Section 901 and Standard Drawing C-21.10, at locations as directed by ADOT and the Engineer.

Payment shall be made on the basis of the unit price bid for each monument installed, complete in place.

ITEM 405-1 - MONUMENTS

SECTION 420 - CHAIN LINK FENCES

Replace MAG Section 420 with the following:

Subsection 420.1 - Description

Add the following:

Fencing shall be placed along the ADOT right-of-way as shown on the plans in accordance with ADOT Standard Chain Link Fence Detail C-12-20, 1830 mm, Type 1 and Standard Specification (1996 - Metric) for Chain Link Fences. Gates shall be installed as shown on the plans and in accordance with ADOT Standard Gate Detail C-12.20.

Subsection 420.5 - Payment

Payment for the chain link fence and gates shall be made on the basis of the price bid per linear meter, complete in place.

ITEM 420-1 - CHAIN LINK FENCES

SECTION 505 - CONCRETE STRUCTURES

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

Subsection 505.1 - Description

Add the following:

The work under this section shall consist of furnishing all labor, materials and equipment for the construction of all cast-in-place and other concrete, including:

Box culvert channel transition walls (Detail D19) and headwall extensions (Detail D4) at channel transitions at Stations 0+016.5, 1+062.260 and 2+014.675.

Reinforced concrete box culverts (RCBC), constructed to ADOT Standard Details, including RCBC 1, Type 1 from Station 0+000 to Station 0+016.5; RCBC 2, Type 4 from Station 1+062.261 to Station 1+205.00; RCBC 3, Type 1 from Station 1+205.00 to Station 1+999.276; RCBC 4, Detail D14 from

Station 1+999.276 to Station 2+009.876; RCBC 5, Type 1 from Station 2+009.876 to Station 2+014.675; and RCBC 7, Type 1 from Station 1+062.261 to Station 1+065.261.

Headwall to be installed in Santan Outfall channel lining at Station 0+485 for corrugated metal pipe connection per Detail D13.

Concrete channel lining from Station 0+016.500 to Station 1+062.261 and from Station 2+014.675 to Station 2+822.742.

Concrete spillways at Station 0+076 and 0+192 per Detail D11.

Permanent Plug for RCBC 7 at Station 1+065.261.

PVC weepholes are to be constructed in the channel lining and channel transition walls between vertical joints spaced at 6.10 M (max). The weepholes will be constructed of 102 mm PVC pipe extending through the channel lining. The area behind the weepholes will be backed by a burlap bag filled with No. 57 clean aggregate with untreated kraft paper between the bag and the back of the channel per Details D9 and D19. All material and construction of the weepholes will be considered incidental to the installation of channel lining and channel transition walls.

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

ADOT Class "S" Concrete, $f_c = 27$ Mpa (4000 psi), shall be used for all Reinforced Concrete Box Culvert construction.

Class "A" Concrete, $f_c = 21$ Mpa (3000 psi), shall be used for all concrete structures, including the channel transition walls, wing walls, channel lining, irrigation structures, spillways, and head walls, and all basin structures.

Reinforced Concrete Box Culvert (RCBC) RCBC 4 (Detail D14) for the Union Pacific Railroad (UPRR) crossing shall be supplied as precast units due to the extremely short duration of 72 hours that the UPRR will allow the track to be shut down for the installation of the box culvert and the P-MIP pipelines. See Section 506 for use of precast units. The 72 hour shut-down and significant coordination that is required with the UPRR is discussed in Subsection 105.6.2.

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

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

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

Wire mesh reinforcement shall be furnished in flat sheets (not rolled).

Waterstops shown on Detail D19 shall be ADEKA Ultra Seal MC-2010M or approved equal. Payment for waterstop is incidental to the cost of the structures in which it is being installed.

All sluice gates shall be the product of one of the following or approved equal:

- Rodney Hunt
- Waterman
- Hydro Gate

Sluice gate, stem lifts, and other appurtenances of site, type, material and construction shall be supplied as shown on the plans and specified. Gates shall meet requirements of AWWA specification C-501. Maximum clearance between seating surfaces with slide gate closed is 0.004 IN.

Sluice gate shall have manual handwheel operator with centerline of handwheel approximately 36 IN above operating floor unless otherwise shown. Lift shall be provided in accordance with AWWA C-501. All lifts shall be provided with clear butyrate plastic stem cover with Mylar open-close indicator.

Sluice gate frame, glides, slide, pedestal, gear housing, thimble, and yoke shall be constructed of cast iron, ASTM A126 Class B. Resilient seals for flush bottom gates shall be of neoprene. Wedges shall be of bronze, ASTM B584, CA872. Stems, stem couplings, anchor bolts, assembly bolts and nuts shall be bronze ASTM B98.

Operators with counter clockwise opening as viewed from the top shall be provided as shown on Drawings or specified. A handwheel shall be provided with the direction of opening and the word OPEN shall be cast into the handwheel. Size handwheel for valves in accordance with AWWA C500.

Size actuator to produce required torque with a maximum pull of 80 LB and to withstand without damage a pull of 200 LB. Gear actuators to be totally enclosed, permanently lubricated and with sealed bearings.

The project includes the reconstruction of the Salt River Project(SRP) Pecos Drain from I-10 to 56th Street and the outlet drain pipe southeasterly from 56th Street to the Gila Drain, noted as the "Lateral 2.6 and 2.7 Tailwater Drain" in the SRP plans. The Pecos Drain from I-10 to 56th Street will be temporarily diverted from its present location to allow for the construction of the Santan Outfall box culvert in the current alignment of the Pecos Drain. After the Santan box culvert is installed, the Pecos Drain will be replaced in its present alignment with a concrete-lined channel. The Pecos Drain diversion and reinstallation includes the diversion and reconnection of an existing lateral along 56th Street, diversion and reconnection of existing well sites and storm drain discharges along the existing Pecos Drain, and a field drain crossing of the Santan Outfall Channel east of 56th Street. The SRP Pecos Drain facilities shall be constructed in accordance with SRP plans attached to and made a part of these plans and SRP Standard Specifications included in Appendix "C".

Diversion of the Pecos Drain during construction of the Santan box culvert is a significant feature of the project. A capacity of at least 20 cfs must be maintained at all times while the Pecos Drain is being diverted, and the diversion ditch shall be bermed to provide for excess flows generated from storm events, as indicted in the SRP plans.

505.6.1 - Joints

Add the following:

Construction joints shall be located at the end of a day's pour or when concrete placement stops for more than 45 minutes. Reinforcing steel shall be continuous through lining construction joints for a minimum of 610 mm beyond the end of pour unless noted otherwise on the plans. The end of the pour shall be a roughened surface.

No expansion or contraction joints will be used for the channel lining. Expansion joints will be used at the interface of the spillway to channel connection per Detail D11.

Subsection 505.8 - Curing

Add the following:

All concrete in top and bottom slabs of box culverts shall be water cured, utilizing the wet burlap method, unless otherwise permitted by the Engineer, and shall be kept continuously wet for 10 days.

No vehicular loads will be permitted on the box culvert structures before the period of twenty-one (21) days from the date of the last pour of concrete unless approval is obtained in writing from the Engineer. In no case shall traffic be allowed on the structure until the specified concrete strength has been attained. The Contractor shall take special precautions to keep the area properly barricaded, lighted, and marked to prevent automotive traffic from crossing the new box culvert structures prior to the Engineer's approval.

Subsection 505.9 - Finishing Concrete

Add the following:

The use of wood trowels will not be permitted in any finishing operations for concrete slabs.

Concrete Channel Lining shall be finished to light broomed texture.

Subsection 505.10 - Payment

Payment for box culvert channel transition walls (Detail D19), and the box culvert head wall extensions (Detail D4), shall be made on the basis of the price bid per cubic meter including all concrete, reinforcing steel, PVC pipe and granular backfill, labor and equipment and other materials as required complete in place.

ITEM 505-1 - CLASS "A" CONCRETE

Payment for the reinforced concrete box culverts shall be made on the basis of the price bid per linear meter including all concrete, reinforcing steel, waterstop, and other materials, all structure excavation and backfill, and all labor, equipment and appurtenances necessary for construction complete in place.

ITEM 505-2 - RCBC 1, TYPE I**ITEM 505-3 - RCBC 2, TYPE IV (I-10 CROSSING ONLY)****ITEM 505-4 - RCBC 3, TYPE I****ITEM 505-5 - RCBC 4, DETAIL D14 (AT RAILROAD)****ITEM 505-6 - RCBC 5, TYPE I****ITEM 505-7 - RCBC 7, TYPE I**

Payment for all gate structures and the basin structures shall be made on the basis of the price bid per each complete in place and including all materials, concrete, reinforcing steel, trash racks, aluminum grates, sluice gate and crank stand assemblies, flap gates, structure excavation and backfill, labor, equipment, and other materials and appurtenances complete in place.

ITEM 505-8 - HEAD WALL, 610 mm CMP (DETAIL D13)**ITEM 505-9 - HEAD WALL W/RIP RAP (610 mm) (DETAIL B5)****ITEM 505-10- HEAD WALL W/TRASHRACK (610 mm) (DETAIL B4)****ITEM 505-11 - HEAD WALL W/TRASHRACK (1370 mm) (DETAIL B4)****ITEM 505-12 - GATE STRUCTURE 101 (DETAIL B1)****ITEM 505-13 - GATE STRUCTURE 102, 103 (DETAIL B2)****ITEM 505-14 - GATE STRUCTURE 104 (DETAIL B3)**

Payment for concrete channel lining shall be measured to neat lines and made at the unit price bid per square meter, and shall include full compensation for all labor, material, equipment, and appurtenances necessary for the construction of the channel lining in place including all concrete and reinforcing steel, PVC weep holes complete and in place. The channel lining shall be constructed using Detail D7 or D22. Channel lining may be constructed using cast-in-place concrete per MAG Section 505 or pneumatically placed concrete per MAG Section 525 as modified herein. At the Pre-Construction Conference the Contractor shall present to the Engineer the type of concrete, MAG 505 or MAG 525, and the Detail D7

or D22, that forms the basis of the bid price. Only one type of concrete and one reinforcement detail can be bid for this item. **[This item will not be eligible for Value Engineering.]**

ITEM 505-15 - CONCRETE CHANNEL LINING

Payment for concrete spillways shall be measured to neat lines and made on the basis of the unit price bid per linear meter, and shall include full compensation for all labor, material, equipment, and appurtenances necessary for construction of the spillways, including all concrete and wire mesh complete in place.

ITEM 505-16 - CONCRETE SPILLWAYS (DETAIL D11)

Payment for RCBC 7 permanent plug in accordance with ADOT Std. Det. C-22.30, A = 900 mm shall be made on the basis of the price bid per each and shall be full compensation for furnishing and constructing the plug complete in place.

ITEM 505-17 - RCBC 7 PERMANENT PLUG

Payment for the SRP Pecos Drain, including the concrete-lined ditch, headwalls, all pipe, laterals, well and storm drain reconnections, field drain pipe crossing, and other items shown in the SRP prepared plans, and including the diversion of the existing Pecos Drain and all connections thereto for the construction of the Santan Outfall box culvert, shall be paid on the basis of the lump sum price bid. The Contractor shall provide a detailed cost breakdown to document the basis of the lump sum bid according to the bid items shown on the SRP prepared plans, and in addition, shall include the cost for temporarily diverting and maintaining the capacity of the existing Pecos Drain during construction.

ITEM 505-18 - SRP PECOS DRAIN

SECTION 506 - PRECAST PRESTRESSED CONCRETE MEMBERS

Precast Reinforced Concrete Box Culvert shall conform to MAG Section 506 except as modified herein.

Subsection 506.1 Description

Add the following:

Reinforced Concrete Box Culvert RCBC 4 (Detail D14) for the Union Pacific Railroad(UPRR) crossing shall be supplied as precast units due to the extremely short duration of 72 hours that the UPRR will allow the track to be shut down for the installation of the box culvert and the P-MIP pipelines. The 72-hour shutdown and significant coordination that is required with the UPRR is discussed in Subsection 105.6.2.

Other RCBC's, including RCBC 1, 2, 3, 5 and 7 may be supplied either as cast-in-place structures per Section 505 or as precast structures per Section 506. Construction plans for precast units, submitted to meet the requirements of Section 506, must be sealed by an Arizona Registered Engineer. In addition, the plans must include details that clearly show how construction joints will be sealed to prevent water leakage.

Subsection 506.10 Payment

Payment for any RCBC items supplied as precast units shall be made per the applicable item in Section 505. At the Preconstruction Conference the Contractor shall present to the Engineer the type of construction, MAG 505 or MAG 506, that forms the basis of the bid price for RCBC Items 505-2, 3, 4, 5, 7, and 8. **[These items will not be eligible for Value Engineering.]**

SECTION 520 - STEEL AND ALUMINUM HANDRAILS

Steel handrail construction shall conform to Section 520 of the Uniform Standard Specifications except as modified herein.

Subsection 520.1 - Description

Add the following:

The work shall consist of furnishing and installing steel handrails on the headwalls at locations shown on the project plans and in accordance with the ADOT Standard Details.

Subsection 520.4 - Measurement

Add the following:

Measurement shall be made on a per linear meter basis.

Subsection 520.5 - Payment

Payment for handrails shall be made on the basis of the price bid per linear meter and shall be full compensation for furnishing and installing steel handrail, complete in place.

ITEM 520-1 - STEEL HANDRAIL

SECTION 525 - PNEUMATICALLY PLACED MORTAR

Pneumatically placed mortar shall conform to Section 525 of the MAG Uniform Standard Specifications except as modified herein.

Subsection 525.1 - Description

Add the following:

Pneumatically placed mortar may be used for concrete channel lining. Pneumatically placed mortar shall be constructed with reinforcement per Detail D7 or D22. Portland Cement Concrete used for the channel lining shall be Class A concrete and conform to MAG Standard Specifications Section 725.

Subsection 525.9 - Finishing

Add the following:

Pneumatically placed mortar used for Concrete Channel Lining shall be finished to a light broomed texture.

Subsection 525.12 - Payment

Payment for pneumatically placed Concrete Channel Lining shall be made per the applicable item in Section 505 (ITEM 505-15).

SECTION 601 - TRENCH EXCAVATION, BACKFILLING AND COMPACTION

Trench excavation, backfilling and compaction for the P-MIP pipelines shall conform to Section 601 of the MAG Uniform Standard Specifications except as modified herein.

Subsection 601.1 - Description

Add the following:

The work covered by this specification covers the P-MIP base pipe alternate of AWWA C302 reinforced concrete pipe (rigid pipe) design. Trenching, backfilling and compaction specifications for allowable alternative pipe materials shall be submitted by the Contractor for any allowable alternative pipe material other than the base pipe material and shall be reviewed and approved by the Engineer prior to acceptance of the alternative pipe material.

Subsection 601.4 - Foundation, Bedding, Backfilling and Compaction

Add the following:

Water consolidation for compaction shall not be allowed.

Type I trench backfill compaction of 90% is predicated on the base design condition of a rigid pipe design. Should the contractor choose an alternate pipe for construction, the contractor shall provide pipe manufacturers recommendation for trench backfill compaction to the owner's engineer for review prior to beginning construction.

Granular material for bedding shall be a fine aggregate (sand) with a sand grading as shown in ASTM C33 or cover aggregate (chips or pea gravel) where 100% passes the 3/8-inch sieve with 10% to 40% passing the No. 4 sieve.

Granular bedding within the UPRR right-of-way shall consist of a minimum of 22 inches of UPRR approved ballast underneath the rails, placed in accordance with UPRR specifications and these specifications. Cost for furnishing the ballast within UPRR right-of-way shall be considered incidental to and included in the cost for ITEM 105-2 - UPRR CONTRACTOR SUPPORT ALLOWANCE.

Subsection 601.4.7 - Rights-Of-Way Belonging to Others

Add the following:

P-MIP pipelines will cross Union Pacific Railroad right-of-way. Use One (1) sack ABC slurry backfill around P-MIP pipelines at location shown on the drawings per MAG Section 728. The Contractor will be required to execute the attached Contractor's Right of Entry Agreements for each pipeline in accordance with Section 107.2, and comply with all the requirements contained within as a condition of working within the UPRR right-of-way.

Subsection 601.6 - Payment

No payment will be made for trench excavation, granular bedding, backfilling, compaction, placement of temporary pavement, or crossing of UPRR right-of-way. The cost of this work shall be included in the unit price bid per linear meter for furnishing and laying pipe.

SECTION 602 – ENCASUREMENT OF SEWER PIPE BY JACKING OPERATION

Sewer line encasement under the Union Pacific Railroad tracks shall conform to Section 602 of the MAG Uniform Standard Specifications except as modified herein.

Subsection 602.1 – Description

The work consists of installing a 762mm (30”) steel casing under the UPRR railroad by jack and bore operation.

Subsection 602.2 - General

Add the following:

Thickness of steel casing pipe shall be a minimum of 12.7 mm (1/2”) in accordance with Union Pacific Railroad Company Common Standard Specification C.S. 1029. The casing shall be installed with even bearing throughout its length and shall slope to one end as shown on the plans. The inside diameter of the casing pipe shall be no less than 50.8 mm (2”) greater than the largest outside diameter of sewer line pipe, joints or couplings. Both ends of the casing shall be sealed using a lean grout. No separate measurement or payment will be made for such, the cost included in the price for furnishing and installing of steel casing.

Subsection 602.3 – Jacking Operation

Jacking pits shall be a minimum of 9.144 m (30') from the centerline of the railroad tracks.

Subsection 602.7 - Measurement and Payment

Payment for the furnishing and installing the steel casing (762mm (30’)) under the UPRR right-of-way shall be made on the basis of the price bid per linear meter, complete in place. The contractor will be required to execute Contractor's Right-of-Entry for this crossing in accordance with Section 107.2 and comply with all requirements contained within as a condition of working within the UPRR right-of-way.

ITEM 602 -1 - STEEL CASING

SECTION 610 - WATER LINE CONSTRUCTION

Temporary water line removal and/or relocation shall conform to Section 610 of the MAG Uniform Standard Specifications, including testing and disinfecting, except as modified herein.

Subsection 610.1 - Description

Add the following:

An existing City of Chandler 203 mm (8") water line parallels the Santan Channel alignment running east from approximately Sta. 1+326 to Sta. 1+541 (Weber Drive to 56th Street). Resilient wedge type gate valves, manufactured by Clow or Waterous may be installed at these locations to isolate the line during construction. This will allow for shutoff of the water line as necessary. Any portion of the water line not affected by construction shall remain and be protected-in-place. Should any portion of water line require temporary shutdown or relocation to allow for diversion of the Pecos Drain or other related construction activities resulting from construction of the Santan Channel, such work shall be accomplished, including testing and disinfecting, in accordance with Section 610 of the MAG Uniform Standard Specifications and the requirements of these specifications.

Subsection 610.13 - Blocking

Add the following:

Any required temporary water line piping shall be restrained using approved methods of restraint in appropriate locations as directed by the Engineer.

Subsection 610.18 - Measurement and Payment

Payment for the installation of the two gate valves, and if required the temporary relocation and reinstallation of the water line shall be made on the basis of the lump sum price bid.

ITEM 610-1 - GATE VALVES AND WATER LINE

SECTION 615 - SEWER LINE CONSTRUCTION

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

Subsection 615.1 - Description

Add the following:

This work includes the installation of 381 mm (15") and 610 mm (24") vitrified clay pipe (VCP), 406 mm (16") ductile iron pipe (DIP), and 610 mm (24") DIP and 910 mm (36") steel casing pipe.

Santa Fe Pacific Pipeline Partners (SFPPP) maintains a 100 mm (4") PVC gravity sewer line that feeds into the existing City of Chandler 381 mm (15") sanitary sewer manhole at Sta. 2+253.292, 7.2 m Rt. as shown on the plans. The existing manhole and sewer line from this location to the east shall remain in service, may be flowing full, and shall be protected-in-place in order to accommodate these flows. Any outages shall be at low flow times between the hours of 2:00 a.m. to 6:00 a.m. The existing sewer line to the west, at Sta. 2+253.292, 7.2 m Rt. will be removed in accordance with the plans and Section 350, and a plug per MAG Det. 427 shall be installed. Payment for the pipe removal and modifications to the existing manhole to remain as shown on Plan Sheet U-1.4 is covered in ITEM 350-3 REMOVAL OF PIPE.

406 mm (16") restrained joint ductile iron pipe (DIP), Class 50, in accordance with AWWA C-150 shall be used through the casing under the railroad tracks as shown on the plans. 610 mm (24") restrained joint ductile iron pipe (DIP), Class 50, in accordance with AWWA C-150 shall be used through the casing under the Santan Channel as shown on the plans. Steel casing pipe 910 mm (36"), shall conform to ASTM 53, Schedule 80. Transition from vitrified clay pipe to ductile iron pipe shall be completed in a manner approved by the Engineer. All ductile iron pipe shall have a ceramic epoxy or polyurethane protective lining which shall cover the inner surfaces of the pipe and fittings from the plain spigot end to the rear of the gasket socket. The pipe manufacturer shall be solely responsible for the quality of the lining and shall supply a certification as to compliance with the specification. The certification of the lining shall be submitted to the COC for approval prior to installation of the DIP pipe.

Five (5) 200 mm (8") VCP stub outs from new manholes, with plugs per MAG Detail 427, shall be provided as shown in the plans.

Subsection 615.3 - Laying Pipe

Add the following:

Connection of new 610 mm (24") sanitary sewer pipe to the existing manhole at Station 2+553.600, 10 m Rt. shall be completed according to the alignment and grade shown on the plans. The Contractor shall exercise caution when making the connection so as not to damage the existing manhole structure or connected sewer lines. Any damage to these facilities resulting from the Contractors construction activities shall be repaired to the satisfaction of the Engineer at the Contractors expense.

Subsection 615.4 - Measurement and Payment

Measurement for connection of new sanitary sewer line to existing manhole will be incidental to the installation to the sewer line.

Payment for the five stub outs and plugs will be made on an each basis.

Payment for the installation of VCP, DIP and Steel casing pipe will be made on the basis of the price bid per linear meter and shall be compensation in full for such work including all required equipment, labor and materials, excavation and backfill, coatings and linings, complete in place.

ITEM 615 -1 VITRIFIED CLAY PIPE (381 mm) (15")

ITEM 615 -2 VITRIFIED CLAY PIPE (610 mm) (24")

ITEM 615 -3 DUCTILE IRON PIPE (406 mm) (16")

ITEM 615- 4 DUCTILE IRON PIPE (610 mm) (24")

ITEM 615- 5 STEEL CASING PIPE (910 mm) (36")

Payment for the installation of the 200 mm (8") stub outs and the plugs per MAG Det. 427 shall be made on the basis of the price bid per each.

ITEM 615-6 – STUBOUT AND PLUG

SECTION 618 - STORM DRAIN CONSTRUCTION

Storm drain construction shall conform to Section 618 of the MAG Uniform Standard Specifications except as modified herein.

Subsection 618.1 - Description

Add the following:

The work includes the installation of the P-MIP pipelines, plugs, and PVC pipe, basin piping, and the reconnecting of existing irrigation lateral pipes for Salt River Project and for the Broadacres Lateral, and other storm drain and well site discharge pipes into the Pecos Drain as shown on the plans.

P-MIP pipeline is an irrigation delivery pipeline (not a storm drain) and construction shall conform to specifications included in Appendix "B".

P-MIP pipelines have been designed using the base alternatives of pipe as listed below:

Station	to	Station	Base Alternatives
0+000	-	0+051.2	Reinforced Concrete Non-Cylinder Pipe (RCNP) AWWA C302 (Section 15069)
0+051.2	-	0+078.6	Reinforced Concrete Cylinder Pipe (RCCP) AWWA C300 (Section 15070)
0+078.6	-	0+878.0	Reinforced Concrete Non-Cylinder Pipe (RCNP) AWWA C302 (Section 15069)

0+878.0	-	1+004.3	Reinforced Concrete Cylinder Pipe (RCCP) AWWA C300 (Section 15070)
1+004.3	-	1+034.158	Reinforced Concrete Non-Cylinder Pipe (RCNP) AWWA C302 (Section 15069)

Contractor may substitute Reinforced Concrete Cylinder Pipe, AWWA C300 (Section 15070), for Reinforced Concrete Non-Cylinder Pipe, AWWA C302 (Section 15069), as indicated on the P-MIP Summary Sheets and in the P-MIP Specifications included in Appendix "B". Cathodic protection monitoring points per Details P12, P14 and P15 are required for the RCCP alternative. Cathodic protection monitoring points are considered incidental to the installation of the RCCP pipe.

Pipe markers shall be installed for each P-MIP pipeline per Detail P11. Pipe markers are considered incidental to the installation of the P-MIP pipelines.

56th Street pavement removal and replacement for installation of the P-MIP pipelines and the Outfall Channel box culvert shall be incidental to the installation of the pipe and box culvert. Pavement structure shall meet the requirements of Section 401 and the plans.

I-10 pavement removal and replacement for the installation of P-MIP pipelines and the Outfall Channel box culvert shall be incidental to the installation of the pipe and box culvert. Pavement structure shall meet the requirement of Section 401 and the plans.

76 mm PVC pipe sleeve shall be installed in the P-MIP pipe trench for the entire length of the project as shown on the plans. 76 mm PVC pipe sleeve under UPRR track from Sta. 0+052.2 to Sta. 0+078.6 shall be installed through a 200 mm (8") Grade 50 restrained joint ductile iron pipe sleeve meeting AWWA C-150.

Both permanent and temporary plugs will be installed at the ends of the P-MIP pipelines as shown on the plans. The temporary plug for the High Head (1370 mm) and Low Head (2130 mm) Pipes shall be constructed of a minimum of exterior grade plywood sheets (1219 mm x 2438 mm x 19 mm) with lumber verticals (102 mm square) at 1219 mm on center. The contractor shall provide a shop drawing for the Engineer's approval a minimum of 2 weeks prior to construction.

The installation of a plug per ADOT Standard Detail C-22.30 on the 1370 mm basin pipe (Pipe 108, Sheet B-1.3) shall be considered incidental to the installation of the pipe.

Siphon cleanouts shall be constructed for the P-MIP pipelines as shown on the plans and in accordance with Detail P8. Cleanout covers shall have the identification "C.O."

Painted markers shall be installed to identify the locations of the P-MIP manholes and valve boxes, and shall be installed per Detail P11. The cost of the markers shall be incidental to the cost for the installation of the P-MIP pipe.

Subsection 618.2 - Materials

Add the following:

P-MIP pipe shall be according to P-MIP Pipeline Specifications in Appendix "B". Concrete pipe, specials, joints, gaskets, installation and testing for Detention Basin B piping and the Broadacres Irrigation Pipe Extension shall be according to ADOT Standard Specifications 501 and 1010. Pecos Drain storm drain and well site connector pipes shall be of the same material and equal or exceed the size and applicable standard specifications of the existing pipes.

Subsection 618.5 - Measurement

Add the following:

NOTE: Measurement and payment for ALL piping included as part of the reconstruction of the SRP Pecos Drain, including all laterals, and well and storm drain reconnections of existing pipe to the reconstructed Pecos Drain, (as shown in the SRP prepared plans included and made a part of the plans) will be paid for and included as a component of the LUMP SUM price bid for the reconstruction of the Pecos Drain as stated in Section 505, and ITEM 505-18 - SRP PECOS DRAIN.

Subsection 618.6 - Payment

Payment for the P-MIP pipelines and plugs, basin piping, and the reconnecting of existing irrigation lateral pipes for the Broadacres lateral shall be made on the basis of the price bid per linear meter, and shall be full compensation for furnishing and installing the pipe and fittings complete in place, as specified, including excavation, saw-cutting, removal, disposal, and replacement of AC pavement, pipe collars, cathodic protection monitoring points for RCCP, pipe markers, removal of obstructions, furnishing and compacting granular bedding, backfilling, compaction, sheeting and bracing, testing, and all incidental work not specifically covered in other pay items.

ITEM 618-1 - REINFORCED CONCRETE PIPE (610 mm, Class IV)

ITEM 618-2 - REINFORCED CONCRETE PIPE (760 mm, Class IV)

ITEM 618-3 - REINFORCED CONCRETE PIPE (910 mm, Class II)

ITEM 618-4 - REINFORCED CONCRETE PIPE (910 mm, Class III)

ITEM 618-5 - REINFORCED CONCRETE PIPE (610 mm, Class V)

ITEM 618-6 - REINFORCED CONCRETE PIPE (1370 mm, Class V)

ITEM 618-7 - REINFORCED CONCRETE PIPE (1370 mm)

ITEM 618-8 - REINFORCED CONCRETE PIPE (2130 mm)

ITEM 618-9 - REINFORCED CONCRETE PIPE (1370 mm, I-10 Crossing Only)

ITEM 618-10 - REINFORCED CONCRETE PIPE (2130 mm, I-10 Crossing Only)

Payment for the installation of the 76 mm PVC pipe sleeve for the P-MIP, and including the 200 mm (8") Grade 50 restrained joint ductile iron pipe sleeve, shall be made on the basis of the price bid per linear meter of PVC pipe sleeve, and shall include full payment for all work required to install sleeves as shown on the plans.

ITEM 618-11 - PVC PIPE (76 mm)

Payment for the installation of the permanent P-MIP pipeline plugs in accordance with Detail P3 shall be made on the basis of the price bid per each, and shall include full payment for all work required to install plugs as shown on the plans.

ITEM 618-12 - P-MIP PERMANENT PLUG

Payment for the installation of the temporary P-MIP pipeline plugs shall be made on the basis of the price bid per each, and shall be full compensation for furnishing and constructing plugs complete in place.

ITEM 618-13 - P-MIP TEMPORARY PLUG

Payment for the P-MIP siphon cleanouts per Detail P8 shall be made on the basis of the price bid per each, complete and in place.

ITEM 618-14 - SIPHON CLEANOUT

SECTION 621 - CORRUGATED METAL PIPE AND ARCHES

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

Subsection 621.1 - Description

Add the following:

Work includes the reconnecting of an existing CMP to the new channel, with head wall and a Waterman Model F-10 flap gate or approved equal. Contractor shall maintain a positive outfall for the existing 610 mm (24") CMP throughout the duration of construction.

Subsection 621.2 - Materials

Add the following:

Location	Sta. 0+485
Type	I, circular, AASHTO M-36
Diameter	610 mm
Minimum Thickness	68 mm x 13 mm x 1.6 mm
Coating	Bituminous
Joints	Watertight galvanized connecting bands

Subsection 621.6 - Payment

Payment for corrugated metal pipe construction shall be made on the basis of the lump sum price bid, and shall be full compensation for furnishing and installing the pipe, fittings and the Waterman Model F-10 flap gate, complete in place, as specified, including excavation, removal of obstructions, backfilling, compaction, and all incidental work not specifically covered in other pay items.

ITEM 621-1 - PIPE, CORRUGATED METAL (610 mm)

SECTION 625 - MANHOLE CONSTRUCTION AND DROP SEWER CONNECTIONS

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

Subsection 625.1 - Description

Add the following:

Construction of the P-MIP pressure manholes, basin manholes 100, 101, and 102, and the manholes at the Broadacres irrigation crossing (Detail D20) shall conform to Section 625 of the MAG Uniform Standard Specifications and applicable ADOT Specifications, and shall be constructed in accordance with the details as shown on the plans.

The Broadacres and basin manholes shall be constructed per ADOT Standard Detail C-18.10.

Irrigation manholes for SRP shall conform to the details provided on the plans, and shall be incidental to the lump sum bid item for the SRP Pecos Drain reconstruction as described in Section 505.

The P-MIP pressure flange manhole shall conform to MAG and to the details as shown on the plans (Detail P1). The blind flange shall conform to ANSI/AWWA C207-94 "Steel Pipe Flanges for Waterworks Service - Sizes 100 mm Through 3600 mm."

Manholes for the P-MIP shall have the agency identification "PIMA-MARICOPA IRRIGATION PIPELINE" on each manhole cover.

Sanitary sewer manholes shall conform to MAG Detail 420.

Subsection 625.2 - Materials

Add the following:

All sanitary sewer manhole covers shall be water tight. All manhole frames and the underside of the accompanying covers shall be coated with 2 - 16 mil coats of coal tar epoxy. All costs for such shall be considered incidental to the price of the manhole.

All interior concrete surfaces of the manhole shall be coated with 2 – 16 mil coats of coal tar epoxy and with “Insecticidal Coating – White Semi-Gloss Latex” or approved equal. The cost of such materials and labor shall be considered incidental to the price of the manhole.

Subsection 625.3 - Construction Methods

Add the following:

The existing sanitary sewer manhole floor at Station 2+553.600, 10 m Rt. shall be reshaped in order to accommodate the connection of the new 610 mm (24") sewer pipe. The invert channels shall be smooth and semicircular in shape, conforming to the inside of the adjacent sewer pipe connections. The Contractor shall exercise caution when reshaping the manhole floor so as not to damage the existing manhole structure or connected sewer lines. Any damage to these facilities resulting from the Contractors construction activities shall be repaired to the satisfaction of the Engineer at the Contractors expense.

Subsection 625.4 - Measurement

Add the following:

Manhole measurement will be per each complete in place.

Subsection 625.5 - Payment

Payment for the P-MIP pressure manholes, irrigation manholes, basin manholes, and the sanitary sewer manholes, shall be made on the basis of the price bid per each, and shall include full compensation for all labor, materials, equipment, and appurtenances necessary for construction in place including all concrete and reinforcing steel, precast manhole sections, all coatings and linings, and all other steel and other embedments, ladders, and manhole covers, including frames.

ITEM 625-1 - IRRIGATION DROP MANHOLE (DETAIL D20)

ITEM 625-2 - PRESSURE MANHOLE (MAG 521 MODIFIED) (DETAIL P1)

ITEM 625-3 - SANITARY SEWER MANHOLE (MAG 420)

ITEM 625-4 - RESHAPE MANHOLE FLOOR

ITEM 625-5 - BASIN MANHOLES (NO. 100, 101, 102)

SECTION 703 - RIPRAP

Riprap shall conform to Section 703 of the MAG Uniform Standard Specifications except as modified herein.

Subsection 703.1 - Stone

Add the following:

In addition to the requirements of Section 703.1, stone for riprap shall have a minimum apparent specific gravity of 2.4 per ASTM C-127.

Waste concrete shall not be used for riprap.

In order to maintain slope stability where the plain riprap is constructed, stone used shall be hard, durable, angular in shape, resistant to weathering and to water action, free from overburden, spoil, shale, and organic material, and shall meet the gradation requirements for the type specified.

Subsection 703-2 - Size of Stone

Add the following:

Subsection 703-2 of the MAG Standard Specifications is replaced with the following requirements:

GRADATION #1

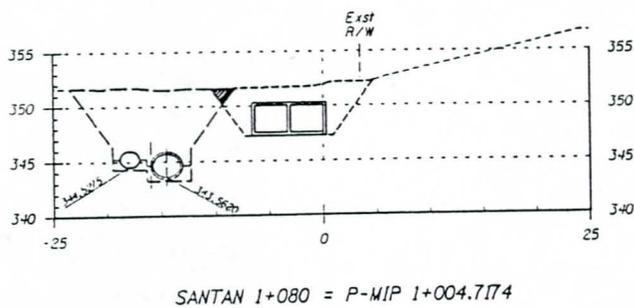
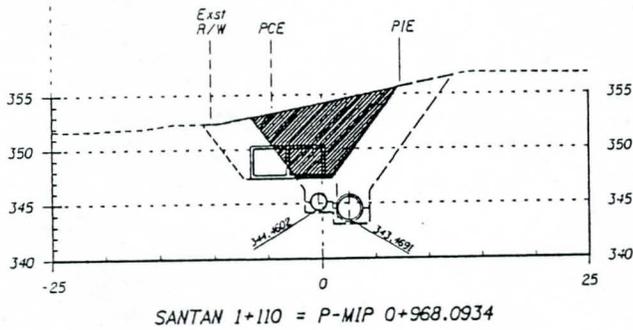
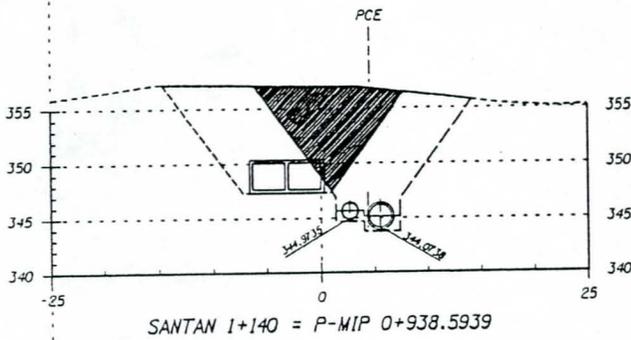
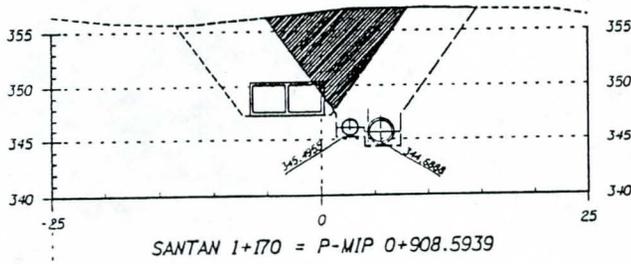
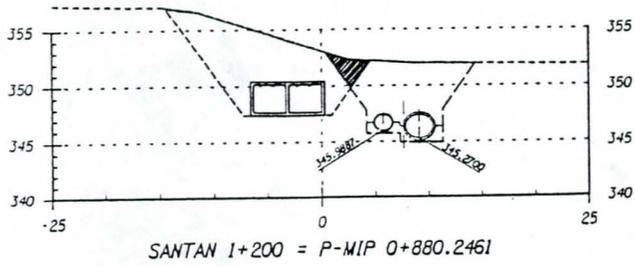
PERCENT PASSING	SIZE
100 - 90	600 mm
85 - 70	450 mm
50 - 30	300 mm
15 - 5	200 mm
5 - 0	100 mm

GRADATION #2

PERCENT PASSING	SIZE
100 - 90	400 mm
85 - 70	300 mm
50 - 30	200 mm
15 - 5	133 mm
5 - 0	66 mm

APPENDIX "A"

EXCAVATION AND BACKFILL CROSS SECTIONS AND QUANTITIES
BETWEEN
SANTAN STATIONS 1+080 AND 1+200



TOTAL EXCAVATION VOLUMES	
+	SANTAN VOLUME = 13273 M ³
+	P-MIP VOLUME = 14371 M ³
-	SHARED VOLUME = 5728 M ³
<hr/>	
	TOTAL = 21916 M ³

APPENDIX "B"

P-MIP PIPELINE SPECIFICATIONS

P-MIP pipelines have been designed using the base alternatives of pipe as listed below:

Station	to	Station	Base Alternatives
0+000	-	0+051.2	Reinforced Concrete Non-Cylinder Pipe (RCNP) AWWA C302 (Section 15069)
0+051.2	-	0+078.6	Reinforced Concrete Cylinder Pipe (RCCP) AWWA C300 (Section 15070)
0+078.6	-	0+878.0	Reinforced Concrete Non-Cylinder Pipe (RCNP) AWWA C302 (Section 15069)
0+878.0	-	1+004.3	Reinforced Concrete Cylinder Pipe (RCCP) AWWA C300 (Section 15070)
1+004.3	-	1+034.158	Reinforced Concrete Non-Cylinder Pipe (RCNP) AWWA C302 (Section 15069)

Contractor may substitute Reinforced Concrete Cylinder Pipe, AWWA C300 (Section 15070), for Reinforced Concrete Non-Cylinder Pipe, AWWA C302 (Section 15069), as indicated on the P-MIP Summary Sheets and in the following P-MIP Specifications.

SECTION 15062

PIPE: DUCTILE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Ductile iron piping, fittings, and appurtenances related to the Siphon Cleanouts.
- B. Measurement and Payment:
 - 1. Payment for ductile iron pipe, including cost of materials, labor, installation, testing, fittings, linings, coatings, and associated earthwork is included in the per each unit bid price for Siphon Cleanouts.

1.02 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. American National Standards Institute (ANSI):
 - a. B1.1, Unified Inch Screw Threads (UN and UNR Thread Form).
 - b. B16.1, Cast-Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
 - c. B16.21, Nonmetallic Flat Gaskets for Pipe Flanges.
 - 2. American Society for Testing and Materials (ASTM):
 - a. A183, Carbon Steel Track Bolts.
 - b. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - c. B695, Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
 - d. D1330, Rubber Sheet Gaskets.
 - 3. American Water Works Association (AWWA):
 - a. C104, Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
 - b. C105, Polyethylene Encasement for Gray and Ductile Cast-Iron Piping for Water and Other Liquids.
 - c. C110, Ductile Iron and Gray Iron Fittings, 3 IN through 48 IN for Water and Other Liquids.
 - d. C111, Gasket Joints for Cast Iron and Ductile Iron Pressure Pipe and Fittings.
 - e. C115, Flanged Ductile Iron Pipe with Threaded Flanges.
 - f. C150, Thickness Design of Ductile Iron Pipe.
 - g. C151, Ductile Iron Pipe, Centrifugally Cast-In-Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
 - h. C153, Ductile-Iron Compact Fittings, 3 in. through 16 in. for Water and Other Liquids.
 - i. C203, Coal-Tar Protective Coatings and Linings for Steel Water Pipelines-Enamel and Tape-Hot Applied.
 - j. C606, Grooved and Shouldered Joints.

4. Military Specification (Mil Spec):
 - a. QQ-P-416F, Plating, Cadmium Electro Deposited.

1.03 SUBMITTALS

- A. Shop Drawings:
 1. Certification of factory hydrostatic testing.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 1. Flanged adapters:
 - a. Rockwell (Style 913 (steel)).
 - b. Dresser (Style 128 (steel)).
 - c. Or approved equal.
- B. Submit requests for substitution in accordance with Specification.

2.02 MATERIALS

- A. Ductile Iron Pipe:
 1. AWWA C115.
 2. AWWA C150.
 3. AWWA C151.
- B. Fittings and Flanges:
 1. AWWA C110.
 2. AWWA C115.
 3. Flanges drilled and faced per ANSI B16.1 for both 125 and 250 psi applications.
- C. Nuts and Bolts:
 1. Buried: Cadmium-plated meeting Military Specification QQP416F, Type 1, Class 2 (Cor-Ten) for buried application.
 2. Heads and dimensions per ANSI B1.1.
 3. Threaded per ANSI B1.1.
 4. Project ends 1/4 to 1/2 IN beyond nuts.
- D. Polyethylene Encasement: See AWWA C105.

2.03 LININGS AND COATINGS

- A. Provide linings to a minimum thickness of 40 mils.
 1. Polyethylene, "Polybond" by American Pipe.
 2. Polyurethane, "Polythane" by U.S. Pipe.
 3. Ceramic epoxy, "Protecto 401" by U.S. Pipe.
 4. Calcium aluminate, "Sewper Coat" by Griffin Pipe.

- B. Encase and buried D.I.P. with protective polyethylene wrapping not less than 8 mils in thickness. Secure wrapping with 2-inch wide pressure sensitive tape not less than 10 mils thick.

2.04 SOURCE QUALITY CONTROL

- A. Factory Test:
 - 1. Subject pipe to hydrostatic test of not less than 500 psi with the pipe under the full test pressure for at least 10 seconds.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Joining Method - Flanged Joints:
 - 1. Install in accordance with AWWA C115.
 - 2. Extend pipe completely through screwed-on flanged and machine flange face and pipe in single operation.
 - 3. Make flange faces flat and perpendicular to pipe centerline.
 - 4. When bolting flange joints, exercise extreme care to ensure that there is no restraint on opposite end of pipe or fitting which would prevent uniform gasket compression or would cause unnecessary stress, bending or torsional strains to be applied to cast flanges or flanged fittings.
 - 5. Allow one flange free movement in any direction while bolts are being tightened.
 - 6. Do not assemble adjoining flexible joints until flanged joints in piping system have been tightened.
 - 7. Gradually tighten flange bolts uniformly to permit even gasket compression.
- B. Flange Adapters 12 IN and Less:
 - 1. Locate and drill holes for anchor studs after pipe is in place and bolted tight.
 - 2. Drill holes not more than 1/8 IN larger than diameter of stud projection.
- C. Cutting:
 - 1. Do not damage interior lining material during cutting.
 - 2. Use abrasive wheel cutters or saws.
 - 3. Make square cuts.
 - 4. Bevel and free cut ends of sharp edges after cutting.
- D. Install polyethylene encasement in full compliance to AWWA C105.
 - 1. Encase underground appurtenances required as part of installation.
 - 2. Where tapping polyethylene encased pipe, first wrap location of tap with three layers of polyethylene adhesive tape. Make tap through tape.
 - 3. Make sections 2 FT longer than pipe section to be covered.
 - 4. Slip tube over pipe while pipe is suspended immediately before placing in trench.
 - 5. After installing in trench, pull tube ends over joint and overlap.
 - 6. Fasten securely in place on each side of each joint with joint tape or strapping.
 - 7. Pull loose tube along pipe barrel up snugly around pipe and fasten in place with joint tape at 3 FT intervals.
 - 8. Completely cover fittings and connections with film held snugly in place with joint tape or strapping.

END OF SECTION

SECTION 15069

PIPE: REINFORCED CONCRETE PRESSURE PIPE, NON-CYLINDER TYPE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Reinforced concrete non-cylinder pipe (RCNP).
- B. Unit Prices:
 - 1. Measurement.
 - a. Measurement per linear meter of pipe.
 - 2. Payment.
 - a. Payments per linear meter of pipe shall be full compensation for designing, furnishing and installing the pipe and fittings complete in place, as specified, including excavation, removal of obstructions, backfilling, granular bedding, compaction, sheeting, bracing, cathodic protection survey and design, testing, and all incidental work not specifically covered in other pay items.

1.02 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. Reinforced concrete pipe (RCNP):
 - a. American Water Works Association (AWWA):
 - 1) C302, Reinforced Concrete Pressure Pipe, Non-Cylinder Water and Other Liquids.
 - 2) M9, Concrete Pressure Pipe.
- B. Provide each pipe, fitting, special appurtenance with a plainly and permanently waterproofed, marked identification. Include but not necessarily limit markings to the following:
 - 1. Size and pressure designation rating in compliance with referenced standards.
 - 2. Date of manufacture.
 - 3. Manufacturer's trademark.
 - 4. Manufacturer's name.
 - 5. Full details on fittings and pipe schedule regarding angles of change, reduction.
 - 6. Special notations and tagging of special items in regard to line location.

1.03 SUBMITTALS

- A. Shop Drawings:
 - 1. Product technical data including:
 - a. Acknowledgment that products submitted meet requirements of standards referenced.
 - b. Manufacturer's installation instructions.

- c. Furnish full details of reinforcement, concrete, and joints for the straight pipe, specials, and connections.
- d. Twenty-one (21) days prior to beginning fabrication of the pipes, submit a tabulated layout schedule with reference to stationing and grade line shown on Drawings. Include on schedule identification of pressure zones, each of design pressure or transient loading zones applicable, point of change from one zone to another. Include for each portion of the pipeline diameter of pipe, design pressures and transient loadings, thickness of pipe, area of steel in reinforcing cage and steel cylinders. Include elevations and horizontal control of items included in submittal Drawings. Design calculations are to be submitted to the Engineer for approval.
- e. Detail special fittings and appurtenances showing reinforcement, concrete, and special requirements.
- f. Test Reports: Include six copies of D (0.01) - Load & Failure Test Reports, cylinder compression test results, and joint tests (if required).
- g. Certificates of Compliance.
- h. Affidavit of Compliance per AWWA.

PART 2 - PRODUCTS

2.01 FABRICATION

- A. Furnish Reinforced Concrete Pressure Pipe, Non-Cylinder Type in full compliance with AWWA C302.
 - 1. Type of joint shall be steel end ring joint with spigot groove and O-ring gasket equivalent to United States Bureau of Reclamation Type R-2.
 - 2. Type of joint shall be spigot groove type joint with O-ring gasket or steel end ring joint with spigot groove and O-ring gasket, equivalent to United States Bureau of Reclamation Type R-4 and R-2, respectively.
 - 3. All fittings shall be furnished with steel end ring joint with spigot groove and O-ring gasket, equivalent to United States Bureau of Reclamation Type R-2.
 - 4. The pipe manufacturer is responsible for determining the restrained joint lengths according to the procedure outlined in AWWA M9 utilizing the design factors listing in 2.01 B below and the information provided on the pipe summary sheets. Each of these joints shall have an internal welded tied steel joint.
- B. Pipe Design: Furnish RCNP in accordance with the pressure and loading conditions as noted on the P-MIP Pipe Summary Sheets
 - 1. Utilize the following design factors:
 - a) Installation condition: Positive projection embankment.
 - b) K_u' , Soil Type = 0.150
 - c) w , Soil weight = 120 lb./ft³
 - d) rd_{sp} , settlement/projection ratio = 0.5
 - e) E' , soil modules = 1000
 - f) D_1 , deflection lag = 1.0

- g) K, bedding constant = 0.096%
- h) Delta x, limiting deflection - 2 percent of pipe diameter
- i) Bedding angle = 150 degrees
- 2. For restrained joints, utilize the following factors:
 - a) u, coefficient of friction = 0.3
 - b) w, soil weight = 120 lb./ft³
 - c) p, pressure = 55 psi

2.02 SPECIAL REQUIREMENTS

- A. Bonding of Joints:
 - 1. All joints shall be bonded electrically. The pipe manufacturer shall provide Engineer with proposed method of bonding.
- B. Corrosion Monitoring
 - 1. Install four-wire test station at approximately 1000 foot intervals at any location where the reinforced concrete cylinder pipe option is used. Two wires will be bonded to each pipe, one for monitoring (#8 AWG w/ insulation) and the other for bonding of the two lines (#2 AWG). Route wires to a valve box per plan. Submit layout of monitoring station locations for Engineer approval.
- C. Cathodic Protection Monitoring
 - 1. The Contractor shall furnish the design, including engineering services as required, furnish all material, and perform all work for a corrosion survey, including low resistivity and stray current. A recommendation report by a corrosion engineer shall be provided to the Owner's Engineer for approval. If cathodic protection is required, payment will be made by change order. Installation plans shall be provided to Owner's Engineer for approval prior to the systems installation. The cathodic protection system shall be furnished, installed, and tested subject to approval of the Owner's Engineer. Testing shall be supervised by the system's designer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Observe all recommendations in accordance with AWWA M9 for installation, delivery, and storage of pipe material.
- B. Departure from and return to grade or alignment shall not vary by more than 1/16 inch per FT, nor more than 1 inch in total departure, for any point on the pipeline.

3.02 CURVES AND FITTINGS

- A. Curves:
 - 1. Observe Drawings for details regarding changes in direction. Where changes of direction by curvature is acceptable, perform curve by

- deflecting pipe at each joint within the permissible joint deflection allowance recommended by the manufacturer.
2. $R = L/2(\tan \frac{1}{2} D/N)$ where R = radius of curvature, meters; L=average laid length of pipe sections measured along the centerline, meters; D = total deflection angle of curve, degrees; N = number of pipe with pulled joints; D/N = total deflection of each pipe, degrees. Check D/N from manufacturer.
 3. Employ the use of special radius (beveled or mitered) pipe where deflected straight pipe will not provide a short enough change in radius.

B. Fittings:

1. In addition to straight pipe or radius pipe, furnish bends, tees, adapters, closure pieces, and other fittings or specials shown on Drawings or required to complete the work. Design fittings to provide same strength as the adjacent piping.
2. Fittings to be smooth or mitered providing mitered angles do not exceed 22-1/2 Degrees and fitting has an R/d greater or equal to 2.5, where:
 $R = \text{radius of bend, mm}$
 $d = \text{diameter of pipe, mm}$
3. All fittings shall have an internal welded tied steel joint according to M9.

C. Pipe Jointing:

1. Inside Joint:
 - a. The inside joint recess of pipe shall be filled with mortar and finished smooth by hand trowel after the joint is engaged.
 - b. All fittings shall have interior welded tied joints.
2. Exterior Joint:
 - a. After the joint is engaged and the joint is checked and found satisfactory, a typar (non-woven fabric) wrapper with steel bands shall be placed around the pipe covering the joint. The steel bands shall be used to secure the wrapper around the pipe by means of a stretcher and sealer. The entire joint shall be poured with a cement mortar and consolidated and rodded or agitated to eliminate voids.
3. Mortar:
 - a. Mortar used for jointing shall consist of 1 part Portland cement Type I or II and 2½ parts of fine, inert, sharp clean sand mixed with water as provided in AWWA Manual M9. The joints shall be filled with mortar inside and outside this pipe using procedures in M9, Chapter 17.

3.03 PRESSURE AND LEAKAGE TEST

- A. General: Subject pipe to the required in-place tests.
- B. Hydrostatic Tests:
 1. For all pressure service RCNP, test each section hydrostatically for pressure test and allowable leakage test immediately after construction.

Prior to the initial filling of piping before testing, ensure that permanent concrete blocking and restraining facilities are in place and sufficiently cured. Backfill above sections of piping required to have end blocked or be restrained. Supply test plugs necessary to prevent specified test pressure from being applied to any existing system pipes and valves. Furnish test pump and equipment necessary to apply test pressures prescribed. Provide water and pressure measurement devices providing an accuracy of measurement of plus or minus 1 percent and ensure that these devices can be utilized continuously without interruption for the duration of the test. Subject all sections of piping system to hydrostatic test pressure of 25 psig for 4 hours. Inspect and perform test in full.

C. Leakage Test:

1. Perform leakage test after pipe installation has favorably complied to other tests required.
 - a. For leakage tests, apply required test head of a minimum of 3 feet above top of pipe at the upper end of the test section during the entire time line leakage measurements are made to determine leakage rate. Ensure that air has been thoroughly evacuated from the line prior to starting the test. Ensure that test pressure has stabilized. Note time of test start and force metered water into the line to maintain pressure within stated variances. Piping system or any section shall not be acceptable until the leakage rate is less than 80 gallons per inch of diameter per mile of pipe per 24 hours.
 - b. If leakage rate is excessive, perform necessary surveys for defect or damage and repair damage or defects immediately.
 - c. Conduct testing procedures in the presence of the Engineer and the P-MIP Representative. Safeguard the entire piping system from damage prior to and during test procedures. Perform all repair and replacement work. Undertake repairs immediately after the test period. Repairs, replacement of defective material, additional retesting, and all cost incurred shall be performed at no additional cost to Owner.

END OF SECTION

SECTION 15070

PIPE: REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Reinforced concrete cylinder pipe (RCCP), and beveled or mitered-end pipe and fittings for reinforced concrete cylinder pipe.

1.02 MEASUREMENT AND PAYMENT

- A. Measurement.
 - 1. Measurement will be per linear meter of reinforced concrete cylinder pipe.
- B. Payment.
 - 1. Payment per linear meter of pipe shall be full compensation for designing, furnishing and installing the pipe and fittings complete in place, as specified, which includes the design of the pipe, excavation, removal of obstructions, backfilling, granular bedding, compaction, sheeting, bracing, coatings, cathodic protection survey and design, testing, and all incidental work not specifically covered in other pay items.

1.03 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. American Water Works Association (AWWA):
 - a. Reinforced concrete cylinder pipe:
 - 1) C300, Reinforced Concrete Pressure Pipe, Steel Cylinder Type for Water and Other Liquids.
 - 2) M9, Concrete Pressure Pipe.

1.04 SUBMITTALS

- A. Shop Drawings:
 - 1. Report full results of the following test reports showing compliance with referenced standard prior to shipment of pipe material:
 - a. Steel test reports.
 - b. Concrete test cylinder reports.
 - c. Rubber gasket test reports.
 - 2. Furnish full details of reinforcement, concrete, and joints for the straight pipe, specials, and connections.
 - 3. Prior to manufacture of pipe, specials or fittings, submit a tabulated layout schedule with reference to stationing and grade line shown on Drawings. Include on schedule identification of pressure zones, point of

change from one zone to another and pipe diameter. Include detailed shop drawings giving full information on amount, size, and nature of reinforcement for each classification and size of pipe. Show details of curves, fittings, specials, appurtenances, together with identification marks or numbers by which location of each pipe, special or accessory is determined in the pipeline. Indicate elevation of each joint in vertical curves. Indicate vertical and/or horizontal deflection of each joint where applicable.

4. Pipe design calculations.
5. Welding procedures and welding certification.
6. Affidavit of Compliance per AWWA.

PART 2 - PRODUCTS

2.01 FABRICATION

- A. Reinforced Concrete Cylinder Pipe (RCCP):
 1. Provide reinforced concrete cylinder pipe (RCCP) meeting or exceeding specification AWWA C300. Construct pipe with a continuous arc welded steel cylinder with steel joint rings welded to the ends. Steel cylinder shall be surrounded by reinforcing cage or cages of steel bars, wire or welded wire fabric and lined with concrete inside and out.
 2. Furnish RCCP designed to resist the flexural and axial stresses from the load conditions shown on the plans.
 3. The pipe manufacturer is responsible for determining the restrained joint lengths according to the procedure outlined in AWWA M9 utilizing the design factors listing in 2.01 B below and the information provided on the pipe summary sheets. Each of these joints shall have an internal welded tied steel joint.

- B. Pipe Design: Furnish RCNP in accordance with the pressure and loading conditions as noted on the P-MIP Pipe Summary Sheets.
 1. Utilize the following design factors:
 - a) Installation condition: Positive projection embankment.
 - b) K_u' , soil type = 0.150
 - c) w , soil weight = 120 lb/ft³
 - d) rd_{sp} , settlement/projection ratio = 0.5
 - e) E' , soil modulus = 1000
 - f) D_1 , deflection lag = 1.0
 - g) K , bedding constant = 0.096%
 - h) Δx , limiting deflection - 2 percent of pipe diameter
 - i) Bedding angle = 150 degrees
 2. For restrained joints, utilize the following factors:
 - a) u , coefficient of friction = 0.3
 - b) w , soil weight = 120 lb/ft³
 - c) p , pressure = 55 psi

2.02 COATINGS

- A. Protective Coatings:
 - 1. Surfaces of steel joint rings exposed in finished pipe and all other exposed metal surfaces shall be shop primed with manufacturer's standard rust inhibitive primer.
 - 2. Mortar coating shall be used to protect all exposed steel surfaces after installation.
- B. Cement mortar for coatings shall consist of 1 part Portland cement to 2-1/2 parts of fine, sharp clean sand mixed with water.

2.03 SOURCE QUALITY CONTROL

- A. Conduct shop testing to evaluate physical properties of pipe components in accordance with requirements of applicable section of AWWA standard(s).
- B. Provide each pipe, fittings, special appurtenance with a plainly and permanently waterproofed, marked identification. Include but not necessarily limit markings to the following:
 - 1. Size and class of pipe, pressure rating in compliance with referenced standards.
 - 2. Date of manufacturer.
 - 3. Manufacturer's trademark or name.
 - 4. On bends, the angle turned.
 - 5. On beveled pipe, amount of bevel and point of maximum bevel, marked on the bevel end.
 - 6. Special notations and tagging of special items in regard to line location.

2.04 SPECIAL REQUIREMENTS

- A. Bonding of Joints:
 - 1. All joints shall be bonded electrically. A minimum of two bonds per joint is required. The bonding jumpers shall include collared studs attached at the plant and # 2 GA (AWG) bare stranded copper cable attached to copper connectors.
- B. Corrosion Monitoring
 - 1. Install four-wire test station at approximately 1000 foot intervals at any location where the reinforced concrete cylinder pipe option is used. Two wires will be bonded to each pipe, one for monitoring (#8 AWG w/ insulation) and the other for bonding of the two lines (#2 AWG). Route wires to a valve box per plan. Submit layout of monitoring station locations for Engineer approval.
- C. Cathodic Protection Monitoring
 - 1. The Contractor shall furnish the design, including engineering services as required, furnish all material, and perform all work for a corrosion

survey, including low resistivity and stray current. A recommendation report by a corrosion engineer shall be provided to the Owner's Engineer for approval. If cathodic protection is required, payment will be made by change order. Installation plans shall be provided to Owner's Engineer for approval prior to the systems installation. The cathodic protection system shall be furnished, installed, and tested subject to approval of the Owner's Engineer. Testing shall be supervised by the system's designer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General:
 - 1. Install products in accordance with manufacturer's instructions.
 - 2. Follow all recommendations in accordance with AWWA M9 for installation, delivery and storage of pipe materials.
 - 3. Departure from and return to grade or alignment shall not vary by more than 1/16 inch per FT, nor more than 1 inch in total departure, for any point on the pipeline.

- B. Joints, Curves, and Fittings:
 - 1. Joints:
 - a. Install sealed joints using continuous steel end ring with spigot groove and O-ring gasket per AWWA.
 - 1) Ensure rubber gasket serves as the sole element to make the joint watertight.
 - 2) O-ring to have a smooth surface, free from pitting, blisters, porosity and other imperfections.
 - 3) Cement mortar or plastic materials used to finish joints shall not be depended upon for watertightness.
 - 2. Curves:
 - a. Observe Drawings for details regarding changes in direction.
 - b. Where changes of direction by curvature is acceptable, perform curve by deflecting pipe at each joint within the permissible joint deflection allowance recommended by the manufacturer.
 - c. Employ the use of special radius (bevelled or mitered) pipe where deflected straight pipe will not provide a short enough change in radius.
 - 3. Fittings:
 - a. In addition to straight pipe or radius pipe, furnish bends, tees, adapters, closures pieces, and other fittings or specials shown on Drawings or required to complete the work.
 - b. Provide specials and fittings in accordance with AWWA C300 and construct in accordance with stated design pressures equal to or greater than that of the adjacent pipe.
 - c. Fittings may be smooth or mitered providing mitered angles do not exceed 22-1/2 degrees and fitting has an R/d greater or equal to 2.5, where:
 - 1) $R = \text{radius of bend, IN}$

2) d = diameter of pipe, IN

C. Pipe Jointing:

1. Inside Joint:
 - a. The inside joint recess of pipe shall be filled with mortar and finished smooth by hand trowel after the joint is engaged.
 - b. All fittings shall have interior welded tied joints.
2. Exterior Joint:
 - a. After the joint is engaged and the joint is checked and found satisfactory, a typar (non-woven fabric) wrapper with steel bands shall be placed around the pipe covering the joint. The steel bands shall be used to secure the wrapper around the pipe by means of a stretcher and sealer. The entire joint shall be poured with a cement mortar and consolidated and rodded or agitated to eliminate voids.
3. Mortar:
 - a. Mortar used for jointing shall consist of 1 part Portland cement Type I or II and 2½ parts of fine, inert, sharp clean sand mixed with water as provided in AWWA Manual M9. The joints shall be filled with mortar inside and outside this pipe using procedures in M9, Chapter 17.

3.02 FIELD QUALITY CONTROL

A. Pressure Testing:

1. Hydrostatic tests: For pressure service concrete cylinder pipe, test each section hydrostatically for pressure test and allowable leakage test immediately after construction.
 - a. Prior to the initial filing of piping before testing, ensure that permanent concrete blocking and restraining facilities are in place and sufficiently cured. Backfill above sections of piping required to have end blocked or be restrained prior to test.
 - b. Supply test plugs necessary to prevent specified test pressure from being applied to any existing system pipes and valves. Furnish test pump and equipment necessary to apply test pressures prescribed.
 - c. Provide water and pressure measurement devices providing an accuracy of measurement of one percent and ensure that those devices can be utilized continuously without interruption for the duration of the test.
 - d. Subject all sections of piping system to hydrostatic test pressure of 25 psig for 4 hours. Inspect and perform test in full.
2. Leakage test:
 - a. Perform leakage test in conjunction with pressure test.
 - b. Ensure that air has been thoroughly evacuated from the piping prior to starting the test.
 - c. Ensure that test pressure has stabilized.
 - d. Note time of test start and force metered water into the line to maintain pressure within stated variances.

- e. Piping system or any section shall not be acceptable until the leakage rate is less than 10 GAL/IN diameter per mile per day.
- f. If leakage rate is excessive, perform necessary surveys for defect or damage and repair damage and defects immediately.
- g. Conduct testing procedures in the presence of Engineer or his authorized representative.
- h. Safeguard the entire piping system from damage prior to and during all test procedures.
- i. Perform all repair and replacement work in accordance with Engineer's directions.
- j. Undertake repairs immediately after the test period.
- k. Repairs, replacement of defective materials, additional retesting and all costs incurred shall be performed at no additional cost to Owner.

END OF SECTION

APPENDIX "C"

SALT RIVER PROJECT (SRP)
STANDARD SPECIFICATIONS

SRP CONSTRUCTION INFORMATION AND SPECIFICATIONS

PROVIDE THIS ENTIRE PACKAGE TO YOUR CONTRACTOR

GENERAL

Temporary Irrigation Outage Agreement Instructions

Temporary Irrigation Outage Agreement Form

Permit-Required Confined Space Policy

Confined Space Checklist - Pipe Crawl

Confined Space Entry Permit Form

STANDARD SPECIFICATIONS

SRP 02227 Salt River Project Standard Specification
for Slurry Backfill Materials

WTR 02614 Salt River Project Water Group
Standard Specification
for Precast Concrete Pipe

SRP 03210 Salt River Project Standard Specification
for Reinforcing Steel

SRP 03300 Salt River Project Standard Specification
for Concrete

GE 03305 Salt River Project Generation Engineering
Standard Specification
for Concrete Formwork and Placement

REFERENCE DRAWINGS

WES-30300-001 Pipeline Bedding/Backfill
Requirements

WES-30300-003 Standard Concrete Pipe Collar

WES-30300-004 Rubber Gasket Joints

WES-30350-200 45 Degree Trashrack for Pipeline
Headwall

SRP APPROVED LANDFILLS MAP

TEMPORARY IRRIGATION OUTAGE AGREEMENT INSTRUCTIONS

Whenever an SRP irrigation outage is needed for construction, an Outage Agreement must be completed by the SRP Watermaster and signed by the Contractor before SRP will allow construction to begin.

To initiate the process, Contractor shall contact the SRP Watermaster and request a pre-construction meeting.

At the pre-construction meeting, or subsequent meetings, if all conditions have been met to the satisfaction of SRP, the SRP Watermaster will fill out an Outage Agreement form. Outage Agreement form must be signed by SRP Watermaster and by Contractor. SRP Watermaster will provide Contractor with a copy of signed Outage Agreement.

After the Outage Agreement form has been completed and signed, Contractor may proceed with the agreed upon work during the time period specified.



Delivering More Than Power.™

SRP File or License # _____

TEMPORARY IRRIGATION OUTAGE AGREEMENT

This TEMPORARY IRRIGATION OUTAGE AGREEMENT ("OUTAGE AGREEMENT") is made by and between _____ ("CONTRACTOR") and the SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT ("SRP"), an agricultural improvement and power district organized and existing under the laws of the State of Arizona.

During the period from _____ 19__ at ____:00 ____M. through _____ 19__ at ____:00 ____M. ("OUTAGE PERIOD"), SRP agrees to cease irrigation deliveries through the SRP irrigation facilities at the following location(s):

The CONTRACTOR, having read both sides of this OUTAGE AGREEMENT, understands and agrees to all the terms and conditions contained herein. CONTRACTOR further acknowledges that CONTRACTOR (1) has been informed that the workplace may contain OSHA Permit-Required Confined Spaces, (2) agrees that CONTRACTOR will conduct any Permit-Required Confined Space entry under a permit space program that complies with applicable OSHA requirements, and (3) has received and reviewed SRP's Association Permit-Required Confined Space Program.

Authorized CONTRACTOR Representative _____ Date _____

Office Phone No.: _____ Emergency Phone No.: _____

SRP _____ Date _____



SRP emergency phone number: 236-5296

COPIES: WHITE - INSPECTOR CANARY - WATERMASTER PINK - CONTRACTOR

TERMS AND CONDITIONS

In consideration of the permission granted by SRP to the CONTRACTOR to perform certain work (the "Work") on or near SRP's irrigation facilities as identified herein, the CONTRACTOR agrees as follows:

1. CONTRACTOR shall complete the Work and shall restore the affected SRP irrigation system to full operational condition during the OUTAGE PERIOD.
2. If CONTRACTOR does not complete the Work during the OUTAGE PERIOD, CONTRACTOR, upon demand, shall pay SRP for all costs and expenses incurred in completing the Work and/or restoring the irrigation facilities to full operational condition and for all direct and indirect damages incurred by SRP.
3. CONTRACTOR shall comply with all applicable federal, state, and local laws, rules, regulations and ordinances.
4. If CONTRACTOR or CONTRACTOR's employees enter a Permit-Required Confined Space as defined in OSHA 29 C.F.R. 1910.146, CONTRACTOR shall notify SRP of the Permit-Required Confined Space program that the CONTRACTOR followed and shall notify SRP during OSHA required debriefing about any hazards encountered or created. SRP has informed CONTRACTOR of potential known hazards of Permit-Required Confined Spaces, including but not limited to: engulfment from water; atmospheric hazards such as oxygen deficiency, carbon monoxide or flammable atmosphere from methane gas; and/or entrapment hazard from roots or other debris in the pipeline.

NOTE: THIS OUTAGE AGREEMENT DOES NOT GUARANTEE DRY CONDITIONS.

5. CONTRACTOR is responsible for "The Control of Hazardous Energy (Lockout/Tagout)" as defined in OSHA 29 C.F.R. 1910.147. CONTRACTOR shall protect the job site from water that may leak through SRP gates or from storm water and nuisance water that may enter the system uncontrolled, and CONTRACTOR shall relieve SRP from any such responsibility.
6. CONTRACTOR shall indemnify, defend and hold harmless the United States, Salt River Valley Water Users' Association, and SRP, for, from and against all damages, costs, liabilities, and expenses, including attorneys' fees, arising out of any act, omission, or negligence of CONTRACTOR or of any of its contractors or subcontractors.
7. CONTRACTOR shall dispose of all waste materials removed from the site that are associated with the construction or modification of SRP's irrigation facilities in an SRP APPROVED LANDFILL.
8. If CONTRACTOR enters into any contract or subcontract for performance of any Work, CONTRACTOR shall require each such contractor or subcontractor to agree to the terms and conditions of this OUTAGE AGREEMENT. If contract or subcontract Work is performed in Permit-Required Confined Space as defined by OSHA 29 C.F.R. 1910.146, CONTRACTOR shall provide each such contractor or subcontractor with a copy of SRP's Association Permit-Required Confined Space Program, inform each such contractor or subcontractor that the workplace may contain OSHA Permit-Required Confined Spaces, and ensure all permit-required confined space entries are made under a Permit-Required Confined Space program that complies with applicable OSHA requirements. CONTRACTOR shall be responsible for compliance by such contractors or subcontractors with the terms and conditions of this OUTAGE AGREEMENT.
9. This OUTAGE AGREEMENT shall be governed by and construed under the laws of the State of Arizona. No change, addition, or modification shall be binding upon SRP unless in writing and signed by SRP.

ASSOCIATION PERMIT-REQUIRED CONFINED SPACE POLICY
April 15, 1993

PURPOSE:

To provide a procedure assuring that Salt River Project personnel can safely enter new, existing or other permit-required confined spaces to accomplish inspection, repairs or construction of water transmission and distribution facilities.

COMPLIANCE WITH OSHA STANDARD CFR 1910.146, CFR 1910.147

Page #

I.	Definitions, Terminology, Duties of Participants	1-3
II.	Required Special Equipment	4
III.	Checking for hazardous gases & adequate air flow	5
IV.	Procedures for entering Existing Pipeline	5
	Procedures for Lock Out/Tag Out protection	6-7
V.	Procedures for entering New Pipeline	8
VI.	Procedures for entering New or Existing Irrigation Structures, Manholes, Vaults or Culverts	8

I. DEFINITIONS, TERMINOLOGY, DUTIES OF PARTICIPANTS

A. PERMIT-REQUIRED CONFINED SPACE DEFINITION

1. Any space which is large enough to enter and work in;
2. Has limited means for entry or exit;
3. Is not designed for continuous occupancy; AND,
4. Has one or more of the following characteristics:
 - a. Contains, or has the potential to contain, a hazardous atmosphere;
 - b. Is an engulfment hazard; or,
 - c. Any other recognized serious safety or health hazard.
5. Examples of permit-required confined space: structures, manholes, vaults, pipelines, well casings, stand pipes, sumps, and culverts.

Examples of non-confined space: canals, open lateral structures, removing check boards from a structure, assembling pre-cast structures.

B. CONFINED SPACE ENTRY PERMIT

A document that defines the conditions under which permitted confined space may be entered; states the reason(s) for entering a space, the anticipated hazards of the entry, lists the attendants, entrants and the individuals who may be in charge of the entry and establishes the length of time for which the permit may remain valid. Entry permit must be maintained in departmental file for one year after the permit is cancelled.

If gas monitor goes off while entrants are in the confined space, send the original copy of permit to Employee Safety Services.

Confined Space Checklist and Confined Space Entry Permit shall be completed prior to entry into a confined space.

C. DUTIES OF PARTICIPANTS

No person(s) will participate in an entry into a permitted confined space unless they have had prior Association confined space training.

All participants will be trained as the "attendant", "entrant", and or "crew leader". These roles may be rotated as directed by crew leader.

No pipe crawl shall take place unless the crew is in complete agreement as to the safety of the confined space entry.

Rescue will be conducted by local fire department personnel.

1. ATTENDANT

An employee stationed outside the permitted confined space who is trained in accordance with OSHA Standard 29 CFR 1910.146 and who monitors the authorized entrants inside the confined space and does not attempt rescue of entrant.

2. ENTRANT

An employee who is trained in accordance with the OSHA Standard 29 CFR 1910.146 and who is authorized by the employer to enter a confined space. Entrant must have minimum SRP Category B respirator certification. The employee is considered an "entrant" as soon as any part of the employee's body breaks the opening of a confined space.

3. CREW

Refers to entrant(s), attendant, crew leader (foreman, inspector), zanjero, watermaster.

4. CREW LEADER

This job function title may also refer to foreman or inspectors regarding confined space policies, permits, checklist. Crew Leader authorizes entry and ensures that permit contains all information and that all procedures,

practices and equipment for safe entry are in effect before notifying ADC of entry. Crew leader continues to monitor at appropriate intervals and ensures that only entrants are permitted in the confined space. Crew leader terminates entry whenever conditions are unacceptable and upon completion of work, cancels permit. If there are air quality problems requiring assistance, the crew leader will call the foreman.

5. FOREMAN

Existing Pipe: foreman or crew leader meets with watermaster and reviews microfilm drawings, print, and Zanjero Hazards Identification Map when problem arises. Passes all of above information on to the crew leader.

6. ZANJERO

A person with SRP water distribution systems who will arrange the system for dry-up and act as standby at a specific location for control of potential water hazards. Identifies points of Lock Out/Tag Out.

7. WATERMASTER

Existing Pipe: Meets with foreman and reviews microfilm drawings, print, and Zanjero Hazards Identification Map to identify potential water hazards when problem arises. Arranges for dry-up with zanjeros.

D. TERMINOLOGY

1. CULVERTS

Pipelines or other confined spaces, 100 feet or less in length such as road crossings, ties to open ditch where both ends are open.

2. ENTRY

The employee is considered to have entered as soon as any part of the employee's body breaks the plane of an opening into the confined space.

3. EXISTING PIPELINE

Any irrigation pipeline that has had water in it or any new irrigation pipeline that is tied into existing facilities as determined by the foreman and/or watermaster.

4. HOT WORK PERMIT

Employer's written authorization to perform operations which could provide a source of ignition.

5. NEW PIPELINE

A pipeline which has not yet been tied into the existing facilities as determined by the foreman and/or watermaster.

6. PIPE CRAWL

When one or more employees enter a pipeline.

II. REQUIRED SPECIAL EQUIPMENT FOR PERMITTED CONFINED SPACES

Each department involved in permitted confined space work will provide and maintain the following equipment for use when entering confined spaces. Most of the equipment listed below is stored in a Confined Space Box along with other equipment, such as: knee pads, batteries, etc. Prior to going to work site, monitors may be obtained from tool room and upon completion of work, returned to tool room for battery charging.

- A. Flammable gas, oxygen and carbon monoxide gas monitors with sampling pumps in appropriate carrying cases. Each entrant is required to carry a monitor.
- B. One emergency air/oxygen escape pack for each entrant and one spare in crew truck.
- C. NOTIFICATION SIGNS FOR ENTERING EXISTING PIPE:
 - 1. Magnetic Sign for wellsite starter cabinet:
"DANGER DO NOT START, PERSON IN PIPELINE"
 - 2. Clearance Tag with Special Lock:
SRP Warehouse Stock Code # 73-2293
"DO NOT OPERATE"
- D. Air Blowers for ventilation
- E. Radios for Existing Pipe - a minimum of two are required when working in existing pipeline. One unit with the attendant at the entry point and one unit with the zanjero, both using the same channel.

Radios for New Pipe and "other" confined spaces - a minimum of one is required.
- F. Air horns in Existing & New Pipe - a minimum of four are required. Two for inside the pipeline and two outside at the entry point.
- G. Safe-Alert Measuring Probe used by Zanjero is an additional safety precaution which is placed at water surface at the nearest upstream structure. Any influx of water will trigger the probe and alert the zanjero who is also visually monitoring the water level.

III. CHECKING FOR HAZARDOUS GASES AND ADEQUATE AIR FLOW IN ALL CONFINED SPACES

PERFORM TESTS NO LONGER THAN 30 MINUTES PRIOR TO ENTERING ANY CONFINED SPACE

- A. Crew will check entrance opening to all confined spaces for oxygen, flammable gases and carbon monoxide content.
- B. In New and Existing Pipe, crew will check downstream opening to determine that an adequate flow of air is coming out of the pipeline to ensure that the line is clear.
- C. Crew leader will determine if a suitable air supply does exist. If air is not suitable, a portable air blower will be used. Blower runs a minimum of 10 minutes before entry. Care should be taken to place the gasoline/powered blowers so that the exhaust fumes will not be sucked into the air stream going into the confined space.

AFTER VENTILATION, THE AIR SUPPLY MUST BE RETESTED

- D. If there are any questions, the crew leader will call the foreman. The foreman will call Employee Safety Services if additional assistance is required.

IV. PROCEDURES FOR ENTERING EXISTING PIPELINE

- A. Crew will consist of two or more employees depending on the job.
 - 1. A minimum of two people will enter existing pipe together to repair or construct.
One person may enter existing pipe for inspection or observation.
 - 2. One attendant is required.
- B. Prior to entrant(s) entering existing pipeline:
 - 1. Watermaster meets with foreman, crew leader or inspector when problem arises.
 - Review microfilm drawings and copy
 - Review zanjero identification map
 - 2. Crew leader, entrant(s), watermaster and zanjero will meet at the job site to inspect the area for anything that might impact the pipeline; i.e. street drains.
 - 3. Crew leader will pass on all information to crew gathered from the microfilm and the meeting held with the foreman/watermaster.

IN CASE OF EMERGENCY,
CONTACT ADC VIA RADIO OR PHONE 236-5296

C. Procedure to PLACE Lock Out/Tag Out Equipment

1. Zanjero will identify all lockout/tag out sources.

Crew Leader will issue equipment: Safe Alert Probe, special locks and clearance tags, and if needed, signs for pump starter boxes.

Crew Leader & Zanjero will place locks/tags on all sources using special locks and clearance tags, and if needed, signs for pump starter boxes.

2. Zanjero will recheck the pipeline upstream and downstream for any possible source of water including waste water, street drainage and well sites.

The dry up will be such that both the upstream and downstream ends of the pipe will be open to allow a free flow of air through the pipeline.

If there is a well site that could discharge water into the pipeline, the Crew Leader will place magnetic sign on the outside of the starter box that states: DANGER DO NOT START, PERSON IN PIPELINE

Crew Leader, at direction of Zanjero, will place special lock & tag on control box and switch deep-well to "MANUAL" if pump is on supervisory control and notify ADC (circuit breaker switch must be on outside of control box). If circuit breaker is on inside of motor control box, call Groundwater).

Crew Leader, at direction of Zanjero, will place special lock and clearance tag on the first upstream control gate to prevent it from being operated when someone is in the pipe.

CREW LEADER HOLDS KEYS TO SPECIAL LOCKS

Zanjero stations himself/herself at the nearest upstream structure where water could possibly enter and installs the Safe-Alert probe in the nearest upstream structure.

3. Crew leader will review checklist, complete Confined Space Entry Permit and then notify ADC that they are about to enter pipeline, giving all required permit information.

ADC will broadcast entry on both channels D and E and notify appropriate municipalities and agencies.

D. Procedure to REMOVE Lock Out/Tag Out Equipment

1. Crew leader will inform zanjero, foreman, and ADC when the work is completed and all entrant(s) are out of the pipeline.

ADC will broadcast completion on channel D and E. This cancels the permit.

Zanjero will remain on the job and monitor the pipeline until the crew leader has informed the zanjero that all employees are out of the pipeline and the job is completed.

2. Crew Leader who placed all of the special locks and clearance tags upstream and on control box must remove them. If used, Crew Leader who placed magnetic sign on pump starter will remove it and return pump to "Supervisory" control at direction of Transmission.

OSHA regulations require that the same "authorized" person who places a specific lock and tag, removes them.

If the Crew Leader who placed the locks/tags is unable to remove them, the Crew Leader will notify the Foreman who will name a replacement Crew Leader. An "Authorized Exception" Form shall be completed which names another Crew Leader as the authorized replacement.

3. Crew Leader checks that all numbered locks and tags are returned to the confined space box upon completion of every confined space entry.

IN CASE OF EMERGENCY,
CONTACT ADC VIA RADIO OR PHONE 236-5296

V. PROCEDURES FOR ENTERING NEW PIPELINE

- A. Crew will consist of two or more employees depending on the job.

One person may enter new pipe, the second person will act as attendant.

- B. Crew leader will review checklist, complete Confined Space Entry Permit and then notify ADC that they are about to enter new pipe, giving all required permit information.

ADC will broadcast entry on both channels D and E and notify appropriate municipalities and agencies.

IN CASE OF EMERGENCY,
CONTACT ADC VIA RADIO OR PHONE 236-5296

VI. PROCEDURES FOR ENTERING NEW OR EXISTING IRRIGATION STRUCTURES, MANHOLES, VAULTS OR CULVERTS

- A. Crew will consist of two or more employees depending on the job.

One person may enter the confined space provided the attendant has verbal or visual contact with the entrant.

- B. Crew leader will review checklist, complete Confined Space Entry Permit and then notify ADC that they are about to enter confined space, giving all required permit information.

ADC will broadcast entry on both channels D and E and notify appropriate municipalities and agencies.

IN CASE OF EMERGENCY,
CONTACT ADC VIA RADIO OR PHONE 236-5296

CONFINED SPACE CHECKLIST

Pipe Crawl

Foreman, Crew Leader and Inspector are synonymous

Check Here

1. WATERMASTER	Meet with Foreman, Crew Leader or Inspector when problem arises.	
	Review microfilm drawings and copy.	
	Review area zanjero Hazards Identification Map.	
2. WATERMASTER/ZANJERO	Arrange for dry-up with zanjeros/Transmission.	
3. CREW LEADER	Obtain necessary ventilation equipment.	
	Obtain gas monitors from charge base.	
	Obtain confined space storage box.	
4. WATERMASTER	Arrange for zanjeros as needed.	
5. AREA ZANJERO (OR Most Experienced)	Check all upstream and downstream facilities. Crew Leader & Zanjero place all locks/tags.	
6. AREA ZANJERO CREW LEADER	Meet to review & discuss Lock Out/Tag Out Procedures. In case of problems, instructs zanjeros which channel to use.	
7. ON-SITE MEETING: Crew Leader, Crew, Foreman, Watermaster & Area Zanjero		
8. CREW LEADER	Crew has checked structure for gas, oxygen content and carbon monoxide no longer than 30 minutes before entry.	
	Complete Confined Space Entry Permit.	
	Notify ADC with Confined Space Entry Permit information.	
	ADC announces on Channel "D" and "E" that a confined space entry is about to begin at _____ location. Terminates entry when necessary.	
	Notify ADC when confined space entry has been completed. Crew Leader & Zanjero remove all locks/tags.	
	ADC announces on Channel "D" and "E" that a confined space entry has been completed. Release zanjero from site.	

Crew Leader will turn in Confined Space Entry Permit to Foreman which will be kept on file for one year

AUTHORIZED EXCEPTION

CONFINED SPACE LOCK OUT/TAG OUT
OSHA CFR 1910.147

Directions: In the event that the same authorized person (crew leader) who placed the special locks and tags, cannot remove them, the following documentation is required by OSHA and SRP Employee Safety Services. Complete spaces with correct information.

PERMIT # _____ Date _____ Time _____

1. Name of authorized person who PLACED Lock Out/Tag Out equipment:

2. Reason for an Authorized Exception:

3. Name of authorized replacement who will REMOVE Lock Out/Tag Out equipment:

4. Signature of Supervisor/Crew Leader reviewing & acknowledging transfer:

Authorized Exception Form is to be turned in with the Permit
Blank Forms are to be kept in the Confined Space Box

PERMIT # _____ SALT RIVER PROJECT DATE _____
 ASSOCIATION CONFINED SPACE ENTRY PERMIT

SPECIAL EQUIPMENT: Confined Space Box ___ Ventilation ___ Hyd. Probe ___ Signs ___ Radios ___
 PERSONAL PROTECTION EQUIPMENT: Emergency Escape Pack ___ Air Horn ___ Gas Monitor ___

INFORMATION BELOW MUST BE COMPLETED AND CALLED TO ADC PRIOR TO ENTRY
 IN CASE OF EMERGENCY NOTIFY ADC

ADC Phone Number 236-5296

ADC NOTIFIED BY CREW LEADER: _____ TIME: _____

PURPOSE: INSPECT ___ CONSTRUCT ___ REPAIR ___ 3. NEW PIPE ___ EXISTING PIPE ___ HOT WORK ___ OTHER ___

COORDINATES: _____ 5. Emergency Notification:
 City/Agency _____

STREET ADDRESS: _____

POINT OF ENTRY: MANHOLE ___ STRUCTURE ___ CANAL ___ LATERAL ___ GATE ___ OTHER ___

8. Trained Participants	Name(s):	Radio #	Channel
Crew Leader			D / E
Attendant			
Entrant(s)	(1) _____ (2) _____ (3) _____		
Foreman			D / E
Watermaster			D / E
Area Zanjero		Truck # _____	D / E
Standby Zanjero		Truck # _____	D / E

Standby Location: COORDINATES _____ CANAL ___ LATERAL ___ GATE ___

STREET ADDRESS _____

10. LOCK OUT/TAG OUT PROTECTION

PUMP #	Coordinates	Canal #	Lateral #	GATE #	Coordinates	DRAIN
	-				-	
	-				-	
	-				-	
	-				-	

WORK COMPLETED/ADC NOTIFIED TIME: _____ Date _____ SIGNED _____

**SALT RIVER PROJECT
STANDARD SPECIFICATION
FOR
SLURRY BACKFILL MATERIALS
(SRP 02227)**

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	GENERAL	1
1.1	Work Included	1
1.2	Reference Standards	2
1.3	Definitions	4
1.4	Submittals	4
1.5	Quality Assurance	4
1.6	Storage and Handling	4
2.0	PRODUCT	5
2.1	Cement	5
2.2	Fly Ash	5
2.3	Lime	5
2.4	Aggregate	5
2.5	Water	5
2.6	Admixtures	5
2.7	Measurement and Mixing of Materials	6
2.8	Mix Design for RFG Grout	6
2.9	Batching RFG Grout	6
2.10	Washed Gravel for RFG	7
3.0	EXECUTION	7
3.1	Delivery	7
3.2	Placement	7
3.3	Protection	8
3.4	Testing	9
3.5	Acceptance of Backfill Materials	9
	Table 1	10

Prepared By: M. D. Voda

Reviewed By: P. M. Kandarlis
(Revised for Metric 6/7/96)

STANDARD SPECIFICATION
FOR
SLURRY BACKFILL MATERIALS
(SRP 02227)

1.0 GENERAL

1.1 Work Included

This specification shall cover the furnishing of all labor, equipment and materials for supplying and placing slurry-type backfills.

The following is a brief description of the types of slurry backfills and their intended uses:

ASB - Aggregate Slurry Backfill - washed gravel and sand, no cementitious materials, for use as a backfill around wood and concrete transmission line poles and trench backfill where no structural loads will be anticipated.

LMB 1/2 SACK - Lean Mix Backfill with 1/2 Sack (21.3-kg) portland cement per cubic yard (0.84-m^3) - washed gravel and sand with cement, for use as a general trench backfill in low load areas (streets and parking areas).

LMB 1 SACK - Lean Mix Backfill with 1 Sack (42.5-kg) portland cement per cubic yard (0.84-m^3) - washed gravel and sand with cement, for use as a general trench backfill in low load areas (streets and parking areas). Use in lieu of LMB 1/2 Sack (21.3-kg) when required by municipality.

LMB 1-1/2 SACK - Lean Mix Backfill with 1-1/2 Sacks (63.8-kg) portland cement per cubic yard (0.84-m^3) - washed gravel and sand with cement, for use as a structural backfill under foundations and as thermal fill and/or mechanical protection of duct banks.

DBA - Duct Bank Backfill w/ Aggregate - washed gravel and sand with four sacks (170-kg) portland cement per cubic yard (0.84-m^3), used as a thermal backfill/encasement for electrical ductbank with conduits spaced greater than 2 inches (51-mm) apart.

DBS - Duct Bank Backfill w/ Sand - washed sand with four sacks (170-kg) portland cement per cubic yard (0.84-m^3), used as a thermal backfill/encasement for electrical ductbank with conduits spaced less than 2 inches (51m-mm) apart and for pumping grout around conduits run through a pipe sleeve.

DEPB - Direct Embed Pole Backfill - a lean concrete with a minimum strength of 1000 psi (6.9-MPa) at 28 days, for use as backfill around direct embed steel poles.

RFG - Rock with Fly Ash Grout - a two component backfill for direct embed steel and concrete poles; the initial component, RFG-Gravel, is a uniform size, coarse gravel. The gravel is placed by ready-mix truck in the annulus space of direct embedment poles. The second component, RFG-Grout is a flowable fly ash/cement/lime grout. The grout is batched separately and placed afterward, filling voids in the aggregate backfill by gravity flow (no pumping).

Each of these backfill materials has an SRP Material Stock Code Number (See Table 1). All references to these materials in purchase order documents, submittals and invoices shall use the SRP material stock code. Vendor may assign its own product codes in addition to those required by the Purchaser.

1.2 Reference Standards

1.2.1 Reference to standards and/or specifications herein shall be interpreted to mean the latest revision unless noted otherwise.

1.2.2 The following abbreviations appear in this Specification:

ACI	American Concrete Institute
ARPA	Arizona Rock Products Association
ASTM	American Society for Testing and Materials
NRCMA	National Ready-Mixed Concrete Association
SRP	Salt River Project

1.2.3 The following standards shall be made a part of this Specification:

ASTM C25	Standard Test Method for Chemical Analysis of Limestone, Quicklime and Hydrated Lime
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C117	Standard Test Method for Materials Finer Than 75-Micrometer (No. 200) Sieve in Mineral Aggregates by Washing

ASTM C136	Standard Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C143	Standard Test Method for Slump of Hydraulic Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures
ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete
ASTM C403	Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
ASTM C494	Standard Specifications for Chemical Admixtures for Concrete
ASTM C618	Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete
ASTM C685	Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C937	Standard Specification for Grout Fluidifier for Preplaced-Aggregate Concrete
ASTM C939	Standard Test Method for Flow of Grout for Preplaced Concrete Aggregate (Flow Cone Method)
ASTM C1064	Standard Test Method for Temperature of Freshly Mixed Portland Cement Concrete
ASTM D512	Standard Test Methods for Chloride Ion in Water
ASTM D516	Standard Test Method for Sulphate Ion in Water

1.2.4 Exceptions to this specification must be approved in writing by the Engineer prior to commencement of the affected work.

1.3 Definitions

One Sack of cement: same as one 94 pound (42.5-kg) bag of cement.

1.4 Submittals

1.4.1 Vendor shall submit the following items for each material to be supplied:

- a. Plant Certification
- b. Mix designs
- c. Source and gradation of coarse and fine aggregate
- d. Cement certification and mill test report
- e. Certification of testing of the water
- f. Fly ash certification
- g. Admixture brand and source
- h. Lime certification and chemical analysis

1.4.2 If the mix design and batch plant have been pre-approved by the Engineer, submittals under Section 1.4.1 will be waived.

1.4.3 Vendor shall refer to the mix designs by the SRP Material Stock Code Number.

1.4.4 In addition to the specified materials, Vendors may submit alternate mix designs or deviations to the specifications for review and approval. The Engineer may request additional test and certification documentation for alternate mixes submitted.

1.5 Quality Assurance

1.5.1 Each plant from which the Vendor intends to provide materials governed by this specification must have current NRMCA, ARPA or equivalent laboratory certification.

1.5.2 Vendor shall provide access to the plant for inspection of materials and/or batch plant equipment.

1.6 Storage and Handling

1.6.1 All materials shall be stored and handled in such a manner as to prevent deterioration or intrusion of foreign matter and to produce a minimum amount of segregation.

1.6.2 Storage of aggregate on a natural ground surface will be permitted if bottom 6 inches (152-mm) of pile is not used in batching.

2.0 PRODUCT

2.1 Cement

Cement shall conform to ASTM C150, Type II with alkali content not to exceed 0.6 percent.

2.2 Fly Ash

not deleteriously reactive with alkali in cement. Fly ash shall be sampled and tested in accordance with ASTM C311.

2.3 Lime

Lime shall be commercial dry hydrated lime containing a minimum 85 percent calcium hydroxide, $\text{Ca}(\text{OH})_2$, as determined by ASTM C25. Lime shall be protected from exposure to moisture until used and shall be sufficiently dry and flow freely when handled.

2.4 Aggregate

Aggregate shall conform to ASTM C33; coarse aggregate shall be sized as noted in Table 1 of this specification.

2.5 Water

Water for washing aggregates and for mixing slurry shall be potable or shall meet requirements of ASTM C94. If water does not meet said requirements, a chemical analysis of water shall be performed in accordance with ASTM D512 and ASTM D516 by an independent testing laboratory at Vendor's expense and submitted to the Engineer for approval.

2.6 Admixtures

2.6.1 Admixtures shall be approved in writing by the Engineer prior to use. Admixtures shall be added at the plant at the time of batching unless noted otherwise.

2.6.2 Air-entraining admixtures shall conform to ASTM C260 and shall be used only in DEPB.

2.6.3 Water-reducing, retarding, and accelerating admixtures shall conform to ASTM C494. Chloride admixtures shall not be used.

2.6.4 Superplasticizers shall conform to ASTM C494, Type F or G. Superplasticizer may be added at batch plant or at jobsite.

2.6.5 Grout Fluidifiers shall conform to ASTM C937.

2.7 Measurement and Mixing of Materials

- 2.7.1 Measurement and mixing of materials shall be in accordance with ASTM C94 and C685.
- 2.7.2 Mixes shall be homogenous, readily placeable and uniformly workable. Proportioning of ingredients shall produce consistency, durability, workability and other required properties appropriate for the intended usage.
- 2.8 Mix Design for RFG Grout
- 2.8.1 Proportioning of ingredients shall produce grout with efflux (flow consistency), set, strength and shrinkage characteristics as specified herein and appropriate for intended usage. Grout upon delivery shall be homogeneous, readily placeable and uniformly flowable.
- 2.8.2 Grout shall have an efflux time of less than 18 seconds for minimum 30 minutes after arrival at jobsite (tested in accordance with ASTM C939), shall be firm to the touch within 72 hours after placement, shall have no more than three percent volume loss (including fluid separation) seven days after batching and have a compressive strength when combined with aggregate of minimum 1000 psi (6.9-MPa) in 56 days. Mix shall maximize use of fly ash. General proportions for mix design are as follows:
- a. Solids: 5 parts fly ash to 1 part cement to 3/4 part lime
 - b. 2 1/4 parts solids to 1 part water
 - c. 20 ounces (0.6-L) of high-range water-reducing admixture per 100 pounds (45.2-kg) of solids
- Vendor is responsible for final mix design that meets performance requirements of this specification.
- 2.8.3 Retarding admixtures may be added to mix to meet efflux requirements and compensate for travel time to specific jobsites. Volume of retarding agent added is responsibility of Vendor, but specific type must be preapproved by the Engineer prior to batching of grout.
- 2.8.4 No change in source, character or mix proportions of grout shall be made without prior written approval of the Engineer. For changes to be approved, affected items listed under Paragraph 1.4.1 shall be resubmitted.
- 2.9 Batching RFG Grout
- 2.9.1 Mixing shall follow the procedures in ASTM C94, with all grout constituents added at the batch plant.
- 2.9.2 Fly ash shall be added in a manner and at a rate as to minimize incompletely mixed fly ash nodules within the grout. Dry fly ash nodules over one inch

diameter shall not be allowed. Grout containing non-uniform material exceeding one percent of total grout volume, as determined by the Engineer, will be rejected at full cost to the Vendor.

2.10 Washed Gravel for RFG

2.10.1 Gravel shall be washed to remove dust and dirt prior to placement in mixer.

2.10.2 Washed gravel shall be sent to jobsite by ready-mix truck. Maximum of two gallons (7.6-L) of water per cubic yard (0.84-m³) of gravel may be added.

3.0 EXECUTION

3.1 Delivery

3.1.1 Deliver materials in conformance with ASTM C94.

3.1.2 When materials contain cement, machine-stamp batch out time of truck on delivery ticket at Vendor's plant. A copy of delivery ticket having machine-stamped batch out time shall be given to the Engineer at the time of delivery. Deliveries of materials containing cement without machine-stamped batch out time on delivery ticket will be rejected.

3.1.3 Deliver materials within 30 minutes of requested delivery time. Time lapse between successive deliveries shall not vary by more than 20 minutes from that requested. The Engineer may reject any batch not meeting these requirements. Vendor shall allow 30 minutes for material discharge. Standby time may be charged after 30 minutes.

3.1.4 Backfill containing cement will be rejected if the Engineer determines that, on arrival at the jobsite, backfill temperature is outside the range of 50°F (10°C) to 90°F (32°C), or that backfill has attained its initial set. Rejected backfill shall be at the Vendor's cost.

3.1.5 Vendor may add water only once to bring a mix to the desired slump. Water shall not be added to RFG-Grout. Mix not meeting slump requirements will be rejected.

3.2 Placement

3.2.1 Slurry and Lean Mix Backfills

Discharge backfill containing cement within 1-1/2 hours after initial mixing water is added. The Engineer may waive this limitation if slump is such that the material can be placed without addition of water.

Place backfill so that it flows easily around and beneath conduit, pipe or other obstructions in trenches and excavations. Slurry shall have consistency, workability, flow characteristics and pumpability (where required) such that the

material when placed is self-compacting and has sufficient plasticity that mechanical compaction or vibration is typically not required. Mechanical compaction or vibration may be used to consolidate around obstructions.

Place slurry backfill equally on both sides of conduit or pipe to prevent displacement of conduit or pipe.

Place slurry backfill in lift depths that will not float the conduit or pipe; to place backfill in greater lift depths, provide sufficient approved anchorage so the conduit or pipe cannot float.

3.2.2 Washed Gravel for RFG

Remove all excess water prior to placement of gravel by rotating mixer and directing water away from backfill area. Time for removal of excess water shall be at Vendor's cost. Wet gravel must flow uniformly and readily out of truck.

Gravel that has not been washed of dust and dirt will be rejected. Gravel that is not surface saturated shall not be placed.

3.2.3 RFG Grout

Discharge grout within 30 minutes after arrival at jobsite. This requirement may be waived by the Engineer if retarding admixtures are used.

Grout that exceeds efflux time requirements upon arrival at jobsite (as determined by flow testing), shall be rejected at full cost to Vendor. No water shall be added at jobsite or after batching to decrease efflux time.

3.3 Protection

3.3.1 Slurry backfill for trenches shall be protected from vehicular loading and shall not be covered with pavement prior to having reached initial set per ASTM C403, or for 12 hours, whichever occurs first. Set time tests shall be performed during initial placement while backfill is fluid.

3.3.2 Slurry backfill for foundation excavations shall be protected from foundation loading and placement of foundation concrete prior to having reached initial set per ASTM C403, or for six hours, whichever occurs first.

3.3.3 Where the Engineer has identified soils as being moisture sensitive, a drainage notch or drain wick shall be placed longitudinally along centerline of slurry backfill within first hour following placement. Drainage water shall be collected at end of trench or excavation and removed.

3.4 Testing

3.4.1 Samples will be taken directly from transit mix truck. Sampling and testing will be in accordance with the following standards:

Sampling	ASTM C172
Temperature	ASTM C1064
Slump	ASTM C143
Air	ASTM C231
Gradation	ASTM C117/ ASTM C136

3.4.2 Testing of gradation shall be done for all projects in public rights-of-way and other locations as determined by the Engineer; sampling shall be done at material source prior to the start of mix production.

3.4.3 Testing will be performed by the Engineer at no cost to Vendor.

3.5 Acceptance of Backfill Materials

3.5.1 Backfill materials shall be considered deficient and will be rejected if:

- a. slump is less than specified in table.
- b. aggregate gradation is outside specified limits.

3.5.2 Rejected material shall not be used and shall be replaced with new material. Cost of disposing of rejected material and replacing with new material, including Purchaser's direct and indirect costs, shall be paid by Vendor.

TABLE 1 - BACKFILL MIXES

Stock Code Number	Backfill Designation	Description	Coarse Aggregate ASTM C33	Fine Aggregate	Slump Range	Minimum Cement Content (lbs/cu. yd.)	Required Admixtures
00-0100	ASB	Aggregate Slurry Backfill	No. 67 [3/4" (19mm) nom. max]	A, H	6"-9" (152-229mm)	None	
00-0101	DEPB	Direct Embed Pole Backfill	No. 8 [3/8" (9.5mm) nom. max]	A	6"-9" (152-229mm)	376 B (223 kg/m ³)	C
00-0104	LMB 1/2 SACK	Lean Mix Backfill w/ 1/2 Sack Cement pcy	No. 57 [1" (25mm) nom max]	A	6"-9" G (152-229mm)	47 (28 kg/m ³)	
00-0105	LMB 1 SACK	Lean Mix Backfill w/ 1 Sack Cement pcy	No. 57 [1" (25mm) nom. max]	A	6"-9" G (152-229mm)	94 (56 kg/m ³)	
00-0106	LMB 1-1/2 SACK	Lean Mix Backfill w/ 1-1/2 Sack Cement pcy	No. 57 [1" (25mm) nom. max]	A	6"-9" G (152-229mm)	141 (84 kg/m ³)	
00-0108	DBA	Duct Bank Backfill w/ Large Aggregate	No. 8 [3/8" (9.5mm) nom. max]	A	6"-9" (152-229mm)	376 (223 kg/m ³)	
00-0109	DBS	Duct Bank Backfill w/ Sand	None	A	6"-9" (152-229mm)	376 (223 kg/m ³)	
00-0160	RFG GRAVEL	Washed Gravel for RFG	No. 4 [1-1/2" (38.1mm) to 3/4" (19mm)]	None			
00-0161	RFG GROUT	Lime and Fly Ash Grout for RFG	None	None		D, E	F

- NOTES
- A. Fine aggregates (sand) shall be in accordance with ASTM C33
 - B. Maximum water/cement ratio .60
 - C. Air entrainment 4% +/- 1%, Superplasticizers as required to obtain slump
 - D. Cementitious solids: 5 parts fly ash to 1 part cement to 3/4 part lime, by weight. See paragraph 2.8.2
 - E. Limit water content to 1 part water to 2.25 parts cementitious solids by weight. See paragraph 2.8.8
 - F. High range water reducing admixture
 - G. Purchaser may request material at lower slumps
 - H. Fine aggregates 45-50% of the total aggregate weight

5/08/97

SALT RIVER PROJECT
WATER GROUP
STANDARD SPECIFICATION
FOR
PRECAST CONCRETE PIPE
(WTR 02614)

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	GENERAL	1
1.1	Work Specified	1
1.2	Measurements	1
1.3	Reference Standards	1
1.4	Quality Assurance	3
1.5	Delivery, Storage and Handling	3
1.6	Warranty	4
2.0	PRODUCT	4
2.1	Type and Class of Pipe	4
2.2	Pipe Markings	4
2.3	Irrigation and Low Head Pressure Drain Pipe	4
2.4	Rubber Gasket Joints	5
2.5	Source Quality Control	5
2.6	Mortar/Grout	5
2.7	Pipe Diaper	5
2.8	Geotextiles	6
2.9	Bedding	6
2.10	Backfill	6
3.0	EXECUTION	7
3.1	Protection	7
3.2	Excavation	7
3.3	Subgrade	9
3.4	Bedding	10
3.5	Pipe Installation	10
3.6	Backfilling	14
3.7	Field Test	16
3.8	Cleanup	16

PREPARED: CHARLES W. THUMS

APPROVED: 

:

STANDARD SPECIFICATION

FOR

PRECAST CONCRETE PIPE

(WTR 02614)

1.0 GENERAL

1.1 Work Specified

This specification covers the fabrication, furnishing and installation of precast concrete pipe.

1.2 Measurements

Both English and metric measurements are shown in this specification. The English and metric measurements shown may not be exactly equal, however, the difference between them will generally be between +/- 1.5%. The system of measurement to be used relative to this specification for a particular project will be that used in the project-specific documents and drawings.

1.3 Reference Standards

1.3.1 Reference to standards or specifications shall be interpreted to mean the latest revision unless noted otherwise.

1.3.2 The following abbreviations appear in this specification.

ASTM	American Society for Testing and Materials
CE	Civil Engineering
OSHA	Occupational Safety and Health Administration
SRP	Salt River Project
29 CFR	Code of Federal Regulations, Title 29

1.3.3 The following standards shall be made a part of this specification:

ASTM C14	Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe (reference only - for hydrostatic testing of ASTM C76 pipe)
----------	--

ASTM C76 Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

ASTM C144 Standard Specification for Aggregate for Masonry Mortar

ASTM C150 Standard Specification for Portland Cement

ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes

ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

ASTM C361 Standard Specification for Reinforced Concrete Low-Head Pressure Pipe

ASTM C443 Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets

ASTM C507 Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe

ASTM C822 Standard Terminology Relating to Concrete Pipe and Related Products

ASTM D698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (Standard Proctor)

ASTM C924 Standard Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method

ASTM C969 Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines

ASTM C1103 Standard Practice for Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines

SRP 02227	Salt River Project Standard Specification for Slurry Backfill Materials
SRP 02230	Salt River Project Standard Specification for Aggregate Base, Select Material and Surface Material
CE 02.272	Salt River Project Standard Specification for Geotextiles
OSHA	General Industry Occupational Safety and Health Standards (29 CFR Part 1910)
OSHA	Safety and Health Standards for Construction (29 CFR Part 1926)
SRP ESRM	Salt River Project Excavation Safety Resource Manual

1.3.4 Exceptions to this specification require approval in writing by the Engineer prior to beginning the affected work.

1.4 Quality Assurance

As part of purchase agreement for pipe, Contractor shall stipulate that the Engineer shall have access to the following:

- a. Pipe manufacturing specifications.
- b. Certification of pipe by others.
- c. Pipe manufacturing quality control test results.
- d. Manufacturing facilities to observe manufacture of pipe.
- e. Testing facilities to observe testing of materials and pipe.

1.5 Delivery, Storage and Handling

1.5.1 Notify the Engineer of name and address of pipe seller a minimum of two working days before delivery of pipe.

1.5.2 Deliver only requested quantity of pipe to jobsite. Delivery of greater or lesser quantity of pipe requires advance approval of the Engineer.

1.5.3 Provide copy of D-load test documentation along with delivery for each production lot of pipe included in that delivery. Pipe shall not be installed if copy of D-load test information for that particular production lot/date is not available on site.

1.5.4 Integrity of pipe is responsibility of seller until pipe has been delivered and unloaded at jobsite. Contractor is responsible for protecting pipe from physical damage or loss after delivery at jobsite until acceptance of the Work by the Engineer.

1.6 Warranty

Contractor shall warranty material and workmanship for a period of one year from date of written final acceptance of pipeline by the Engineer; leaks, defects and deterioration shall be repaired/replaced at no cost to SRP. Contractor shall make repairs/replacements within 14 days, or if dry-up is required, during first available dry-up following notification of leak or deficiency.

2.0 PRODUCT

2.1 Type and Class of Pipe

Type and class of pipe required for project will be stated in project-specific specifications or shown on drawings.

2.2 Pipe Markings

Pipe shall be marked as required by the applicable ASTM specification.

2.3 Irrigation and Low Head Pressure Drain Pipe

2.3.1 Rubber gasketed reinforced concrete pipe (RGRCP) shall meet one of the following requirements:

- a. ASTM C361 and withstand minimum 10 PSI (70 kPa) hydrostatic test pressure.
- b. ASTM C76, class III, wall B and meet hydrostatic test requirements as specified in ASTM C14.

2.3.2 Reinforced concrete elliptical pipe (RCEP) shall meet requirements of ASTM C507 and withstand minimum 10 PSI (70 kPa) hydrostatic test pressure as specified in hydrostatic testing requirements of ASTM C361.

2.3.3 Premanufactured bend shall meet requirements of specification for type of pipe with which it is to be

5/08/97

used. Maximum angle of bend shall not exceed that shown on drawings. Premanufactured bends shall be manufactured in accordance with approved shop drawings; submit shop drawings to the Engineer for approval minimum two weeks prior to manufacture of bend.

2.4 Rubber Gasket Joints

2.4.1 Rubber gasket joints shall meet requirements of ASTM C443.

2.4.2 When pipe is supplied with gasket installed, gasket end of pipe shall be enclosed in weathertight protective covering.

2.5 Source Quality Control

2.5.1 External load crushing strength tests shall be in accordance with ASTM standard under which pipe was manufactured.

2.5.2 Pipe tests shall be performed at no cost to SRP at either pipe manufacturer's plant or at an independent testing facility acceptable to the Engineer.

2.6 Mortar/Grout

Mortar for repair of precast concrete pipe shall be composed of two parts sand to one part portland cement (by volume) and sufficient water to provide a plastic mixture.

Up to one-fifth part hydrated lime may be added to adjust consistency of mix. Lime shall be in addition to and not a replacement for cement. Equal or similar mortar may be substituted with prior approval of the Engineer.

a. Sand (aggregate) shall conform to requirements of ASTM C144.

b. Portland cement shall conform to requirements of ASTM C150, Type II.

c. Hydrated lime shall conform to requirements of ASTM C207, type N.

2.7 Pipe Diaper

Pipe diaper shall be made of Tytar or other suitable fabric having porosity low enough to prevent loss of cement from grout. Edges of fabric shall be hemmed; steel strapping bands for securing diaper around pipe shall be sewn into outside edges of diaper.

2.8 Geotextiles

Geotextiles used to stabilize subgrade shall conform to requirements of CE 02.272.

2.9 Bedding

Granular fill used for Class C or better bedding shall be processed aggregate base material (ABC) meeting requirements of SRP 02230.

2.10 Backfill

2.10.1 Native material used for backfill shall meet following particle size requirements:

- a. Maximum 50 percent (by weight) retained on 3/4" (19 mm) sieve.
- b. From bedding to finish grade, native backfill shall not contain solid material exceeding three inches (75 mm) in greatest dimension or exceeding 1/3 distance between side of pipe and trench wall.

Suitability of native material for use as backfill for specific project will be determined by the Engineer.

2.10.2 Granular backfill material shall be processed aggregate base material (ABC) meeting requirements of SRP 02230.

2.10.3 Aggregate slurry backfill shall be processed (washed) aggregate base material (ABC) in slurry form meeting requirements of SRP 02227.

2.10.4 Lean mix backfill shall meet requirements of SRP 02227.

2.10.5 Unsuitable backfill materials include, but are not limited to, the following:

- a. Silt and clay soils which have moisture content significantly over optimum or which cannot be compacted to required density.
- b. Expansive soils.
- c. Sod, matted or decayed vegetation.
- d. Deleterious materials.

3.0 EXECUTION

3.1 Protection

3.1.1 Cost of excavation protection shall be included in excavation bid price.

3.1.2 Protect excavation and safeguard personnel as required for safety and conformance to governing law, including OSHA standards and SRP ESRM. The Engineer reserves the right to stop work deemed unsafe until unsafe condition is corrected by Contractor.

3.1.3 Maintain underground and overhead utilities in continuous service unless prior approval to interrupt service has been obtained from the Engineer. Locate conflicting utilities shown on drawings and identified in field. Comply with Blue Stake requirements for locating all utilities. Contractor shall be responsible for locating, protecting and repairing private lines. Pothole for true depths. Relocate conflicting utilities to resolve conflicts. Utilities identified before excavation and subsequently damaged by Contractor shall be repaired at Contractor's expense.

3.1.4 Contractor shall protect against and shall be liable for damage to buildings, foundations and structures.

3.1.5 Keep pipe trench free of water. Berm or otherwise protect trench from surface drainage and runoff. Failure to protect trench is not grounds for extension of irrigation outage.

3.1.6 Provide safe and convenient passage for pedestrians and vehicles. Maintain access to hospitals, fire stations, and fire hydrants at all times. Barricade or bridge trenches at end of day's work as specified by governing municipality/agency. The Engineer may designate additional points at which passage shall be provided.

3.1.7 Remove excess material from jobsite within 48 hours after backfilling trench. See paragraph 3.8.1 for disposal requirements. Treat loose material to control dust and to prevent pollution of runoff water as specified by governing municipality/agency.

3.2 Excavation

3.2.1 Comply with open trench length requirements of governing municipality/agency.

3.2.2 Alignments and elevations will be surveyed and staked by SRP, unless noted otherwise. Contractor shall

be responsible for protecting stakes. Restaking shall be at Contractor's expense.

3.2.3 Excavations shall conform to alignments, elevations, dimensions and tolerances indicated on drawings or in specifications. Do not begin excavation before establishment of alignments and elevations.

3.2.4 Trench width shall be as specified in Table 1 unless otherwise indicated on drawings or in project-specific specifications. Written approval of the Engineer is required prior to substitution of other pipe or bedding for that specified. From one foot (300 mm) above top of pipe, trench may be widened as necessary to accommodate sheeting, bracing and proper installation of pipe.

Size of Pipe (ID)	Maximum Width at Top of Pipe (Add to Barrel OD)	Minimum Width at Springline (Each Side of Pipe)
Less than 18 in. (450 mm)	16 in. (400 mm)	6 in. (150 mm)
18 in. to 24 in. (450-600 mm) inclusive	19 in. (475 mm)	8 in. (200 mm)
27 in. to 39 in. (675-975 mm) inclusive	22 in. (550 mm)	9 in. (225 mm)
42 in. to 60 in. (1050-1500 mm)	1/2 OD	12 in. (300 mm)
Over 60 in. (1500 mm)	36 in. (900 mm)	12 in. (300 mm)

3.2.5 When backfill below springline of pipe is to be mechanically compacted, minimum distance from all points on pipe at springline to edge of trench shall be width of compaction shoe plus two inches (50 mm).

3.2.6 When backfill from bottom of trench to springline or above is to be aggregate slurry, minimum distance from pipe at springline to edge of trench shall be three inches (75 mm).

3.2.7 Trench bottom shall be level for full width; remove, or fill and compact tooth marks greater than two inches (50 mm) deep. In rock, bottom of trench shall be overexcavated minimum six inches (150 mm) and filled with granular bedding material to provide smooth surface; compact granular bedding material for full width of trench to requirements shown on drawings.

5/08/97

3.2.8 Excavation carried beyond dimensions or elevations indicated on drawings without the Engineer's approval, shall be backfilled and compacted as directed by the Engineer at Contractor's expense.

3.3 Subgrade

3.3.1 Existing subgrade material and subgrade fill material shall be compacted to a minimum of 85 percent of maximum density and moisture content shall be between four percent below and two percent above optimum moisture content as determined per ASTM D698, unless noted otherwise in specifications or drawings.

3.3.2 Suitability of subgrade will be determined by the Engineer prior to placement of bedding.

3.3.3 Unsuitable subgrade materials include, but are not limited to, the following:

- a. Silt and clay soils which have moisture content significantly over optimum or which cannot be compacted to required density.
- b. Expansive soils.
- c. Sod, matted or decayed vegetation.
- d. Deleterious materials.

3.3.4 Treatment of existing subgrade material which exceeds optimum moisture content by more than two percent must be approved by the Engineer. Method of treatment shall be submitted in writing to the Engineer for approval.

3.3.5 Remove unsuitable materials, soil that cannot be dried to meet moisture content specified in paragraph 3.3.1 and soil that cannot attain a maximum dry density of 85 percent. Overexcavate trench minimum two feet (600 mm) each side of pipe bell at springline and maximum four feet (1200 mm) below elevation indicated on drawings, or to suitable subgrade, whichever occurs first. Dispose of removed material in accordance with paragraph 3.8.1. Fill overexcavation with granular material (ABC) to grade indicated on drawings and compact to 95 percent of optimum density per ASTM D698.

3.3.6 Subgrade soils which are unsuitable only because of high moisture content may be left in place and stabilized using geotextiles, if approved by the Engineer. Geotextile shall comply with requirements of CE 02.272. Subgrade preparation, placement of geotextiles, and

placement and compaction of fill material shall be in accordance with geotextile manufacturer's recommendations.

3.4 Bedding

3.4.1 Bedding requirements shall be as called for on drawings. Class C bedding or better is required unless otherwise specified on drawings, on license or in project-specific specifications.

3.4.2 Remove loose material, rocks, deleterious material, and debris from trench bottom prior to placing bedding material.

3.4.3 Bedding material shall be at a uniform moisture content of between optimum and five percent above optimum; compact to density required in 3.6.3 Compaction in one foot (300 mm) or smaller uncompacted lifts.

3.4.4 Finish and compact bedding to elevation indicated on drawings; assure that bedding will provide continuous support for pipe.

3.4.5 Excavate bell holes with minimum two inch (50 mm) clearance to prevent point loading of laid pipe and to maintain continuous support of pipe barrel. Excavate cable holes to prevent movement of pipe when removing sling.

3.4.6 Added or disturbed bedding material shall be compacted to densities required in 3.6.3. Compaction.

3.5 Pipe Installation

3.5.1 General

- a. Install pipe to alignment and elevation shown on drawings. Variation from indicated alignment and elevation shall not exceed 0.1 foot (30 mm), and the rate of departure from or return to indicated alignment and elevation shall be no more than 0.1 foot (30 mm) in ten feet (3000 mm), unless otherwise approved by the Engineer. Bends shall be within one-half pipe section of station shown on drawings. All changes in station require prior approval of the Engineer. Contractor shall mark approved changes in stationing, based on measurement of installed pipe, on drawings and shall supply marked drawings to the Engineer.
- b. Lay pipeline with minimum horizontal separation of two feet (600 mm) from parallel utilities and with minimum one foot (300 mm)

vertical separation from utilities which cross below pipeline. No overcrossings of SRP irrigation pipe will be allowed without approval of the Engineer. Notify the Engineer immediately if it is found that a utility will be closer to pipeline than specified minimum separation.

- c. Install elliptical pipe and elliptically reinforced pipe with vertical axis within ten degrees of true vertical.
- d. Gaps in pipeline during installation due to utility conflicts will not be allowed unless otherwise approved by the Engineer.

3.5.2. Joint Assembly

- a. Rubber gasketed joints (C76 and C361 pipe): Lay pipe with bell ends facing in direction of laying unless otherwise approved by the Engineer. Begin laying pipe at lower end of slope and proceed upward on grades which exceed ten percent. Only use gaskets and lubricant supplied by pipe seller. Clean joint mating surfaces and gasket before joining pipes. Apply generous, uniform coating of gasket lubricant to inside surface of bell end of pipe, in groove portion of spigot, and on gasket. Install gasket in accordance with pipe seller's instructions. Keep joint from contacting ground when inserting pipe spigot into bell. Use industry approved methods to push or pull pipe to complete joint closure.
- b. Tongue and groove mortar joints (C507 pipe): Clean joint mating surfaces prior to joining pipes. Thoroughly wet tongue and groove with water and keep moist until mortar is placed; use brush to apply water. Apply mortar to upper half of tongue and to bottom half of groove in a manner which will fill entire joint. Use industry approved methods to push or pull pipe into position until mortar is squeezed from both inside and outside of joint. Adjust pipe to design alignment and grade; secure pipe section firmly in position using a small amount of bedding material placed and tamped thoroughly against lower portion of pipe at midpoint of length. Remove excess mortar from interior joint and finish interior joint recess smooth and flush with inside of pipe; remove all debris.

If adjustment of position of pipe is required after it has been laid, remove pipe, clean and rejoin it.

Keep the finishing of exterior joints between five and two sections of pipe behind pipe laying operations. Complete outside of joint by covering with hand-placed mortar band extending completely around outside of pipe. As soon as mortar band has set sufficiently, coat it with white-pigmented curing compound conforming to ASTM C309, Type 2, Class A, or provide a suitable moist cure acceptable to the Engineer.

- c. Pipe diaper joints: Grout bands may be placed by diapering when specifically authorized by the Engineer.

After joining pipe, center and secure diaper over the exterior joint recess. Diaper shall completely and snugly encase the exterior joint except for an opening at the top; width of diaper is governed by size of pipe. Moisten joint recess with water prior to grout placement. Form grout band around pipe by pumping grout into opening of diaper; pump grout to one side of pipe until it flows completely under bottom of pipe and partially up other side, then pump to opposite side to fill diaper and complete grout band. Close opening in diaper. Keep grout band moist until trench is backfilled and band is covered.

3.5.3 Radius Curves

- a. Gasketed joints: Long radius curves shall be made by using pipe manufactured with beveled ends or by pulling pipe joints of straight sections of pipe (deflecting pipe unit from straight alignment by opening one side of the outside perimeter of the joint wider than the other side) as it is laid. Maximum opening of pulled joint is $\frac{1}{4}$ " (13 mm) wider than width of joint when pipe is assembled in straight alignment. Deflections requiring outside joint to be pulled more than $\frac{1}{4}$ " (13 mm) shall be considered to be field bends.
- b. Field bends and grade changes: Use reinforced pipe collar to make joints at field bends up to and including 45° (degrees) and grade changes.

Collar for reinforced concrete pipe shall be of mechanically compacted, reinforced, minimum 3000 psi (20 MPa) concrete. Outside of collar shall be made by forming; inside of collar shall conform to inside diameter of pipe. Maintain full pipe cross-section and smoothness through length of bend or grade change. Ensure that forming material is completely removed from inside pipe.

- c. Precast Bends: Shall be as shown on drawings. Submit shop drawings of precast bends to the Engineer for approval; approval of the Engineer is required before beginning fabrication of precast bends.

3.5.4 Branch Connections

Type, size, location and angle of branch connections for irrigation pipe will be shown on drawings. Shop drawings are required for all pre-fabricated connections; submit shop drawings for approval of the Engineer.

3.5.5 Repairs

- a. Repair tie holes, minor cracks and depressions in pipe surface with cement based, rapid setting mortar such as Speed Crete 2028 (Tammis Industries Co.) or approved equal. Clean and moisten surface before applying mortar.
- b. If new or existing pipe has 0.01 inch (0.3 mm) or wider crack(s) notify the Engineer and request inspection of the pipe.

Repair 0.01 inch (0.3 mm) or wider cracks in an otherwise acceptable section of pipe with epoxy grout approved by the Engineer. V-groove inside cracks minimum 1/4 inch (6 mm) deep. Clean area prior to repair.

If crack goes through pipe wall or if structural integrity of pipe is in question, the Engineer may, at his option, require removal of damaged pipe and replacement with new.

- c. Finished surface of inside repairs shall be smooth and flush with inside pipe surface.
- d. Repairs shall not reduce inside pipe diameter.

3.5.6 Plugs

- a. Temporarily cover or plug installed piping systems each day at end of work. Covers or plugs shall prevent entry of persons, small animals or deleterious material into pipe.
- b. Completely remove all temporary covers, plugs, caps or dikes installed during construction before completion of construction.

3.6 Backfilling

3.6.1 General

- a. Unless otherwise noted on drawings or in project-specific specifications, backfill shall be as noted in 2.10 Backfill.
- b. Moisture content of backfill shall be as noted in paragraph 3.6.2.
- c. Do not disturb or damage pipe when backfilling trenches. Place backfill evenly on opposite sides of pipe to prevent movement of pipe.
- d. Lift thickness shall not exceed that which can be effectively compacted by type of equipment and method used. Maximum uncompacted lift thickness for processed or native granular material shall be limited to one foot (300 mm); maximum uncompacted lift thickness for non-granular native material shall be limited to eight inches (200 mm). Do not allow mechanical compaction equipment to come into direct contact with pipe.
- e. Place and consolidate lean mix backfill and aggregate slurry backfill in lift depths that will not cause pipe to move or float. Discharge backfill directly from mixer into trench with even distribution on opposite sides of pipe. Backfill shall flow freely and uniformly around and under pipe without leaving voids; vibrate backfill to consolidate when slump is less than six inches (150 mm) or whenever required to fill voids.

3.6.2 Moisture Content

- a. Contractor shall have sole responsibility to control moisture content of backfill. Optimum moisture content of backfill shall be determined in accordance with ASTM D698. Moisture

5/08/97

content which is outside of range specified shall be sufficient cause to require removal of placed backfill.

- b. Moisture condition backfill material before placement, unless otherwise approved by the Engineer.
- c. Place granular material, except for aggregate slurry, at a uniform moisture content of between optimum and three percent above optimum.
- d. Place aggregate slurry with water content as specified in SRP 02227. The Engineer may require increase or decrease in water content to obtain desired slump.
- e. Place native material, which does not meet requirements for classification as granular material, at a uniform moisture content of between three percent below to two percent above optimum.

3.6.3 Compaction

Compact or consolidate bedding and backfill to, at minimum, density specified in Table 2. Where conflicting density requirements exist, use highest density. Test density in accordance with ASTM D698. Bedding or backfill not meeting density requirements shall be removed/reworked at Contractor's expense.

3.6.4 Field Quality Control

- a. Inspection and compaction tests are required on trench backfill. Compaction tests are not required on lean mix backfill meeting requirements of SRP 02227.
- b. The Engineer will verify density and moisture content of bedding and backfill material during construction. Tests will be made at discretion of the Engineer.
- c. Backfill lifts shall not be covered before compaction tests are performed. If lift is covered prior to testing, Contractor is at own risk and shall excavate test holes for making density tests on lower portions of backfill at instruction of the Engineer. Refill and compact test holes in accordance with specifications. Excavating, refilling and compacting test holes shall be at Contractor's expense.

Compaction Type	Location	From Surface to 2' (600 mm) Below Surface	From 2' (600 mm) Below Surface to 1' (300 mm) Above Top of Pipe	From 1' (300 mm) Above Top of Pipe to Bottom of Trench
I	Under any existing or proposed pavement, curb, gutter, sidewalk, or such construction included in the contract, or when any part of the trench excavation is within 2' (600 mm) of the above.	100% for granular, 95% for non-granular	90%	90%
II	On any utility easement, street, road or alley right-of-way outside limits of (I).	85%	85%	90%
III	Around any structures or exposed utilities.	95%	95%	95%

3.7 Field Test

3.7.1 The Engineer may, at his option, require Contractor to test integrity of installed pipeline or joints. Pipeline and joint tests shall be made at Contractor's expense. The Engineer will monitor field testing.

3.7.2 Pipeline tests shall be in accordance with ASTM C969. Test pressure shall correspond to maximum operating head condition stipulated by SRP Watermaster responsible for that area. Test period shall be 24 hours. The availability of water for pipeline field tests is entirely at the option and convenience of SRP.

3.7.3 Joint tests shall be in accordance with ASTM C924 for 24" (600 mm) pipe or smaller and ASTM C1103 for 27" (675 mm) pipe or larger.

3.7.4 Contractor shall repair all deficiencies revealed by field testing. Tests shall be successfully completed prior to final acceptance of the pipeline.

3.8 Cleanup

3.8.1 Remove unsuitable material and excess spoil material from jobsite and dispose of at SRP approved disposal site, unless otherwise directed by the Engineer. Removal and disposal of material shall be at Contractor's expense.

5/08/97

3.8.2 Dress grades adjacent to the work as needed to return site to like original condition, unless otherwise directed by the Engineer.

3.8.3 All work and property of SRP and/or others damaged or destroyed by Contractor, its employees or Subcontractors shall be repaired or replaced at Contractor's expense to the satisfaction of the Engineer.

SALT RIVER PROJECT
STANDARD SPECIFICATION
 FOR
REINFORCING STEEL
 (SRP 03210)

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	GENERAL	1
1.1	Work Specified	1
1.2	Work Performed by Purchaser	1
1.3	Standard Units	1
1.4	Reference Standards	1
1.5	Submittals	2
1.6	Storage and Handling	3
2.0	PRODUCT	3
2.1	Reinforcing Steel	3
2.2	Bar Supports	4
2.3	Specialty Items	4
2.4	Drawing Requirements	4
2.5	Fabrication	5
2.6	Quality Assurance	5
3.0	EXECUTION	5
	None	

PREPARED BY: K. L. CHHIBBER

APPROVED BY: L. A. BOTTOLFSON

REVISED BY: K. L. CHHIBBER

APPROVED BY: L. A. BOTTOLFSON

STANDARD SPECIFICATION
FOR
REINFORCING STEEL
(SRP 03210)

1.0 GENERAL

1.1 Work Specified

This Specification covers the furnishing of all shop drawings, plant, labor, materials, tools, equipment and performing all operations and incidentals necessary for supplying reinforcing steel, plain steel dowels and bar supports.

1.2 Work Performed by Purchaser

When construction work is performed by Purchaser, the term Contractor shall mean the reinforcing steel supplier.

1.3 Standard Units

Either English or SI (metric) units may be used. Whichever units are specified on the drawings shall be considered standard for that project. Substitution between English and SI products will be allowed, provided that at least equivalent cross-sectional area is furnished.

1.4 Reference Standards

1.4.1 Reference to standards or specifications shall be interpreted to mean the latest revision unless otherwise noted.

1.4.2 The following abbreviations appear in this Specification:

ACI	American Concrete Institute
ASTM	American Society for Testing and Material
CRSI	Concrete Reinforcing Steel Institute

1.4.3 The following standards shall be made a part of this Specification:

ACI 315	Details and Detailing of Concrete Reinforcement
---------	---

ACI 318/318M	Building Code Requirements for Reinforced Concrete
ACI SP-66	ACI Detailing Manual
ASTM A36/A36M	Standard Specification for Carbon Structural Steel
ASTM A82	Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
ASTM A185	Standard Specification for Steel Welded Wire Fabric, Plain for Concrete Reinforcement
ASTM A615/ A615M	Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A775/ A775M	Standard Specification for Epoxy-Coated Reinforcing Steel Bars
CRSI Handbook	Concrete Reinforcing Steel Institute Handbook

1.4.4 Exceptions to this Specification must be approved in writing by the Engineer prior to beginning the affected work.

1.5 Submittals

1.5.1 Shop Drawings

- a. Two prints of each shop drawing shall be submitted to the Engineer for review and approval. The Engineer will require at least three working days for review of shop drawings.
- b. Shop drawings shall include placement drawings, bar list, bending details, standees and spreader bars, and schedules for fabrication and delivery of reinforcing steel.
- c. Shop drawings shall be checked and signed prior to submittal.
- d. The Engineer will return one print of each shop drawing marked "Approved", "Approved as Noted", or "Not Approved". Submittals that are marked "Approved as Noted" or "Not Approved" shall be corrected and resubmitted. Each revision shall be dated.

- e. The Engineer's approval of submittals shall not relieve Contractor from responsibility for compliance with Drawings, Specifications and other Contract Documents nor from responsibility for errors in submittals.
- f. Fabrication shall not begin until all shop drawings are approved by the Engineer.
- g. Four sets of prints and one vellum of each final approved shop drawing shall be provided to the Engineer. The Engineer will distribute shop drawings to jobsite Foreman and Inspector when construction work is performed by Purchaser.

1.5.2 Two copies of original material manufacturer's Material Test Reports (MTR) for reinforcing steel shall be submitted to the Engineer prior to shipment.

1.5.3 Two copies of manufacturer's catalog data for each splicing device or other specialty item shall be submitted to the Engineer prior to shipment.

1.6 Storage and Handling

1.6.1 Reinforcing steel shall be protected during shipping and unloading to prevent damage to material or loss of identification tags.

1.6.2 Reinforcing steel shall be stored above grade and in such a manner as to prevent contamination with dirt, rust, oil or other bond-breaking coatings.

1.6.3 Damaged, misfabricated or deteriorated materials, not caused by Purchaser's actions, shall be replaced by Contractor at no additional cost to Purchaser.

2.0 PRODUCT

2.1 Reinforcing Steel

2.1.1 All reinforcing steel shall comply with the following standards: -

- a. Bars shall conform to ASTM A615, Grade 60 (ASTM A615M, Grade 400) unless noted otherwise.
- b. Epoxy-coated bars shall conform to ASTM A775/A775M.

- c. Plain steel wire reinforcement shall conform to ASTM A82.
- d. Plain steel welded wire fabric shall conform to ASTM A185.
- e. Plain steel dowels shall conform to ASTM A36/A36M.

2.1.2 All material shall be new and free from loose rust, loose mill scale, dirt, oil and paint.

2.1.3 Reinforcing steel with tightly adhered mill scale or rust or a combination of both will be acceptable provided the minimum dimensions (including deformations) and weight of a hand wire-brushed test specimen are not less than acceptable ASTM requirements.

2.2 Bar Supports

2.2.1 Chairs and bolsters shall be steel, plastic or concrete, and shall be of size and dimensions necessary to perform required function.

2.2.2 Standees shall be furnished with the reinforcing steel when top and bottom mats in slabs are shown on the drawings. Maximum standee spacing shall be 4 feet (1200 mm) each way.

2.2.3 Spreader bars shall be furnished with the reinforcing steel when reinforcing in both faces of walls is shown on the drawings and the concrete pour height in such walls exceeds 8 feet (2400 mm). Maximum spreader bar spacing shall be 4 feet (1200 mm) each way.

2.3 Specialty Items

Materials not specifically described, but required for complete and proper installation of reinforcing steel, shall be approved by the Engineer prior to use.

2.4 Drawing Requirements

2.4.1 All placement drawings shall have a clear area within the border in lower right corner for Purchaser's drawing number to be affixed by the Engineer.

2.4.2 Letters, figures and line work on reproducibles shall be clear and dense enough to reproduce legibly on prints. Background shall be free of blemishes which would show on reproduction.

2.4.3 Drawings and data shall be in sufficient detail to indicate the type, size, arrangement and weight of each component.

2.5 Fabrication

2.5.1 All reinforcing steel shall be shop fabricated in accordance with approved shop drawings.

2.5.2 All bars shall be bent cold.

2.5.3 Welding reinforcing steel will not be allowed.

2.5.4 Fabrication details and tolerances shall comply with requirements of ACI 315.

2.6 Quality Assurance

2.6.1 All material shall be subject to inspection by the Engineer. Materials not meeting the requirements of this Specification will be rejected. Reinforcing steel may be rejected at fabrication plant or at jobsite. The Contractor shall be responsible for all Purchaser's direct and indirect costs for removal and replacement of rejected reinforcing steel. Inspection may be waived by the Engineer but such waiver shall not be interpreted as releasing Contractor from responsibility for delivery of materials conforming to this Specification.

2.6.2 Each bundle shall be tagged with quantity, bar size, and piece mark in accordance with approved shop drawings. A complete shipping list shall be provided for each shipment. Failure of Contractor to comply with these requirements will result in rejection of the shipment.

3.0 EXECUTION

None

SALT RIVER PROJECT
STANDARD SPECIFICATION
FOR
CONCRETE
(SRP 03300)

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	GENERAL	1
1.1	Work Specified	1
1.2	Work Performed by Purchaser	1
1.3	Standard Units	1
1.4	Reference Standards	1
1.5	Submittals	3
1.6	Quality Assurance	4
1.7	Storage and Handling	4
2.0	PRODUCT	4
2.1	Cement	4
2.2	Aggregate	4
2.3	Water	4
2.4	Admixtures	5
2.5	Fly Ash	5
2.6	Proportioning of Mix	6
2.7	Measurement of Materials	6
2.8	Mixing	6
2.9	Delivery	6
2.10	Hot Weather Concreting	7
2.11	Cold Weather Concreting	7
2.12	Direct and Indirect Costs	7
3.0	EXECUTION	7
3.1	Testing, Strength Compliance and Acceptance of Concrete	7
	Table 1 (Concrete Mixes)	10

PREPARED BY: K. L. CHHIBBER

APPROVED BY: L. A. BOTTOLFSON

REVISED BY: K. L. CHHIBBER

APPROVED BY: L. A. BOTTOLFSON

STANDARD SPECIFICATION
FOR
CONCRETE
(SRP 03300)

1.0 GENERAL

1.1 Work Specified

This specification covers the furnishing of all plant, labor, materials and equipment necessary for mixing and delivering normal weight portland cement concrete ready for placement.

1.2 Work Performed by Purchaser

When construction work is performed by Purchaser, the term Contractor shall mean the concrete supplier.

1.3 Standard Units

When both English and SI (metric) units are stated, the English units are the standard. The SI units are approximations listed for information only.

1.4 Reference Standards

1.4.1 Reference to standards or specifications shall be interpreted to mean the latest revision unless noted otherwise.

1.4.2 The following abbreviations appear in this Specification:

ACI	American Concrete Institute
ARPA	Arizona Rock Products Association
ASTM	American Society for Testing and Materials
MAG	Maricopa Association of Governments
NRMCA	National Ready-Mixed Concrete Association
SRP	Salt River Project

1.4.3 The following standards shall be made a part of this Specification:

ACI 301	Specifications for Structural Concrete for Buildings
ACI 305R	Hot Weather Concreting
ACI 306.1	Standard Specification for Cold Weather Concreting
ACI 318/318M	Building Code Requirements for Reinforced Concrete
ASTM C31	Standard Practice for Making and Curing Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C42	Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C138	Standard Test Method for Unit Weight, Yield, and Air Contents (Gravimetric) of Concrete
ASTM C143	Standard Test Method for Slump of Hydraulic Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C233	Standard Test Method for Air-Entraining Admixtures for Concrete
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete

5/13/97

ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C618	Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete
ASTM C1064	Standard Test Method for Temperature of Freshly Mixed Portland Cement Concrete
ASTM D512	Standard Test Methods for Chloride Ion in Water
ASTM D516	Standard Test Method for Sulfate Ion in Water

1.4.4 Exceptions to this specification must be approved in writing by the Engineer prior to beginning the affected work.

1.5 Submittals

1.5.1 Contractor shall submit the following items for each mix to be supplied:

- a. Plant certification
- b. Cement certification and mill test report
- c. Fly ash certification
- d. Fly ash replacement ratio
- e. Source and gradation of fine and coarse aggregate
- f. Admixture brand and certification
- g. Source of water and certification
- h. Mix design
- i. Mix design performance/trial batch data

1.5.2 Concrete supplier shall use SRP Stock Code Numbers, but may assign mix design product codes in addition to SRP Stock Code Numbers specified in Table 1 (Page 10).

1.6 Quality Assurance

1.6.1 Each batch plant from which concrete supplier intends to provide concrete must have current NRMCA, ARPA or equivalent laboratory certification.

1.6.2 Concrete supplier shall provide documentation that an Arizona-registered professional engineer has reviewed mix design and other submittals prior to submitting to Purchaser for review and approval.

1.6.3 Concrete supplier shall provide access to batch plant for sampling/inspection of materials and equipment.

1.7 Storage and Handling

1.7.1 Materials shall be stored and handled in a manner that prevents deterioration, segregation, or intrusion of foreign matter.

1.7.2 Storage of aggregate on natural ground surface will be permitted if bottom six inches of pile is not used in batching.

2.0 PRODUCT

2.1 Cement

Cement shall be portland cement, Type II, low alkali, moderate heat of hydration, conforming to ASTM C150. Equivalent alkali content shall not exceed 0.6 percent, per Table 2, ASTM C150.

2.2 Aggregate

Coarse and fine aggregate shall conform to ASTM C33.

2.3 Water

Water for washing aggregate and for mixing concrete shall be potable or shall meet requirements of ASTM C94. If potable water is not used, concrete supplier shall have independent testing laboratory perform chemical analysis of water certifying suitability in accordance with ASTM D512 and ASTM D516.

2.4 Admixtures

2.4.1 Admixtures shall not be used or substituted without prior written approval of the Engineer.

2.4.2 Air-Entraining Admixtures

- a. Air-entraining admixtures shall conform to ASTM C260.
- b. Air-entraining admixtures shall be tested in accordance with ASTM C233.
- c. Air content, unless specified otherwise, shall conform to ACI 318, Table 4.2.1, moderate exposure. Tolerance for air content as delivered shall be ± 1.5 percent.

2.4.3 Water-Reducing, Retarding, and Accelerating Admixtures

- a. Water-reducing, retarding, and accelerating admixtures shall conform to ASTM C494.
- b. Chloride admixtures shall not be used.

2.4.4 Superplasticizers

- a. Superplasticizers shall conform to ASTM C494, Type F or G.
- b. Superplasticizer may be added at batch plant or at jobsite.

2.5 Fly Ash

2.5.1 Fly ash shall be used in all mix designs, unless noted otherwise in Table 1.

2.5.2 Fly ash shall conform to ASTM C618, Class F.

2.5.3 Fly ash shall be compatible with cement and shall not react deleteriously with alkalis in cement. Concrete supplier shall have fly ash sampled and tested in accordance with ASTM C311.

2.5.4 Maximum 20 percent of weight of cement required for mix design may be replaced when using fly ash. Concrete supplier shall be responsible to determine replacement ratio for each pound of replaced cement to maintain specified compressive strength f_c .

2.6 Proportioning of Mix

2.6.1 Source, character or gradation of materials shall not be changed without prior written approval of the Engineer.

2.6.2 Mix shall be homogeneous, readily placeable and uniformly workable. Proportioning of ingredients shall produce consistency, durability, workability, specified compressive strength f_c , and other properties as required per reference standards in Section 1.4.

2.7 Measurement of Materials

Material shall be measured in accordance with ASTM C94.

2.8 Mixing

2.8.1 Mixing shall follow the procedures in accordance with ASTM C94.

2.8.2 Water, or cement and water, shall not be added at the jobsite unless concrete supplier has received prior written approval from the Engineer.

2.9 Delivery

2.9.1 Ready-mix concrete shall be produced and delivered in accordance with ASTM C94. Concrete that is outside the temperature range of 55°F (13 °C) to 90 °F (32 °C), or has attained its initial set upon arrival at jobsite, as determined by the Engineer, will be rejected at Contractor's cost. Engineer may waive these limitations if slump is such that concrete can be placed without addition of water. Concrete shall be discharged within 1-1/2 hours after initial mixing water has been added to cement and aggregate.

2.9.2 Concrete supplier shall be responsible to make corrections to bring mix to specified slump. Only one addition of water to bring mix to specified slump shall be allowed. Mix not meeting slump requirements will be rejected.

2.9.3 Batch out time of truck shall be machine-stamped on delivery ticket at concrete supplier's plant. A copy of delivery ticket having machine-stamped batch out time shall be given to the Engineer at time of delivery. Concrete deliveries without machine-stamped batch out time on delivery ticket shall be rejected.

2.9.4 Concrete shall be delivered within 30 minutes of requested delivery time. Time-lapse between successive deliveries shall not vary by more than 20 minutes from that requested. The Engineer may reject any batch not meeting these requirements.

2.10 Hot Weather Concreting

2.10.1 During conditions of high temperature, low relative humidity, or wind which might impair quality of concrete, setting time shall be delayed by using proper admixtures.

2.10.2 Hot weather concreting shall be in accordance with ACI 305R. The concrete temperature during discharge shall not exceed 90° F (32° C).

2.11 Cold Weather Concreting

Cold weather concreting shall be in accordance with ACI 306.1. Concrete temperature during discharge shall not be less than 55° F (13° C).

2.12 Direct and Indirect Costs

Direct and indirect costs incurred by Purchaser due to failure to meet requirements of this specification shall be paid by Contractor.

3.0 EXECUTION

3.1 Testing, Strength Compliance, and Acceptance of Concrete

3.1.1 Testing

- a. Frequency for sampling concrete for strength compliance will be in accordance with ACI 318 or as specified by the Engineer.
- b. Concrete samples will be taken directly from transit mix truck. Sampling and testing will be in accordance with the following standards:

ASTM C138	Unit Weight & Yield
ASTM C143	Slump
ASTM C172	Sampling
ASTM C231	Air
ASTM C1064	Temperature

- c. Concrete strength specimens will be made in accordance with ASTM C31. Test specimens will be 4" (100 mm) diameter by 8" (200 mm) long cylinders.
- d. Test cylinders will be tested in accordance with ASTM C39.

3.1.2 Testing specified in Section 3.1.1 will be performed by the Engineer at no cost to Contractor.

3.1.3 Compliance With Compressive Strength Provisions

Compressive strength will be considered satisfactory if test results meet following requirements:

- a. 7-day average compressive strength, per strength test (average of two cylinders) equals or exceeds 70 percent specified compressive strength f_c .
- b. 28-day average compressive strength of all sets of three consecutive strength tests equals or exceeds specified compressive strength f_c .
- c. No individual strength test (average of two cylinders) falls more than 500 psi (3 Mpa) below specified compressive strength f_c when at least three strength tests are made.
- d. When less than three strength tests are made, no individual cylinder strength falls below specified compressive strength f_c .

3.1.4 Failure to Meet Compliance Requirements

- a. Failure to meet requirements of Section 3.1.3a indicates that potentially low-strength concrete has been delivered. Contractor will be notified of potential problem for remedial action.
- b. Failure to meet requirements of Section 3.1.3b or Section 3.1.3c shall be basis for investigation of low-strength concrete per Section 3.1.5.
- c. Failure to meet requirements of Section 3.1.3d will be basis for investigation of low-strength concrete per Section 3.1.5.

3.1.5 Investigation of Low-Strength Concrete

- a. A set of three cores representing each strength test shall be taken.
- b. Cores shall be taken within 72 hours of testing for 28-day compressive strength or as specified by the Engineer, in accordance with ASTM C42 and tested in accordance with ASTM C39.
- c. Contractor shall be responsible for costs associated with investigation of low-strength concrete. However, Contractor's cost will be reimbursed if requirements of Section 3.1.6 have been satisfied.

3.1.6 Acceptance of Low-Strength Concrete

Concrete in an area represented by core tests will be considered acceptable if the average of three cores is minimum 85 percent specified compressive strength f_c and no single core is less than 75 percent specified compressive strength f_c .

3.1.7 Rejection of Low-Strength Concrete

Concrete failing to meet acceptance requirements of Section 3.1.6 will be rejected. Contractor shall be responsible for direct and indirect costs of removal and replacement of rejected concrete.

TABLE 1
CONCRETE MIXES

SRP Stock Code Number	Description	Specified Compressive Strength @ 28 Days f _c Psi (Mpa)	Coarse Aggregate Max. Size in. (mm) ASTM C33 Table 2	Slump Range in. (mm)	Maximum Water/Cementitious Material Ratio (By Wt.)	Remarks	
0000220	MAG C or Canal Bottom	2,000 (15)	1 (25) #57	3-5 (75-125)	N/A		
0000221	Slipform		1/2 (12.5) #7	3-4 (75-100)	N/A	Min. cement 423 lbs/yd ³ (250 Kg/m ³)	
0000222	Masonry Grout		3/8 (9.5) #8	4-6 (100-150)	0.60		
0000230	MAG A or Normal	3,000 (20)	1 (25) #57	3-5 (75-125)	N/A		
0000231	Flowable			6-8 (150-200)			Use superplasticizer
0000232	C.I.P. Pipe 42 in. (1050 mm) & larger		3/4 (19) #67	2-3 (50-75)	0.55		
0000233	C.I.P. Pipe 36 in. (900 mm) & smaller Cable Trench		1/2 (12.5) #7	3-4 (75-100)			
0000234	Shotcrete		3/8 (9.5) #8		0.47	75-85% Coarse aggregate passing 3/8 in. (9.5mm) sieve	
0000235	Ditchmix			3-5 (75-125)	0.60		
0000240	MAG AA or Normal		4,000 (30)	1 (25) #57	3-5 (75-125)	N/A	
0000241	Normal with air					0.50	Use superplasticizer
0000242	Flowable	6-8 (150-200)					
0000243	Flowable with air						
0000244	Precast without flyash	1/2 (12.5) #7			3-5 (75-125)		
0000250	Normal	5,000 (35)	1 (25) #57	3-5 (75-125)	0.45	Use superplasticizer	
0000251	Normal with air						
0000252	Flowable			6-8 (150-200)			
0000253	Flowable with air						
0000254	Normal without flyash						
0000255	Normal with small aggregate			3-5 (75-125)			
0000256	Normal with small aggregate & without flyash		1/2 (12.5) #7				

6/04/97

SALT RIVER PROJECT
GENERATION ENGINEERING
STANDARD SPECIFICATION
FOR
CONCRETE FORMWORK AND PLACEMENT
(GE 03305)

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	GENERAL	1
1.1	Work Specified	1
1.2	Reference Standards	1
1.3	Submittals	2
2.0	PRODUCT	3
2.1	Materials	3
2.2	Curing Compound	3
2.3	Form Lumber	3
2.4	Metal Forms	4
2.5	Other Accessories	4
3.0	EXECUTION	4
3.1	Forming	4
3.2	Reinforcing Steel Placement	5
3.3	Waterstop Installation	6
3.4	Concrete Placement	6
3.5	Consolidation	7
3.6	Finishing	8
3.7	Curing	9
3.8	Form Removal	9
3.9	Tolerances	10
3.10	Quality Control	10

PREPARED BY: K. L. CHHIBBER

APPROVED BY: LARRY A. BOTTOLFFSON

REVISED BY: K. L. CHHIBBER

APPROVED BY: LARRY A. BOTTOLFFSON

LAB

6/04/97

STANDARD SPECIFICATION
FOR
CONCRETE FORMWORK AND PLACEMENT
(GE 03305)

1.0 GENERAL

1.1 Work Specified

This Specification covers the furnishing of labor, equipment and materials needed to form, place, consolidate, finish and cure cast-in-place concrete.

1.2 Reference Standards

1.2.1 Reference to standards or specifications shall be interpreted to mean the latest revision unless noted otherwise.

1.2.2 The following abbreviations appear in this Specification:

ACI	American Concrete Institute
ASTM	American Society for Testing and Materials
CRSI	Concrete Reinforcing Steel Institute
SRP	Salt River Project

1.2.3 The following Standards shall be made a part of this Specification:

ACI 117	Standard Specification for Tolerances for Concrete Construction and Materials
ACI 302	Guide for Concrete Floor and Slab Construction
ACI 304R	Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 304	Placing Concrete by Pumping Methods
ACI 305R	Hot Weather Concreting
ACI 306.1	Standard Specification for Cold Weather Concreting

ACI 308	Standard Practice for Curing Concrete
ACI 309R	Guide for Consolidation of Concrete
ACI 318/318M	Building Code Requirements for Reinforced Concrete
ACI 347R	Guide to Formwork for Concrete
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C920	Standard Specification for Elastomeric Joint Sealants
ASTM D1752	Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
CRSI	CRSI Recommended Practice for Placing Reinforcing Bars
SRP 03210	Salt River Project Standard Specification for Reinforcing Steel
SRP 03300	Salt River Project Standard Specification for Concrete
GE 07920	Generation Engineering Standard Specification for Caulking and Sealants

1.2.4 Exceptions to this specification must be approved in writing by the Engineer prior to beginning the affected work.

1.3 Submittals

Fabrication and placement drawings for reinforcing steel and embedded items, mix designs, and Manufacturer's Material Safety Data Sheets (MSDS) for chemicals shall be submitted to the Engineer for approval at least five working days prior to placement of concrete. Work shall not proceed until submittals have been approved by the Engineer.

2.0 PRODUCT

2.1 Materials

2.1.1 Concrete shall conform to SRP 03300.

2.1.2 Reinforcing steel shall conform to SRP 03210.

2.1.3 Waterstop shall be dumbbell shape extruded elastomeric polyvinyl chloride of type, width and thickness specified on Drawings.

2.1.4 Expansion joint filler material shall be preformed neoprene sponge rubber conforming to ASTM D1752, Type I.

2.1.5 Elastomeric sealants for expansion and control joints shall conform to GE 07920. Polyethylene foam backer rod shall be used for back-up of cold-applied elastomeric sealants.

2.1.6 Sealants in fuel or chemically active water containments shall be compatible with properties of stored material.

2.2 Curing Compound

Curing compound shall conform to ASTM C309. Type 1-D, Class A clear resin compound shall be used for interior applications. Type 1-D, Class A clear resin compound with fugitive dye or Type 2, Class A white-pigmented wax emulsion compound shall be used for exterior applications.

2.3 Form Lumber

Form lumber in contact with exposed concrete surfaces shall be new and shall conform to the following:

- a. Structural Plywood, Class I or II. High-density overlay shall be used when highly smooth, grain-free concrete surface is required.
- b. Dimension lumber, Douglas Fir or Larch, Number 2 grade, seasoned and surfaced all sides.

2.4 Metal Forms

A commercial metal forming system or combination metal and plywood forming system may be used provided it is straight, clean and assembled to manufacturer's instructions.

2.5 Other Accessories

2.5.1 Form accessories such as, but not limited to, styrofoam form liners or fiberglass may be used.

2.5.2 Form accessories or other embedded items which are to be partially or entirely embedded in concrete shall be of a commercially manufactured type.

2.5.3 Aluminum pipe which is to be embedded in concrete shall be completely taped with Polyken two-inch wide pipe wrap, spiral wrapped with 50% overlap.

2.5.4 Reinforcing bar supports shall conform to CRSI Class 3 (bright wire) for use in contact with formed surfaces that will not be exposed, and CRSI Class 1 (plastic tipped or coated) for use in contact with formed surfaces that will be exposed.

2.5.5 Concrete block or plastic reinforcing bar supports may also be used.

3.0. EXECUTION

3.1 Forming

3.1.1 Contractor shall be responsible for design and construction of forms, in accordance with ACI 347R. Forms shall have adequate strength to support weight of fresh concrete and added loads imposed by workers, wind and construction equipment.

3.1.2 Forms shall be designed, constructed, braced, and maintained so that finished concrete will be true to line and elevation, and will conform to dimensions and contours specified in Contract Documents. Forms shall be sufficiently tight to prevent leakage of mortar paste.

3.1.3 Reusable forms shall be maintained and kept in good condition as to accuracy of shape, strength, rigidity, watertightness, and smoothness of surface. Forms unsatisfactory to the Engineer shall not be used.

3.1.4 Three-quarter inch chamfer shall be provided in forms at exposed corners and edges of concrete. Horizontal edges of curved forms may be radiused with an edging tool.

3.1.5 Forms shall be treated with form-release agent which will not adhere to or discolor concrete. Form-release agent shall be cleaned from rebar and other embedded items prior to concrete placement.

3.1.6 Shear keys in construction joints shall be formed prior to concrete placement.

3.2 Reinforcing Steel Placement

3.2.1 Reinforcing steel shall be positioned on supports, spacers or hangers and secured in place with wire ties or clips. Welding of reinforcing steel and embedded items will not be permitted.

3.2.2 Reinforcing steel shown on Drawings is the minimum required. Additional bars may be added for working supports, at Contractor's expense, provided these do not interfere with concrete placement or violate concrete cover requirements.

3.2.3 Solid grout or concrete blocks or non-eroding chairs or bolsters shall be used to position bottom mat of slab reinforcing steel.

3.2.4 The following minimum concrete cover shall be provided for reinforcing steel, unless noted otherwise in Contract Documents:

- | | | |
|----|--|--------------|
| a. | Concrete cast against and permanently exposed to earth: | 3 inches |
| b. | Concrete exposed to earth or weather: | |
| | #6 through #18 bars | 2 inches |
| | #5 bar, W31 or D31 wire, and smaller | 1-1/2 inches |
| c. | Concrete not exposed to weather nor in contact with earth: | |
| | Slabs, Walls, Joists: | |
| | #11 bar and smaller | 3/4 inch |
| | #14 and #18 bars | 1-1/2 inches |
| | Beams, Columns: | |
| | Primary Reinforcement, Ties,
Stirrups, Spirals | 1-1/2 inches |

3.2.5 Contact splices of reinforcing steel are preferred. Noncontact splices shall be spaced no farther apart transversely than 1/5 required lap splice length nor six inches clear distance.

3.3 Waterstop Installation

Waterstop shall be accurately located and properly braced to prevent movement during placement of concrete. Waterstop shall be clean and free of dirt, grease or concrete splatter. Splices shall be kept minimum, but when unavoidable, splices shall be made using teflon coated splicing iron to assure watertight joints. Prefabricated intersections shall be used where possible.

3.4 Concrete Placement

3.4.1 Contractor shall notify the Engineer at least 24 hours in advance of each proposed concrete placement. Installation of anchor bolts, reinforcing steel, embedded items, and forms shall be approved by the Engineer prior to concrete placement.

3.4.2 Unless specifically waived by the Engineer, concrete placement shall be done in the presence of the Engineer and shall not commence until the work has been authorized to proceed.

3.4.3 Concrete slabs on grade shall be placed on undisturbed soil or compacted subgrade. Frozen subgrade or subgrade that contains frozen materials will not be acceptable.

3.4.4 Forms and construction joint surfaces shall be clean and free of foreign materials. Sandblasting, water-blasting, or other methods specified in ACI 304R shall be used to achieve a clean interface at construction joints.

3.4.5 Subgrade shall be dampened and excess water removed prior to placement of concrete on grade. Wooden forms that will be in contact with concrete shall be thoroughly moistened unless wood has been properly treated with form release agent. When ambient temperature exceeds 90°F, fog nozzles shall be used to cool reinforcing steel and forms prior to concrete placement. When temperature of reinforcing steel is greater than 120°F, steel forms and reinforcing steel shall be sprayed with water just prior to placing concrete. During cold weather (mean daily temperature below 40°F), ice, snow and frost shall be removed from reinforcing steel and placement areas and temperature of all surfaces which will be in contact with fresh concrete shall be raised to minimum 40°F. Minimum concrete temperature of 50°F shall be maintained during and after placement.

3.4.6 Concrete from mixer shall be conveyed and deposited in place by methods which will prevent segregation or loss of materials. Where concrete trucks cannot access jobsite, concrete shall be pumped or conveyed, or energy dissipating chutes (elephant trunks) shall be used.

3.4.7 Equipment for chuting and pumping concrete shall be of a size and design that can provide a continuous flow of concrete at the delivery end. Aluminum conveying equipment shall not be used.

3.4.8 Mud, soil or foreign matter shall be prevented from entering concrete or forms during placement operations.

3.4.9 Concrete in walls shall be placed continuously in level layers not exceeding two feet thick, so that no cold joints form. Prior to concrete placement, Contractor shall make arrangements to assure uninterrupted delivery of concrete.

3.4.10 Beams and floor slabs shall be placed in one continuous operation unless noted otherwise.

3.4.11 Grade beams, pedestals, columns, and walls shall be placed monolithic, without joints, unless noted otherwise.

3.4.12 Construction joints for walls shall be placed at maximum ten feet height unless noted otherwise.

3.5 Consolidation

3.5.1 Concrete shall be compacted thoroughly into a dense homogeneous mass throughout entire depth of layer being consolidated.

3.5.2 Concrete for slabs, drilled piers, footings, and walls shall be consolidated by vibration, spading or rodding so that concrete is thoroughly worked around reinforcing steel, conduit, embedded items and into corners of forms. Manual consolidation methods for structural concrete placement shall not be used. Structural concrete slab surface shall not be hand tamped when concrete has four inch or greater slump.

3.5.3 Adequate number of vibrators of sufficient capacity shall be provided to keep up with maximum rate of concrete placement. An adequate supply of standby equipment, including a minimum of one vibrator, shall be kept at jobsite.

3.5.4 Internal vibrators shall be inserted vertically through the full depth of layer being placed, penetrating into the previous layer. Vibrator shall not be dragged, but inserted and withdrawn slowly with vibrator running continuously so that no void is left in concrete. Vibrator shall not be used to flow concrete from one location to another.

3.5.5 Concrete shall be vibrated until it is thoroughly consolidated and voids are filled as evidenced by level appearance of concrete at exposed surface and embedment of surface aggregate.

3.5.6 Form vibrators may be used only where sections are too thin or inaccessible for internal vibrators.

3.6 Finishing

3.6.1 Concrete for foundations shall be finished so that free water will not collect on surface.

3.6.2 Threads on anchor bolts and reinforcing steel dowels shall be protected from concrete buildup and/or splatter. Threads on anchor bolts shall be cleaned so that nuts turn freely without interference.

3.6.3 Exposed concrete surfaces for floor slabs shall have final finish conforming to ACI 302.1R unless noted otherwise.

3.6.4 Floor slabs which are to be covered with resilient flooring or coatings shall have smooth, steel trowel finish.

3.6.5 Slabs on which concrete pedestals are to be placed shall have rough, scored finish.

3.6.6 All other exposed concrete surfaces shall have formed or smooth, steel trowel finish, unless noted otherwise.

3.6.7 Control joints may be formed or sawcut. Sawcutting shall be done during initial setting of concrete, but in no case later than 12 hours after completion of concrete placement. Sawcut shall extend full design length. Wall and edge conflicts will preclude use of sawcutting.

3.6.8 Exposed concrete shall be free from irregularities, fins, rock pockets, or other imperfections. Defective concrete surfaces including misalignment and holes from form ties, shall be repaired. Defective surfaces shall be repaired prior to placement of backfill. Repairs to defective surfaces shall be made in following manner:

- a. Surface shall be chipped back to minimum depth of one-half inch beyond imperfection. Edges shall be chipped perpendicular to surface, and the depression shall be pre-wetted and brushed with neat cement immediately before patching.

- b. Mortar used for patching shall have same sand-cement ratio as original concrete with minimum water for placing. Color of existing concrete shall be matched at exposed surfaces.
- c. Mortar to patch form-tie holes shall be applied with hammer and ramming rod within 24 hours of removal of wall forms and shall be struck flush.
- d. Repairs shall be cured by moistening for three days or by using curing compound.

3.7 Curing

3.7.1 Concrete surfaces shall be cured by methods recommended in ACI 308, ACI 305R or ACI 306.1. The following are acceptable methods:

- a. Using saturated burlap, soaker hoses, or sprinklers to keep concrete continuously wet for minimum seven days.
- b. Covering concrete with polyethylene sheets, other than black film, applied in full contact with surfaces and sealed around edges.
- c. Applying curing compound to unformed concrete surfaces within one hour after applying finish. Curing compound shall be applied to formed concrete within one hour after stripping forms. Where epoxy coating or staining of concrete is required, curing compound shall contain no waxes, paraffins or oils. Curing compound shall be applied by spraying with uniform coverage, at rate recommended by manufacturer.

3.7.2 Curing compound shall not be used on concrete surfaces which are to be in contact with grout; if curing compound is used, concrete surfaces shall be sandblasted prior to placing grout. Other means of surface cleaning, such as high pressure water blasting/water jetting, will also be acceptable.

3.7.3 If concrete shows tendency to set and dry too rapidly, form shrinkage cracks or form cold joints, concrete shall be kept moist using fog spray, wet burlap, cotton mats, or other method(s) acceptable to the Engineer.

3.7.4 Concrete placed during cold weather shall be protected with insulating blankets or heated enclosures. Fresh concrete shall not be exposed to carbon monoxide or carbon dioxide fumes from heaters or engines.

3.8 Form Removal

3.8.1 Forms shall not be relieved of load or removed without approval of the Engineer. Formwork for structural slabs shall not be removed until concrete has attained 70 percent specified minimum compressive design strength ($f'c$) or until

seven days, whichever occurs first. Formwork for structural walls shall remain in place for minimum 24 hours after concrete placement. Side forms for nonstructural members may be removed, at Contractor's risk, after concrete has set.

3.8.2 70 percent specified minimum compressive design strength ($f'c$) shall be required before backfilling against walls or application of loads.

3.9 Tolerances

Tolerances for concrete construction shall conform to ACI 117. Following tolerances are maximum, noncumulative, variations from dimensions shown on Contract Documents.

- a. Plumbness in lines and surfaces of concrete walls, columns and piers:

In any 10 feet	1/4 inch
Maximum for total structure height	1/2 inch

- b. Cross-sectional dimensions of columns, beams; walls and slab thickness:

Up to 12 inches	+ 3/8 inch/- 1/4 inch
More than 12 inches	+ 1/2 inch/- 3/8 inch

- c. Footings, Horizontal Dimensions:

Formed Excavation	+ 2 inches/- 1/2 inch
Unformed Excavation	+ 3 inches

- d. Minimum Concrete Cover:

Beams, Walls & Columns	- 0 inch
------------------------	----------

- e. Finished Slab Surfaces:

Maximum depression in floors shall not exceed 3/16 inch below a 10 foot straightedge.

- f. Anchor bolts shall be plumb and to the following tolerances:

Bolt projection	+1/4 inch/- 0 inch
Bolt location (without sleeves)	\pm 1/8 inch
Bolt location (with sleeves)	\pm 3/16 inch

Top of plastic anchor bolt sleeves shall be cut off flush with rough concrete just prior to grouting or setting equipment and base plates.

3.10 Quality Control

3.10.1 Reinforcing steel setting, embedded items, electrical grounding wires and form accessories will be inspected by the Engineer prior to concrete placement. Concrete shall not be placed until all items have been approved by

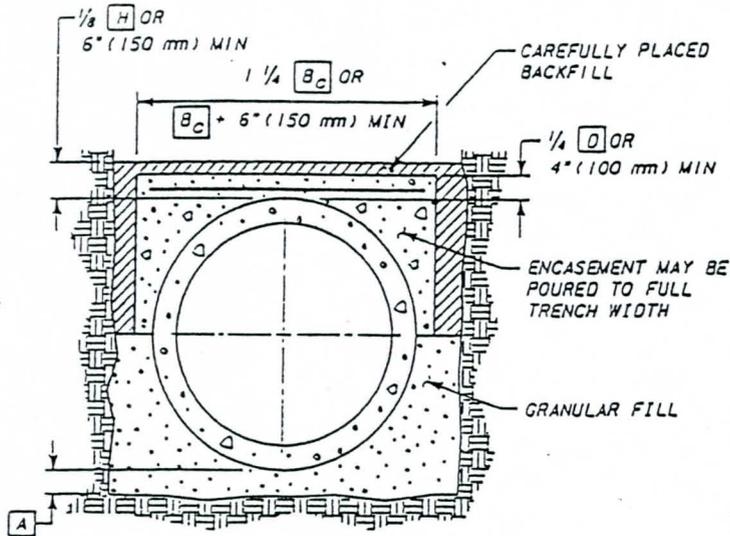
the Engineer. Contractor shall bear cost of delays in concrete placement caused by not providing sufficient inspection time or for making corrections to comply with requirements.

3.10.2 Concrete Testing

- a. The Engineer will furnish test equipment and trained personnel to perform required field tests and to make required test cylinders.
- b. The Engineer shall be provided access and adequate time for securing samples to determine whether materials are in accordance with Contract Documents.
- c. The Engineer may select and pay an independent testing laboratory to perform required laboratory tests.
- d. Testing, strength compliance, and acceptance of concrete will be in accordance with SRP 03300.
- e. Contractor has right to observe all phases of concrete cylinder fabrication, curing and testing. Should Contractor observe deviations from the prescribed testing procedure that may be detrimental to concrete strength test results, Contractor shall immediately notify the Engineer.
- f. The Engineer may require modifications of materials on the basis of field or laboratory tests. Contractor shall make such modifications at his own expense.

3.10.3 Contractor shall have sole responsibility for meeting concrete placement requirements. Inspection by the Engineer shall not relieve Contractor of responsibility for errors or deviations from specifications.

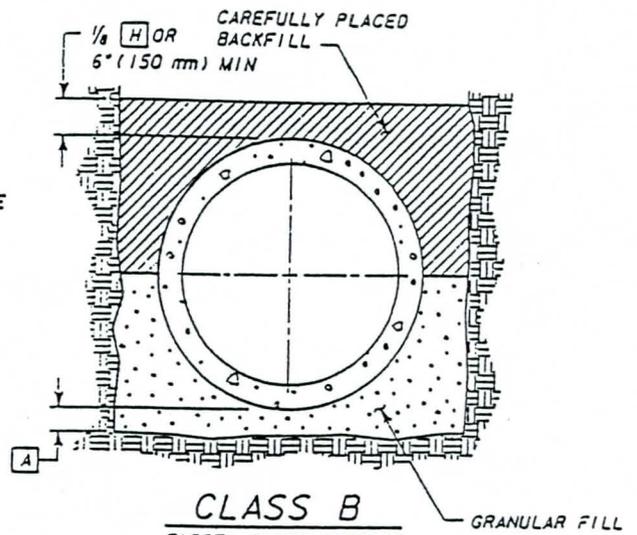
3.10.4 Concrete rejected by the Engineer for nonconformance shall be corrected to conform to specifications or removed and replaced. Contractor shall be responsible for direct and indirect costs of correction, removal and replacement of rejected concrete, including costs incurred by the Engineer.



CLASS A
ARCH ENCASEMENT

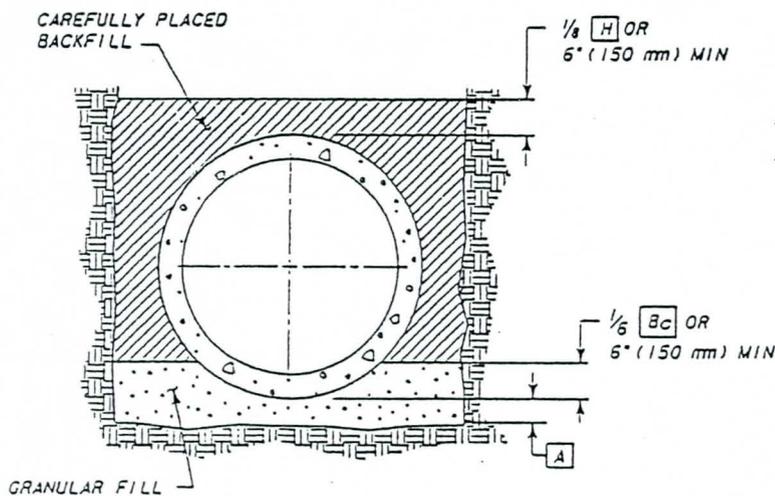
LOAD FACTOR $\left\{ \begin{array}{l} \text{REINFORCED, } A_s = 0.40\% = 3.5 \\ \text{REINFORCED, } A_s = 1.00\% = 4.8 \\ \text{PLAIN} = 2.8 \end{array} \right.$

A_s = PERCENTAGE OF AREA OF TRANSVERSE STEEL IN THE CONCRETE ABOVE CROWN OF PIPE



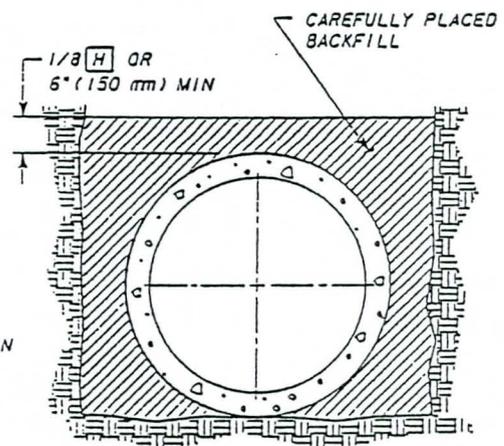
CLASS B
FIRST-CLASS BEDDING

LOAD FACTOR 1.9



CLASS C
ORDINARY BEDDING

LOAD FACTOR 1.5



CLASS D
FLAT BOTTOM BEDDING

LOAD FACTOR 1.15

TABLE OF FILL DEPTHS BELOW PIPE	
D DIAMETER	A MINIMUM
36" (900 mm) & SMALLER	4" (100 mm)
OVER 36" (900 mm)	1/12 OF Bc

H - DEPTH OF FILL ABOVE TOP OF PIPE

Bc - OUTSIDE DIMENSION OF PIPE

REFERENCES

PRECAST CONCRETE PIPE SPECIFICATION WTR 02614

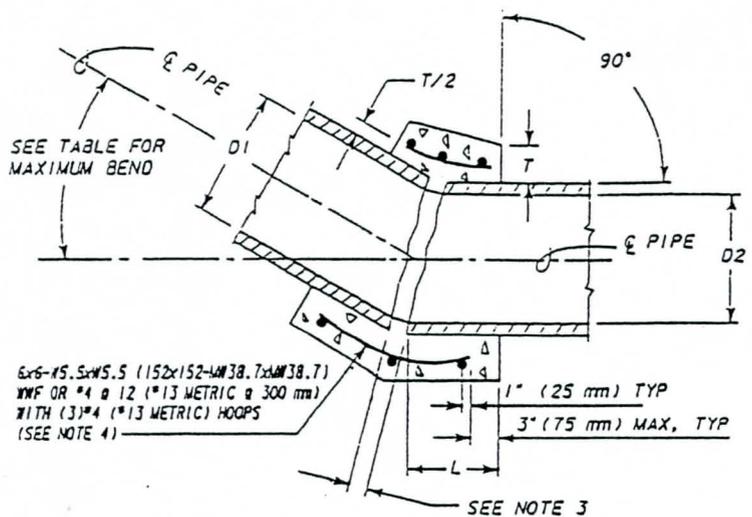
REVISIONS

REV NG	DATE	OPTR	CHKR	ENGR CHK	SUPV APPR	ISSUE DATE
INITIAL ISSUE.						
0	2/89	AK	WJC	REL	AAR	TMS
ADDED METRIC DIMENSIONS						
1	4/97	MD		CWT		GR

SALT RIVER PROJECT
WATER ENGINEERING STANDARDS

PIPELINE
BEDDING/BACKFILL
REQUIREMENTS

SCALE: NONE P021 (129, 238) 2000001.465
DWG SIZE: W/ES-30300-001



SECTION @ PIPE JOINT

D	L	T	MAXIMUM BEND
12" (300 mm)	12" (300 mm)	6" (150 mm)	22 1/2°
24" (600 mm)	12" (300 mm)	6" (150 mm)	30°
36" (900 mm)	18" (450 mm)	8" (200 mm)	45°*
48" (1200 mm)	18" (450 mm)	10" (250 mm)	
54" (1350 mm)	18" (450 mm)	10" (250 mm)	
60" (1500 mm)	21" (525 mm)	11" (275 mm)	
66" (1650 mm)	24" (600 mm)	11" (275 mm)	
72" (1800 mm)	24" (600 mm)	11" (275 mm)	
78" (1950 mm)	24" (600 mm)	12" (300 mm)	
84" (2100 mm)	30" (750 mm)	12" (300 mm)	
90" (2250 mm)	30" (750 mm)	12" (300 mm)	
96" (2400 mm)	30" (750 mm)	12" (300 mm)	

* 30" (750 mm) PIPE OR LARGER

NOTES:

1. A CONCRETE COLLAR IS REQUIRED WHERE PIPES OF DIFFERENT DIAMETERS OR MATERIALS ARE JOINED, OR WHERE A CHANGE IN ALIGNMENT OR GRADE EXCEEDS THAT ALLOWED FOR AN ORDINARY JOINT.
2. D-D1 OR D2, WHICHEVER IS GREATER. FOR PIPE SIZES NOT LISTED USE NEXT LARGER SIZE.
3. PIPE ENDS SHALL BE TRIMMED SUCH THAT THE MAXIMUM DISTANCE BETWEEN PIPES AT ANY POINT IS 2" (50 mm).
4. THE DIAMETER OF THE WWF OR REBAR HOOPS SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS "T". LAP SHALL BE 12" (300 mm).
5. CONCRETE COLLARS SHALL BE FINISHED SMOOTH AND FLUSH WITH THE INSIDE SURFACE OF THE PIPE.
6. ALL CONCRETE SHALL BE A MINIMUM OF 3000 PSI (20 MPa) AT 28 DAYS AND SHALL BE CONSOLIDATED BY MECHANICAL VIBRATOR OR EQUIVALENT METHOD.
7. ALL WELDED WIRE FABRIC (WWF) SHALL BE ASTM A185 AND ALL REINFORCING STEEL BARS SHALL BE ASTM A615 GR 40 (ASTM A615M GR 400) MINIMUM.
8. ALL FORMS SHALL BE REMOVED PRIOR TO BACKFILLING.

REFERENCES

REVISIONS

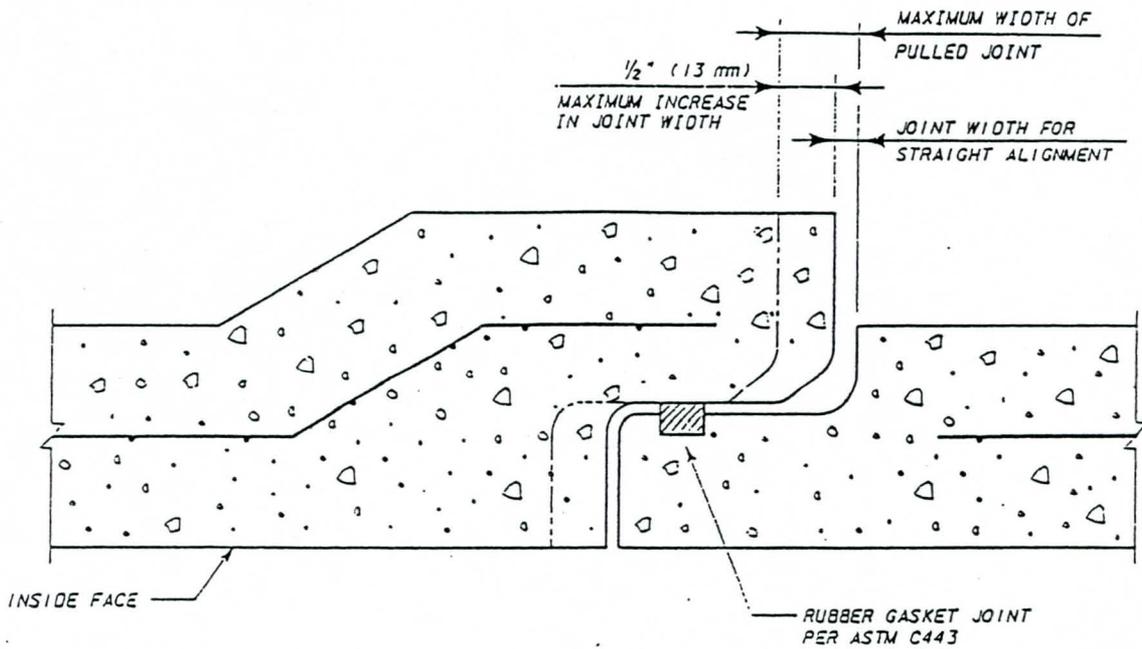
SALT RIVER PROJECT WATER ENGINEERING STANDARDS

REV NO	DATE	DFTR	CHKR	ENGR	SUPV	ISSUE
				CHK	SPFC	AUTH
1	09/88	AK	WJC	TCTN		TNS
2	1/90	AK	WJC	LAB	REL	TNS

STANDARD CONCRETE PIPE COLLAR

REVISED TABLE (ADDED ANGLES) &

SCALE: NONE P02 (120, 236) 30320003-425

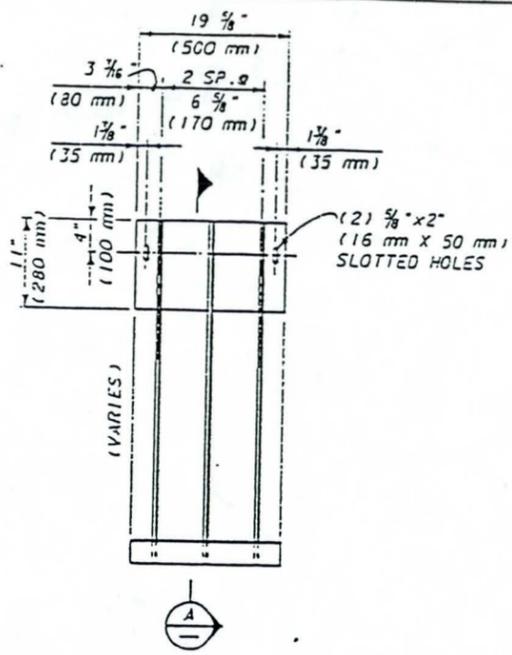


SECTION THRU PIPE JOINT

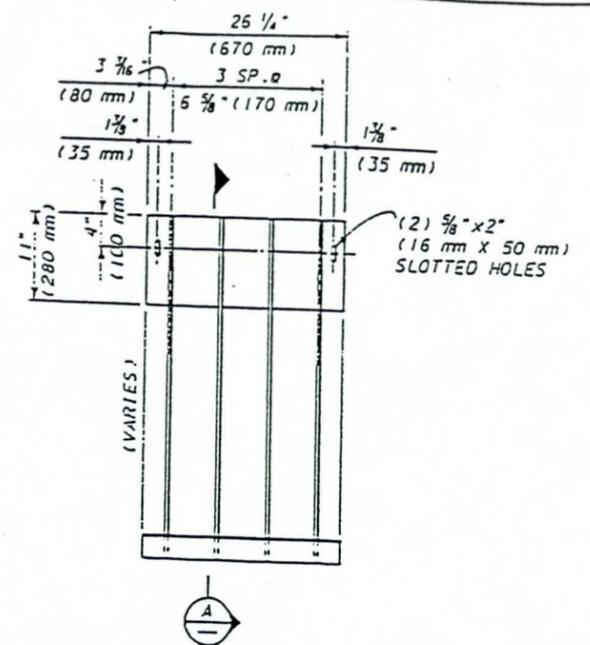
NOTES:

1. THIS DETAIL IS FOR A TYPICAL RUBBER GASKET BELL & SPIGOT ASSEMBLY. FLUSH BELL RUBBER GASKET JOINTS MUST MEET THE SAME SPECIFICATIONS.

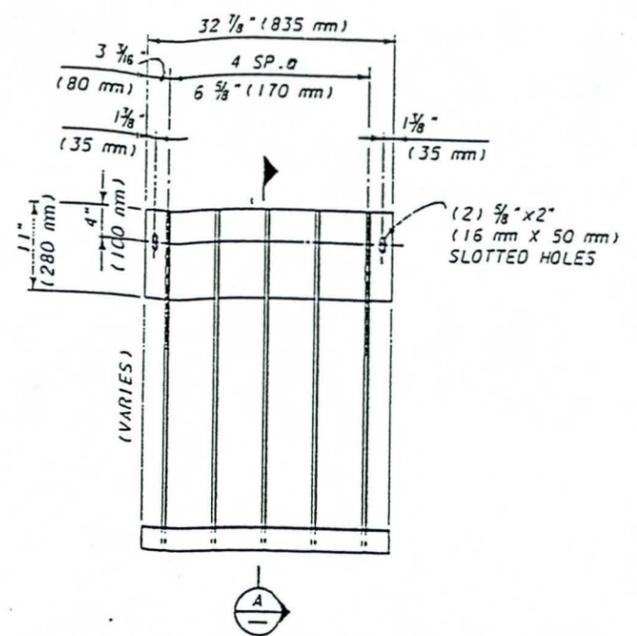
<p>REFERENCES</p> <p>PRECAST CONCRETE PIPE SPECIFICATION _____ WTR 02614</p>	<p>REVISIONS</p>							<p>SALT RIVER PROJECT WATER ENGINEERING STANDARDS</p>	
	REV NO	DATE	OFTR	CHKR	ENGR CHK	SUPV APPD	ISSUE AUTH	<p>RUBBER GASKET JOINTS</p>	
	INITIAL ISSUE								
	0	2/89	AK	WJC	REL	AAR	TNS		
REVISIED TO ASTM C433 STANDARD									
1	5/97	NW	—	CWT	—	—	—	SCALE: NONE	P0210120.23633030004.WPS
							<p>PLG SITE: _____ 30300-004</p>		



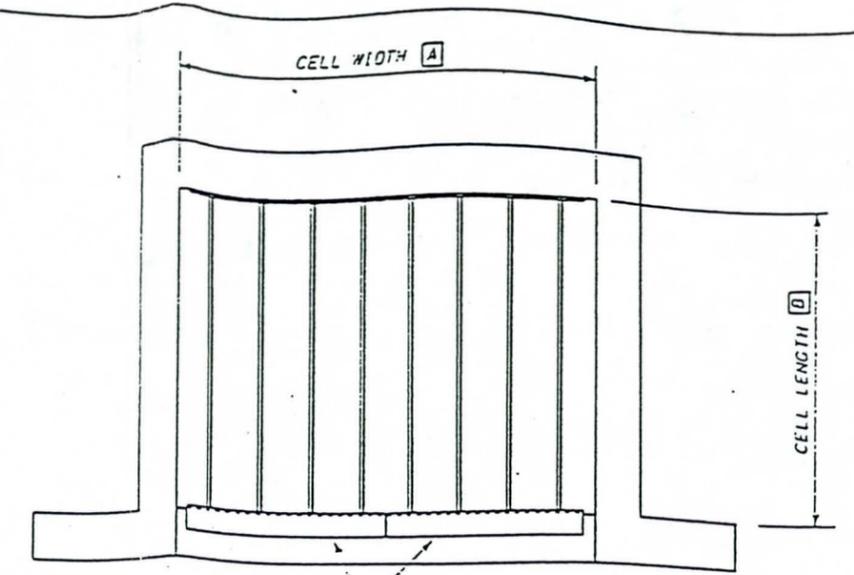
TRASHRACK-TYPE I



TRASHRACK-TYPE II



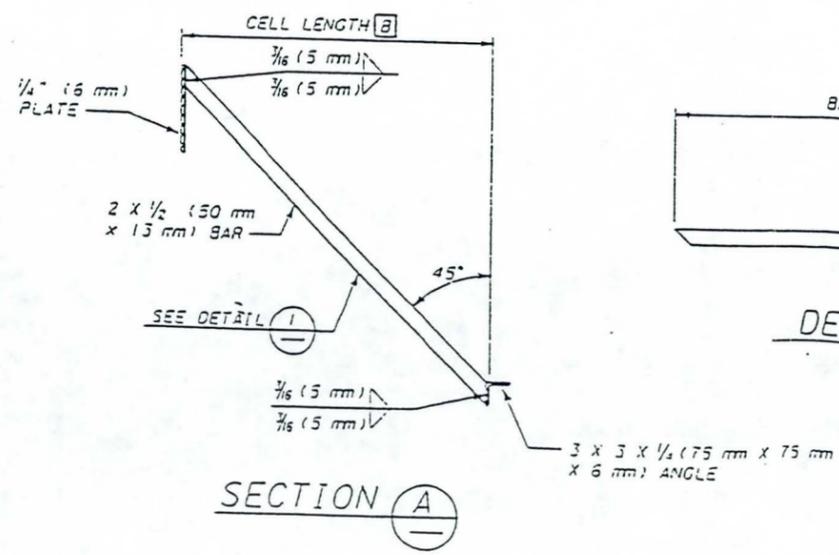
TRASHRACK-TYPE III



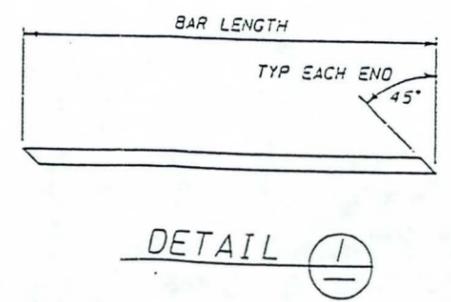
HEADWALL KEY PLAN

SEE TRASHRACK SCHEDULE FOR NUMBERS AND TYPES OF TRASHRACKS REQUIRED FOR VARYING CELL WIDTHS.

TRASHRACK SCHEDULE			
HEADWALL CELL WIDTH [A]	NUMBER OF PANELS REQUIRED		
	TYPE I	TYPE II	TYPE III
32" (813 mm)		1	
40" (1016 mm)			1
48" (1219 mm)	1	1	
56" (1422 mm)		2	
64" (1626 mm)		1	1
72" (1829 mm)			2
80" (2032 mm)	1	2	
88" (2235 mm)		2	1
96" (2438 mm)		1	2
108" (2743 mm)	2		2
120" (3048 mm)		2	2
132" (3353 mm)		1	3
144" (3658 mm)	2		3
156" (3962 mm)	1		4
168" (4267 mm)			5
180" (4572 mm)	1	1	4
192" (4877 mm)	1		5



SECTION A



DETAIL 1

TRASHRACK BAR LENGTH SCHEDULE	
HEADWALL CELL LENGTH [B]	BAR LENGTH
16" (406 mm)	23 1/4" (598 mm)
24" (610 mm)	35 1/4" (895 mm)
32" (813 mm)	46 5/8" (1183 mm)
40" (1016 mm)	57 7/8" (1470 mm)
48" (1219 mm)	69 3/8" (1757 mm)
56" (1422 mm)	80 1/2" (2045 mm)

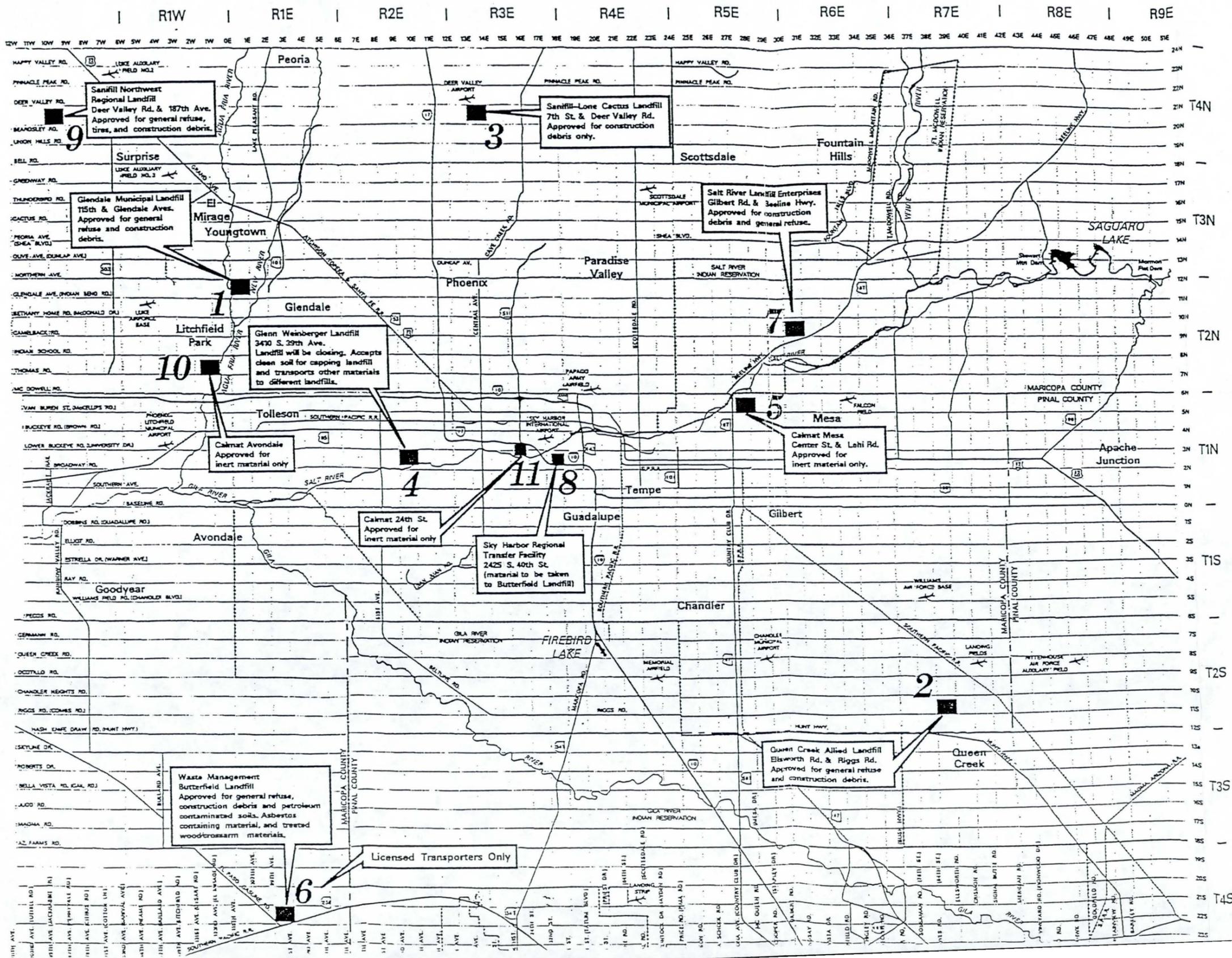
CONTRACTOR NOTE:
 TRASHRACK(S) MUST BE MANUFACTURED PRIOR TO REQUESTING A IRRIGATION OUTAGE FOR THIS JOB.
 TRASHRACKS AND ASSOCIATED HARDWARE CAN BE SUPPLIED BY SALT RIVER PROJECT UPON REQUEST. PLEASE CALL THE MECHANICAL CONSTRUCTION & MAINTENANCE DIVISION OF SRP FOR PRICE QUOTES: (602)236-4154.

- NOTES:**
- UNLESS OTHERWISE SPECIFIED, TOLERANCE DIMENSIONS SHALL BE $\pm 1/32$ " (1 mm).
 - ALL STEEL SHALL BE ASTM A36 UNLESS OTHERWISE NOTED.
 - SANDBLAST TO NEAR WHITE AND ZINC METAL SPRAY OR HOT DIP GALVANIZE 5-7 MILS (0.127-0.178 mm) AFTER FABRICATION.

REFERENCES		REVISIONS						SALT RIVER PROJECT WATER ENGINEERING STANDARD	
REV NO.	DATE	OSGN	ENGR CHK	ISSUE AUTH	DATE				
ADDED METRIC DIMENSION:									
2	1/11/97	---	---	---	---	5/23/97			

45° TRASHRACK FOR PIPELINE HEADWALL

SRP APPROVED LANDFILLS



LEGEND

- County Boundary
- Indian Reservation Boundary
- Approved Landfill Sites

CONSTRUCTION DEBRIS includes solid waste from construction, repair, or remodeling of buildings or other structures (does not include asbestos-containing material or treated wood poles or crossarm material)

GENERAL REFUSE includes solid waste such as garbage, trash, rubbish, refuse, and household waste.

INERT MATERIAL includes uncontaminated concrete, asphalt pavement, brick, rock, gravel, sand and soil. (can include metal but only if used as reinforcement in concrete.)

No Liquids or Lighting Wastes to any Landfill.

Contact Environmental Compliance Division, x6330, x3457, x2811, or x8077, for disposal of any petroleum contaminated soil or asbestos containing material.

Contact Environmental, Health & Safety Audits at x-8118 for approval of any landfills not shown on map.

© 1997 Salt River Project (SRP)

SRP makes no representation as to the accuracy of this mapping product nor as to its fitness for a particular purpose.

SCALE IN MILES



APPENDIX "D"

GILA RIVER INDIAN COMMUNITY REGULATIONS

INDIAN PREFERENCE IN EMPLOYMENT and LABOR AND EMPLOYMENT(TITLE 12)

BUSINESS LICENSES AND TAXATION (TITLE 13) and ORDINANCES GR-06-94, GR-08-96 AND GR-03-89

THE DISCOVERY, TREATMENT AND DOCUMENTATION OF HUMAN REMAINS CRMP POLICY # 8

Note: These documents were reproduced in the quality received. The Gila River Indian Community should be contacted directly if there are any questions.

INDIAN PREFERENCE IN EMPLOYMENT

A. Definitions

1. "Indian" means a person who is an enrolled member of an Indian Tribe as evidenced by a tribal enrollment identification card or Bureau of Indian Affairs (BIA) Certificate of Indian Blood (CIB). If the Contractor has reason to doubt that a person seeking employment preference is an Indian, the Contractor shall grant the preference but shall require the individual within thirty (30) days to provide evidence from the Tribe concerned that the person is a member of that Tribe.
2. "Indian Tribe" means an Indian Tribe, band, nation, or other organized group or community, including Alaska Native village or regional or village corporation as defined or established pursuant to the Alaska Native Claims Settlement Act (85 Stat. 668; 43 U.S.C. 1601) which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.
3. "Indian Organization" means the governing body of any Indian Tribe or entity established or recognized by such governing body in accordance with the Indian Financing Act of 1974 (88 Stat. 77; 25 U.S.C. 1451).
4. "Indian-owned Economic Enterprise" means any Indian-owned commercial, industrial, or business activity established or organized for the purpose of profit provided that such Indian ownership shall constitute not less than 51 percent of the enterprise.
5. "Members of the Community" enrolled members of the Gila River Indian Community as evidenced by an identification card or Bureau of Indian Affairs (BIA) Certificate of Indian Blood (CIB).
6. "Residing on the Gila River Indian Reservation" means the individual lives and has a mailing address on the Gila River Indian Reservation.
7. "Product of Indian Industry" means anything produced by Indians through physical labor or by intellectual effort involving the use and application of skills by them.

B. Policy

1. The Project is located on the Gila River Indian Reservation. The Contractor agrees to make a good faith effort to establish and conduct an Indian preference program

which will expand the opportunities for Gila River Indian Community (the "Community") members and other Indians for training and employment in connection with the work to be performed under this contract. Therefore, the contractor shall:

a) Implement a preference priority in hiring, as follows:

- (I) First preference shall be given to members of the Community;
- (ii) Second preference shall be given to spouses of Community members;
- (iii) Third preference shall be given to Indians from other Federally Recognized Indian Tribes residing on the Gila River Indian Reservation; and
- (iv) Final preference shall be given to all other Federally Recognized Indians.

b) Set as a hiring goal that 50 percent of its personnel performing work under this contract, excluding its key supervisory and core group, be Community members or other Indians.

b) Set as a training goal that 15 percent of its hires from the Community, excluding its key supervisory and core group, will be Community members or other Indians working in apprenticeship positions.

c) Include this provision, including all sub-paragraphs, in each subcontract awarded under this Agreement.

2. Notwithstanding anything to the contrary in this provision, the Contractor understands and agrees that all subcontracts with Contractors shall comply in all respects with all ordinances of the Gila River Indian Community and the Tribal Employment Rights Office (TERO), Joseph Manuel, Director, Ph: (520) 562-3364. Unless otherwise directed by the Community, if there should be any conflict between any ordinances, the ordinances that further promote Community employment, Gila River Indian Organizations and Gila River Indian-owned Economic Enterprises (to include subcontracts with Contractors) shall control.

3. To ensure compliance with these provisions, the Contractor and all subcontractors shall attend a pre-job meeting with the Community TERO prior to starting work. The Contractor will initiate the meeting and provide to the community a list of all subcontractors to be used on the project, including the contact person and telephone number for each firm.

4. The Community TERO will require the Contractor to submit a job request for all

hiring of positions on the project site. The Community TERO will have 48 hours to fill the requested positions. When the Community TERO has exhausted its register, the Contractor may use conventional sources of hiring on a request-by-request basis. A TERO/EEOC poster with the Community Seal will be provided to the Contractor to be posted in a conspicuous place.

5. In the event of noncompliance with this provision and its subparagraphs, the Contractor's right to proceed may be terminated in whole or in part by the Community and the Work completed in a manner determined by the Community to be in the best interest of the Community.

6. The Community TERO will conduct on-site inspections to ensure that employment practices are properly conducted. Non-compliance violations will be documented by the Community TERO and fines may be assessed by them directly to the Contractor of up to \$100 for any person found on site working who is not key supervisory, and who was not approved through the Community TERO. Racial harassment of any kind is cause for revocation of tribal business license and immediate removal from the Gila River Indian Reservation. The Contractor will not be entitled to any additional compensation due to costs of compliance for any delays associated with compliance to the Community laws, rules, regulations and directives, or the above hiring requirements.

7. The Contractor and all subcontractors are expected to make a good faith effort, so far as may be practicable, to purchase the products of Indian industry in open market or to purchase from Indian firms materials to be used in the Project.



GILA RIVER INDIAN COMMUNITY

SACATON, AZ. 85247

ADMINISTRATIVE OFFICES
P. O. Box 97
(602) 562-3311 or 963-4323

Company Name and Address

SUBJECT: TRIBAL EMPLOYMENT RIGHTS OFFICE employment referral, investigation of employment discrimination, and enforcement of Indian Preference.

Dear Contractor:

Please be advised that the Tribal Employment Rights Office will monitor and enforce Indian Preference in employment and contracting through Tribal Ordinance GR-02-08.

Preference priority observed in connection with hiring, promotion, training, subcontracting, and in all other aspects of employment will be:

1. First Preference shall be given to members of the Gila River Indian Community.
2. Second preference shall be given to spouses of members of the Gila River Indian Community.
3. Third preference shall be given to Native American Indians residing on the Gila River Indian Community.
4. Final preference shall be given to all other Native Americans Indians.

Where Preference Priority's set forth above are prohibited by federal law or regulation, the following Preference Priority shall apply:

1. First Preference shall be given to local Native Americans Indians living on the reservation.
2. Final Preference shall be given to all other Native American Indians.

The TERO will require you to fill out and complete the attached Compliance Plan before project start up. The TERO office will need you to forward, as soon as possible, the name of the foreman or project superintendent who will be on site and in charge of this particular project.

The TERO Office will require submittal of weekly reports (enclosed) and /or payroll reports to the office to ensure compliance with wages and pay as well as local Indian hiring.

The TERO Office will also requires you to submit a job request for all hiring of positions on the project site. TERO has 48 hours to fill positions requested.

Except for key supervisory and corecrew personnel TERO requires all skilled trade positions to be local Indian, and all semi- skilled positions to be local Indians.

If the Contractor hires any person on site, contractor must verify with the individual that he is a local Native American Indian. Two (2) common sources acceptable are 1) tribal enrollment Id card, and ,2) BIA Certificate of Indian Blood.

The contractor can use conventional sources of hiring when TERO has exhausted its register on a request by request basis.

TERO will conduct on-site inspections to insure that employment practices are properly executed.

TERO/EEOC poster with the tribal seal must be posted in a conspicuous place at the job site. such as on the job site board.

Union signatory contractors must have three (3) party TERO agreement signed by union local, contractor, and TERO.

Non Compliance Violations:

1. One (1) written warning will be issued and resolutions attempted within five (5) working days. Each violation will be treated separately.
2. Any violation occurring after the first written warning will result in a fine or other sanction against the violator at the discretion of the Tribal Employment Rights Officer /Director.
3. There will be a fine assessment of \$100.00 for any person found on site working who is not key supervisory, who was not cleared through the TERO.
4. Racial harassment of any kind is cause to revocation of tribal business license and immediate removal from the Reservation.

In my experience with construction projects the pertinent information that needs to be delegated to subordinates actually handling the project doesn't please see that it does.

I request your cooperation and comments. This office has worked successfully with other contractors and I feel that it will work with the same success as long as we realize synergy from all parties involved.

Should you have any questions, please contact me at (520) 562-3252 pr (520) 562-1607.

Sincerely,

Joseph Manuel, Officer/Director
Tribal Employment Rights Office

xc: Governor Mary V. Thomas
Lieutenant Governor Cecil F. Antone
File

GILA RIVER INDIAN COMMUNITY
INDIAN PREFERENCE
EMPLOYMENT AND TRAINING PLAN

DATE _____ PROJECT _____

SUBCONTRACTOR _____

ADDRESS _____

TELEPHONE/MOBILE/PAGER _____

EST. START DATE _____ EST. COMPLETION DATE _____

EMPLOYMENT OPPORTUNITIES TO BE MADE AVAILABLE IN IMPLEMENTING CONTRACT:

<u>DESCRIPTION</u>	<u>NUMBER OF POSITIONS</u>
*CORE CREW (identify below)	_____
SKILLED (journeymen, craftsmen)	_____
SEMI-SKILLED (laborers)	_____
TRAINEES (apprentices, training programs)	_____
OTHER (identify)	_____
TOTAL EMPLOYMENT OPPORTUNITIES	_____

NOTE: WITH THE EXCEPTION OF CORE CREW ALL EMPLOYMENT OPPORTUNITIES WILL BE FILLED BY NATIVE AMERICAN INDIANS IF THEY ARE QUALIFIED AND AVAILABLE.

CORE CREW IDENTIFICATION AND CLASSIFICATION:

<u>NAME</u>	<u>CLASSIFICATION & JOB TITLE</u>
_____	_____
_____	_____
_____	_____
_____	_____

CERTIFICATION

This is to certify that _____ will make every effort to comply with the above plan for employment & training Native Americans with regard to GRIC Ordinance GR-02-80 on Project _____. To further implement my goal of employing and training Native Americans, qualified Native Americans will represent atleast _____ % of my work force.

Dated this _____ day of _____ 1994

COMPANY OFFICIAL

TERO

GILA RIVER INDIAN COMMUNITY
EMPLOYMENT AND TRAINING DEPARTMENT
EMPLOYER REQUEST FORM

DATE _____

TAKEN BY _____

NAME, ADDRESS, INDIVIDUAL'S	POSITIONS OR NEEDS	QUALIFICATIONS	SALARY PER HOUR AND PAY SCHEDULE	TIME, DATE & LOCA TO REPORT

GILA RIVER SUBCONTRACTORS

ject:

Company:

DESCRIPTION OF WORK	SUBCONTRACTOR & ADDRESS	TELEPHONE	APPROXIMATE START DATE
EARTHWORK			
CONCRETE			
ROUGH CARPENTRY			
INSTALLATION			
ROOFING			
PLASTERS/MASONRY			
DRYWALL			
PAINTING			
PLUMBING			
AIR COND/HEATING			
ELECTRICAL			
SITE UTILITIES			
other			

Project: _____

Company: _____

EMPLOYEE LISTING

WEEK ENDING _____

EMPLOYEE NAME	TRADE	INDIAN	NON-INDIAN	LAY-OFF DATE
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				

LABOR AND EMPLOYMENT

TITLE 12

Chapter 1. TRIBAL EMPLOYMENT RIGHTS OFFICE.

12.101 TRIBAL EMPLOYMENT RIGHTS OFFICE

The Gila River Indian Community herein called "COMMUNITY" does hereby, establish the "COMMUNITY" Tribal Employment Rights Office, hereinafter called "OFFICE", as a separate office and function of the Community Office of Employment and Training. The Director shall have the authority to hire staff, expend funds appropriated by the Council, and to obtain and expend funding from Federal, State or other sources to carry out the purpose of the "OFFICE". The Office shall have the authority to issue rules, regulations, and guidelines, subject to the approval of the COMMUNITY Council by this Chapter. This OFFICE shall have the power to hold hearings, to subpoena witnesses and documents, to require employers to submit reports and to take such other actions as are necessary for the fair and vigorous implementation of this chapter.

12.102 INDIAN PREFERENCE

All Employers operating within the Exterior boundaries of the Gila River Indian Reservation, hereinafter called "RESERVATION", are hereby required to give preference to Indians in employment. Said employers shall comply with the rules, regulations, guidelines of the Community and the employment rights office that set out the specific obligations of the employer in regard to Indian preference.

12.103 UNIONS

Any covered employer who has a collective bargaining agreement with one or more unions shall obtain written agreements from said union(s) stating that the union shall comply with the Indian preference laws, rules, regulations, and guidelines of the Community. Such agreement shall be subject to approval of the Employment Rights Office. Such agreement does not constitute official tribal recognition or sanction of any union.

12.104 POWERS AND DUTIES

In implementing the requirements of this chapter, the Employment Rights Office is authorized to:

- A. Set hiring goals to be attained with reasonable expediency and specify the minimum number of Indians an employer should hire, by craft or skill level.
- B. Require covered employers to establish or participate in such training programs as the Office determines necessary in order to increase the pool of qualified Indians on the Reservation as quickly as possible.

- C. Establish in conjunction with the Tribal Office of Employment and Training Department, a tribal job bank and impose a requirement that no covered employer may hire a non-Indian until the Tribal Job Bank has certified that no qualified Indian is available to fill the vacancy.
- D. Prohibit any covered employer from using qualifications criteria, or other personnel requirements that serve as barriers to Indian employment unless the employer can demonstrate that such criteria or requirements are required by business necessity.
- E. To require employers to give preference in the award of contracts or sub-contracts to tribal and other Indian owned firms and entities.
- F. To establish programs, in conjunction with other Tribal, state and federal offices, to provide counseling to Indian workers to assist them in retaining employment. Employers shall be required to cooperate and support such counseling programs.
- G. Take such other actions as necessary to achieve the purposes and objectives of this chapter. However, the implementation of any activities or requirements that constitute a significant new component to this program, beyond those listed in subparagraph "A" through "D" shall be subject to the prior approval of the Council.

12.105

INTER-AGENCY COORDINATION

The Comprehensive Employment and Training Act program (CETA) and the Bureau of Indian Affairs Employment Assistance Program shall devote such amount of their resources as is necessary to preparing Indians for the job opportunities to be opened up by the employment rights program. Also, the Tribal Office of Employment and Training is hereby mandated to establish a Construction Worker Trainee Program and to obtain certification for that program from the Department of Labor. The Directors of the Tribal Employment and Training Programs, the Bureau of Indian Affairs (BIA) Employment Assistance Program, and the Tribal Education Department shall coordinate with the Director of the Employment Rights Office in the development of the training plans.

12.106

FUNDING

The Tribal CETA Program shall make available to the office up to five public Employment slots to pay the salaries of Office employees. Within six months after the appointment of the Office Director, he or she shall present to the Tribal Council a plan for the financing of the Office out of monies other than from the Tribal Treasury. The plan shall indicate the expected amount to revenue from the Employment Rights Fees and other potential sources of funding for the Office including but not limited to new funds or reallocations of existing funds from sources as CETA, ONAP, EEOC, BIA Employment Assistance, HUD and EDA.

The Tribal Employment Rights Office is authorized to impose sanction's or penalties on any employer only as last resort. The Director of TERO prior to imposition of sanction or penalties shall first attempt to resolve any alleged failure of compliance with this chapter by informal means.

- A. Any employer who fails to comply with the laws, rules, regulations, or guidelines on employment rights of the Community shall be subject to civil sanctions. The Director, in his discretion, may impose or recommend imposition of any single sanction or combination of the listed civil sanctions in this Section for failure of any employer to comply with the requirements of the Chapter.
- B. The Director shall have the authority to impose the following sanctions without approval of the Community Council:
1. Require the employer to make such changes in its procedures or policies as are necessary in order to comply with these requirements.
 2. Provide back pay and/or re-employment, promotion, training and/or other relief to Indians who were or are being harmed by the employer's non-compliance.
 3. Impose monetary fines not to exceed one thousand dollars (\$1,000) per day of non-compliance for any single violation or failure to comply with any requirements imposed by this Chapter on any employer.
 4. Suspend the employer's operation until corrective action is taken or a plan of corrective action is developed.
- C. The Director shall have the authority to impose the following sanctions subject to approval of the Community Council.
1. Terminate the employer's operation on the Reservation.
 2. Prohibit the employer from engaging in future operations on the Reservation.
- D. Any sanction or sanctions shall not be imposed on any employer until the affected employer has been first provided an opportunity to present evidence to the Director showing any sanction or sanctions should not be imposed. An employer shall be provided at least five (5) days notice of any sanction or sanctions which is to be imposed by the Director or the Community Council.

TITLE 13

BUSINESS LICENSES AND TAXATION

CHAPTER 1. ADMINISTRATION.

13.101 ADMINISTRATION AND ENFORCEMENT

The administration of this title is vested in and shall be exercised by the Treasurer. All payments shall be made to the Treasurer. If payment is made in any other form than the money which is legal tender of the United States of America, the tax obligation shall not be ended until the check, bank draft or money order has been honored by the person on whom drawn.

13.102 EXAMINATION OF BOOKS AND RECORDS

The Treasurer or his authorized agents may examine any books, papers, records or other data bearing upon the correctness of any return, or for the purpose of making a return where none has been made, as required by this title.

13.103 PRESUMPTION THAT ALL GROSS RECEIPTS ARE TAXABLE

- A. For the purpose of the proper administration of this title and to prevent evasion of the tax, it shall be presumed that all gross receipts are subject to the tax until the contrary is established by the person seeking the exemption from taxation.
- B. The burden of proving that a sale of tangible personal property was not a sale at retail shall be upon the person who made it, unless such person shall have taken from the purchaser a certificate to the effect that the property was purchased for resale.

13.104 RECORDS OF THE TAXPAYER

It is the duty of every person engaging or continuing in business activities within the Reservation for which a tax is imposed by this title to keep and preserve for a minimum of three years, suitable records of the gross income, gross receipts of sales, invoices for merchandise purchased and sold, resale certificates, job labor records and all other such books of accounts of tax for which such person is liable under the provisions of this title. Collection of back taxes by the community shall be limited to a period of three years prior to the date when the Treasurer began an audit of the taxpayer's books, notified the person by ordinary mail concerning an apparent violation of this title or took some other recorded action to require compliance with the title.

13.105

INADEQUATE RECORDS

In the event the records of the gross income, value of gross receipts of sales of the business, kept by the taxpayer, are deemed by the Treasurer to be unsuitable, or the taxpayer does not keep such other books or records as may be necessary to determine the amount of the tax for which he is liable under the provisions of this title, the Treasurer may prescribe the form and manner of keeping such books and records.

13.106

MONTHLY PAYMENT AND RETURNS

The taxes provided for in this title shall be paid monthly unless otherwise expressly provided, or the taxpayer elects to pay them more frequently. The taxpayer shall, on or before the thirtieth day following the end of each calendar month, make out a return showing the gross amount, any authorized deductions, taxable amount and amount of the tax due for the preceeding month. The taxpayer shall be required to use a report form authorized by the Treasurer and shall mail or deliver the same, together with remittance for the amount of tax due, payable to the "Gila River Indian Community," to the Treasurer or any Community employee by the taxpayer or his authorized agent, and such signature shall be evidence that the person signing the return verifies the accuracy of the information supplied in the return.

13.107

CASH RECEIPTS OR ACCRUAL BASIS

The taxpayer may elect to file returns and pay his tax either on a cash receipts or accrual basis, but the taxpayer shall not change from one basis to the other without the prior written approval of the Treasurer. As a condition of granting such approval, the Treasurer may require an audit of the taxpayer's record.

13.108

CONSOLIDATED RETURNS

Any person engaging in two or more forms of business of like classification taxable under this title may file a consolidated return covering all business activities of like classification engaged in within the Reservation.

13.109

EXTENSION OF TIME FOR MAKING RETURNS

The Treasurer may for good cause extend the date of making any return required by this title, but the date for filing such return shall not extend more than thirty days beyond the regular due date.

13.110

PENALTY FOR DELINQUENCY

Any taxpayer who shall have failed to pay such tax within five days from the date upon which such payment shall have become due shall be subject to and shall pay a penalty of ten percent of the amount of such tax, together with interest at the rate of one and one-half percent per month or fraction thereof until paid.

If the taxpayer makes an error in computing the tax accessible against him, the Treasurer shall correct the error and notify the taxpayer promptly by ordinary mail that the correction has been made. Any additional tax for which the taxpayer becomes liable shall be payable within ten days after the letter or form showing the correction is mailed to the taxpayer. If the taxpayer makes an error which results in overpayment of tax, the Treasurer shall allow credit against tax due on future returns, or shall authorize a refund to the taxpayer.

- A. The taxes imposed by this title, if not reported and paid by the due date specified by this chapter, shall constitute a lien on the property of any person liable for the tax.
- B. The Treasurer shall give written notice to the taxpayer at his last known mailing address by certified or registered mail or such notice may be sent to the address at which the business is conducted. The written notice shall indicate that the Community will enforce a lien on the subject property unless the taxpayer reports and pays all the tax past due including any penalties and interest due under this chapter, or provides satisfactory evidence to the Treasurer that no taxes are due, within a period of thirty days from service or receipt of said written notice.
- C. If the taxpayer does not pay taxes due or provide evidence that no taxes are due within thirty days after service or receipt of said written notice, or if the Treasurer considers it necessary to take immediate action in order to protect the value of the lien, the Treasurer shall file such "Notice and Claim of Lien" as is necessary to perfect a lien. The Treasurer shall promptly send by certified or registered mail a copy to the taxpayer at his last known mailing address at which the business is conducted. The "Notice of Claim of Lien" shall contain the following:
1. A description of the property sufficient for identification.
 2. The name of the taxpayer as owner or reputed owner of the property.
 3. The amount of the delinquent tax, including penalties and interest or, if this amount cannot be determined precisely because suitable records and books were not made available by the taxpayer, the amount assessed, including penalties and interest, by the Treasurer as authorized by this title when such books and records are not available or are unsuitable.

- D. The Community shall have the right to bring an action to enforce the lien in the Gila River Indian Community Court or in any other court having jurisdiction over the property, but failure to enforce the lien by such action shall not affect its validity.

13.113 TAXPAYER'S LIABILITY

- A. For purposes of this title the total amount of gross income, gross receipts or gross proceeds of sales shall be deemed to be the amount received, exclusive of the taxes imposed by Chapter 3 of this title, if the person upon whom the tax is imposed establishes to the satisfaction of the department that the tax has been added to the sale price and not absorbed by him, but in no event shall the person upon whom the tax is imposed; when an added charge is made to cover the taxes levied by this ordinance, remit less than the amount so collected to the Treasurer.
- B. Where the taxpayer fails to show "tax collected," deductible "repair labor" and other deductible service on invoices to customers, sales slips or cash register slips, on all applicable books and records, he shall be liable for taxation on his full gross receipts without allowance for such items.
- C. The burden of proof for all deductions by any taxpayer shall be on the taxpayer, who must prove to the satisfaction of the Treasurer that such deductions shall have been legal and proper under this title. A person taking deductions for "resale" or for "payments to subcontractors" shall not take such deductions unless the persons for whom deductions are taken have obtained any required business permits.

13.114 TAX LIABILITY OF PARTNERS

All taxes assessed upon the business activities or property of a partnership shall be a liability and charges against each and all of the individual partners.

13.115 ASSESSMENT PROCEDURE

If any person who is required to file a return under the provisions of this title fails or refuses to make a return, or fails to pay the full amount of tax due, the Treasurer shall proceed, in such manner as he may deem best, to obtain facts and information on which to make the assessment of the tax herein prescribed, and to this end the Treasurer may make examination of the books, records and papers of any person whom he may believe to be in possession of facts or information pertinent to the subject of inquiry, which oath the Treasurer may administer. If no other information is readily available, the Treasurer may make a reasonable judgment on the basis of past reports by the taxpayer or by any predecessor. In making the assessment the Treasurer may meet with the taxpayer concerning the assessment. When the Treasurer has reached a decision as to the assessment he shall notify the taxpayer, in writing, of such assessment, which shall become final within thirty days after such notice has been mailed or served.

- A. If any person feels aggrieved by a tax assessment or believes that any or all of his activities are not subject to a tax imposed by this title, he shall pay the amount of such assessment or tax claimed due before the delinquent date and shall at that time give notice, in writing, to the Treasurer that all or part of such payment is made under protest, and shall in the notice give the grounds and reasons for such protest and that a certain part thereof, or that the total sum, is protested. Within ten days of filing the protest notice the taxpayer may request a tax hearing before the Treasurer pursuant to Section 13.117.
- B. If following a hearing before the Treasurer the taxpayer is then dissatisfied, he may take appropriate action in the Gila River Indian Community Court to recover payments made under protest. Court action shall be taken within sixty days after the Treasurer has mailed his reply as required by Section 13.117. Failure to take court action within the required sixty day period shall make the protest null and void.
- C. If action has been taken by the taxpayer under protest all subsequent payments due shall be paid on or before the due date. However, if each tax form is plainly marked "Paid Under Protest," such subsequent payments shall be treated as part of the original protest until such time as remedies have been exhausted or the action withdrawn by the taxpayer.

When a taxpayer requests a hearing as indicated in Section 13.116, such hearing shall normally be held in some suitable room in the principal office of the Gila River Indian Community. However, the Treasurer may choose another suitable place within the Reservation, or by mutual agreement with the taxpayer, he may hold the hearing in such other place as may prove desirable. The hearing shall be conducted by the Treasurer, and it shall be closed to all except the Treasurer and his authorized representatives and the taxpayer and his authorized representatives, unless the taxpayer agrees, in writing, to waive restrictions or release of confidential information. The Treasurer shall provide the taxpayer with not less than ten days notice of the date, time and place of the hearing. During the hearing the taxpayer or his authorized representative may present any evidence he deems appropriate to the issues or questions under consideration. Within fifteen days after the conclusion of the hearing, the Treasurer shall affirm, modify or vacate any decision made with respect to the issues or questions discussed in the course of the hearing. Notice of said decision shall be provided to the taxpayer by the Treasurer, and said decision shall be effective ten days after service of notice.

INJUNCTIONS

No injunction shall be awarded by any court or judge to restrain the collection of the taxes imposed by this title or to restrain the enforcement of this title.

COLLECTION OF DELINQUENT TAXES

- A. If any tax imposed by this title, or any portion thereof, is not paid within thirty days after the same becomes delinquent, the Treasurer shall be empowered to commence action in the Gila River Indian Community Court or any other court of competent jurisdiction to collect tax, penalties and interest due, and to utilize any and all appropriate remedies.
- B. Every tax imposed by this title, and all increases, interest and penalties thereon, shall become, from the time the same is due and payable, a personal debt from the person liable to the Community and it shall be payable to and recoverable by the Treasurer.
- C. If a person liable to pay any tax neglects or refuses to pay the tax, the Treasurer may collect such tax, and such other sums as are sufficient to cover the expenses of the levy, by levy upon all property and rights to property belonging to the person, or on which there is a lien as provided in this title, for the payment of the tax.

UNLAWFUL ACTS

- A. It is unlawful for any person or for any officer or agent of any company or corporation to fail or refuse to make the returns and to pay the tax provided to be made by the provisions of this title, or to make or permit to be made any false or fraudulent return or false statement in any return required by this title or for any reason to aid or abet another in any attempt to evade the payment of the tax, or any part thereof, imposed by this title or for any person or officer or agent of a company to fail or refuse to permit the examination of any book, paper, account, record, or other data by the Treasurer as required by this title or to violate any of the other provisions of this title and any such person, officer or agent of a company, corporation or association is guilty of an offense and shall be fined in an amount not to exceed five hundred dollars or be imprisoned for a period not exceeding ninety days, or both, for each offense; and the Community may institute such civil action as is necessary to enforce the provisions of this title.
- B. In addition to the foregoing penalties, any violation of this title shall be grounds for the revocation or cancellation of any business license, permit, lease or contract issued to the violator by the Community; and shall also be grounds for excluding the person, company or corporation from the Reservation.

The Treasurer is authorized to formulate rules and regulations and prescribe forms and precedures necessary to the efficient enforcement of this title, and when approved by the Gila River Indian Community Council such rules, regulations, forms and procedures shall be binding upon and obeyed by all persons subject to this title. A copy of all rules and regulations shall be furnished to any person subject to this title upon request.

SEVERANCE CLAUSE

The provisions of this title are declared to be severable and if any Section, sentence, clause or phrase of this title shall for any reason be held to be invalid or unlawful, such decision shall not effect the validity of the remaining sections, sentences, clauses and phrases of this title, but they shall remain in effect, it being the legislative intent that this title shall stand notwithstanding the invalidity of any part.

DEFINITIONS

1. "Business" includes all activities or acts, personal or corporate, engaged in or caused to be engaged in with the object of gain, benefit or advantage, either direct or indirect, but not casual activities or sales. An occasional or a casual activity occurs when a person engages in an isolated transaction that is not conducted with such frequency or is not one of a series of activities as to be sufficient to consider the person as regularly conducting the activity. "Business" shall include, but not be limited to:

- a. A manufacturing or industrial concern.
- b. Wholesale merchants.
- c. Retail merchants.
- d. Automobile service stations or garages.
- e. A cotton gin or dairy enterprise.
- f. A farming or agricultural operation making use of more than two hundred acres of land within the Gila River Indian Community, but shall not include such an operation owned and operated by an individual member of the Gila River Indian Community.
- g. A concern providing crop dusting, harvesting, planting or similar services to farming or agricultural operations.
- h. Retailers, wholesalers, manufacturers or any other business not located or having a place of business on the Gila River Indian Reservation, but making sales and deliveries on the Reservation.

- i. Any enterprise or amusement park, sports arena or center which is open to the public.
 - j. A motel, hotel, rooming house, trailer court or park, or a mobile home park.
 - k. A restaurant, lunch counter or snack bar.
 - l. Traveling merchants, food sellers, peddlers, itinerant vendors or any retail business not having an established place of business.
 - m. Construction companies, contractors, repair services, or installation services.
 - n. Livestock operations, but shall not include livestock operations owned and operated by members of the Gila River Indian Community.
2. "Community" means the Gila River Indian Community.
 3. "Contracting" means engaging in business as a contractor.
 4. "Contractor" means a person, firm, partnership, corporation or any of them, who undertakes to, or does himself or by or through others, construct, alter, repair, add to, subtract from, improve, move, wreck or demolish any building, highway, road, railroad, irrigation system, excavation or other structure, project, development or improvement, or to do any part thereof, including the erection of scaffolding or other structure or works in connection therewith, and includes subcontractors, specialty contractors and developers. For all purposes of taxation or deductions, this definition shall govern without regard to whether or not the contractor is acting in fulfillment of a contract.
 5. "Council" means the Gila River Indian Community Council.
 6. "Engaging" when used with reference to engaging or continuing in business, includes the exercise of corporate or franchise powers.
 7. "Gross Income" means the gross receipts of a taxpayer derived from trade, business, commerce or sales and the value proceeding or accruing from the sale of tangible personal property, or service, or both, and without any deduction on account of losses.
 8. "Gross Proceeds of Sale" means the value proceeding or accruing from the sale of tangible personal property without any deduction on account of the cost of property sold, expense of any kind, or losses, but cash discounts allowed and taken on sale shall not be included as gross income.
 9. "Gross Income" or "Gross Proceeds of Sale" shall not be construed to include goods, wares or merchandise, or value thereof, returned by customers when the sale price is refunded either in cash or by credit, nor the sale of any article

accepted as part payment on any new article sold, if and when the full sale price of the new article is included in "gross income" or the "gross proceeds of sale."

10. "Member of the Gila River Indian Community" means an enrolled member of the Gila River Indian Community; a federally recognized Indian tribe organized under the Indian Reorganization Act, 48 Stat. 984, 25 U.S.C. 461 et. seq.
11. "Owner-builder" means a person who acts as a contractor in constructing any improvement upon real property, such property being held by such person for his own use or for rental purposes.
12. "Person" or "Company" includes an individual, officer, agent, firm, partnership, joint venture, association, corporation, estate, trust or any other group or combination acting as a unit, and the plural as well as the singular number.
13. "Prime Contractor" is a contractor which the owner or lessee of the property being improved treats as being responsible for administration, construction and completion of the improvement. For purposes of this definition, a person who, for either a fixed sum, price, fee, percentage bonus or other compensation other than actual wages, undertakes to or offers to undertake to, or purports to have the capacity to undertake to, or submits a bid to, or does himself or by or through others, supervise the construction of the improvement, or coordinate the construction of the improvement, or both, is a "prime contractor," unless such supervisor or coordinator demonstrates, to the Community's satisfaction, that another contractor is, in fact, the "prime contractor" for the improvement.
14. "Sale" means any transfer of title or possession, or both, exchange, barter, lease or rental, conditional or otherwise, in any manner or by any means whatever, of tangible personal property, for consideration, and includes:
 - a. Any transaction whereby the possession of property is transferred but the seller retains the title as security for the payment of the price.
 - b. The fabrication of tangible personal property for consumers who furnish either directly or indirectly the materials used in the fabrication work, and the furnishing, preparing or preserving for a consideration of any tangible personal property consumed on the premises of the person furnishing, preparing or serving such tangible personal property.
15. "Sale at Retail" or "Retail Sale" means a sale for any purpose other than resale in the form of tangible personal property.
16. "Tangible personal property" means personal property which may be seen, weighed, measured, felt, touched or is in any other manner perceptible to the senses.

17. "Taxpayer" means any person liable for any tax imposed by this title.
18. "Treasurer" means the Treasurer of the Gila River Indian Community or such person as the Council designates to carry out the duties of the Treasurer, and may include such subordinate official as the Treasurer designates to carry out the provisions of this title.

Chapter 2 Business Licenses.

13.201 Business Licenses

All persons, associations, companies, firms or corporations conducting or engaged in any business or trade within the Gila River Indian Reservation must obtain a license from the Gila River Indian Community and pay the license fee provided in Section 13.207. The license shall authorize the licensee to transact the business or trade described in the license in the town, village or particular locality designated by the applicant for the license. Separate licenses shall be obtained for each branch establishment or separate business house.

13.202 APPLICATION AND ISSUANCE

- A. An application for a business license shall be submitted in writing to the Treasurer of the Community on a form approved by the Council. The application shall include:
1. A description of the business or trade.
 2. The name and address of the owner or owners of the business or trade.
 3. The trade name if any to be used by the business or trade.
 4. The location at which the business or trade will be located.
- B. A check, money order or cash, payable to the Gila River Indian Community, shall accompany each application in full payment of the business license fee provided for under Section 207 of this ordinance.
- C. Upon approval of the application by the Treasurer and payment of the fee, a business license shall be issued to the applicant on a form approved by the Council. The business license shall be signed by the Treasurer of the Community or his authorized representative, and the Governor, or his authorized representative. The license shall specifically describe the business or trade to be conducted, the name of the owner or owners of the business or trade, and the location at which the business or trade will be conducted.

- D. Upon receipt of each application the Treasurer shall conduct such investigation of the applicant's business and moral character as he deems necessary for the protection of the public good. If as a result of such investigation, the applicant's character or business responsibility is found to be unsatisfactory, the Treasurer shall notify the applicant that his application is disapproved and that no license will be issued. If the character and business responsibility of the applicant are found to be satisfactory, the Treasurer shall endorse and deliver to the applicant his license.

13.203 ESTIMATE OF BUSINESS RECEIPTS AS BASIS FOR TAX

All applicants for a business license or renewal of a business license shall submit an estimate of the probable amount of taxable business which he or the person whom he represents will transact during each of the next succeeding three months, and during the term of the license. The statement shall be based on the amount of business transacted by such person in the preceding months, if any.

13.204 TERM OF LICENSE

- A. Annual Business License: An annual business license or renewal thereof shall be issued for a period of one year, or less, beginning October 1 or the date of approval, whichever is later, and continuing until midnight of the last day of the next September.
- B. Short Term Business License. A short term business license shall be issued for a period of less than three months, such period to be specifically set forth on the license.
- C. Permanent Business Licenses. Businesses within the confines of an industrial park, non-profit charitable, religious or educational organizations, or businesses chartered by the Gila River Indian Community, and such other business as specifically authorized by the Council, may be issued permanent business licenses.

13.205 TRANSACTING BUSINESS WITHOUT LICENSE

- A. A person, association, company, firm or corporation conducting or engaging in any business within the Gila River Indian Reservation without a valid business license shall be notified of their liability for the business license fee and all applicable taxes and shall be sent a notice of assessment for the amount due. The notice shall inform the party that no further business may be conducted on the Gila River Indian Reservation unless the party obtains a business license.
- B. If a party continues to conduct or engage in a business or trade without a business license, the Community may institute an action in the Gila River Indian Community court to enjoin the activity until a business license is obtained. The court may

also take such other action as is necessary to enforce the provisions of this chapter, including imposing a penalty equal to the business license fee due. Community law enforcement officials shall enforce the orders of the court.

13.206 COMPLYING WITH LAWS AND REGULATIONS

Any person or business operating within the boundaries of the Gila River Indian Reservation shall comply with all laws and regulations of the Gila River Indian Community.

13.207 LICENSE FEES

- A. Except as provided in Subsection B every person or business issued or reissued a business license shall pay a license fee as follows:
1. Annual Business License \$100.00 annually;
 2. Short term Business License . . . \$25.00 to \$100.00; as prorated by the Treasurer.
 3. Permanent Business License. . . \$100.00 at the time of initial issuance.
- B. The business license fee for members of the Gila River Indian Community and for businesses owned and operated by members of the Gila River Indian Community shall be \$5.00.

13.208 TRADER'S LICENSE REQUIRED

No business license shall be issued to any person or business who is required by law to obtain a federal traders license from the Bureau of Indian Affairs unless a valid federal traders license has been issued.

13.209 REGULATORY LICENSE

If any other ordinance or law of the Gila River Indian Community requires a business licensed under this chapter to obtain a license or permit for regulatory purposes, no license under this chapter shall be issued until the business has obtained the required license or permit.

13.210 REVOCAION OF LICENSE

- A. Licenses issued under the provisions of this chapter may be revoked by the Treasurer after twenty-four hours notice and hearing, for any of the following causes:
1. Fraud, misrepresentation or incorrect statement contained in the application for license.
 2. Fraud, misrepresentation or incorrect statement made in the course of carrying on his business.

3. Any violation of this ordinance or any other law or ordinance of the Gila River Indian Community.
 4. Conviction of any crime.
 5. Conducting business in an unlawful manner or in such a manner as to constitute a breach of the peace or to constitute a menace to the health, safety or general welfare of the public.
- B. Notice of the hearing for revocation of a license shall be given by the Treasurer in writing, setting forth specifically the grounds of complaint and the time and place of hearing. Such Notice shall be mailed to the licensee at his last known address at least forty-eight hours prior to the date set for hearing, or shall be delivered by a police officer in the same manner as a summons at least forty-eight hours prior to the date set for hearing.

Chapter 3. LEVY OF TAXES.

13.301 TANGIBLE PERSONAL PROPERTY

There is levied and there shall be collected a privilege tax upon every Indian Reservation tangible personal property at an amount equal to four percent of the gross proceeds of sale or gross income of the business. a privilege tax upon every Gila River Indian Reservation tangible personal property being levied

SEE ORDINANCE GR-06-94 ATTACHED

13.302 ALCOHOL AND TOBACCO

In addition to the tax levied by Section 13.301 there is levied and there shall be collected a privilege tax upon every person engaging in the sale of tobacco products at retail, such tax being levied at an amount equal to two percent of the gross proceeds of sale or gross income of the business from such sales. an amount equal to two percent of the gross proceeds of sale or gross income of the business from such sales.

SEE ORDINANCE GR-08-96 ATTACHED

13.303 MINING, SERVICES, CONTRACTING

There is levied and there shall be collected a privilege tax measured by the amount or volume of business or commerce transacted by persons on account of their activities within the Gila River Indian Reservation, and to be measured by the gross proceeds of sales or gross income of persons, whether derived from within the Reservation or from without, and all of said gross proceeds of sale or gross income shall be used to measure the tax in accordance with the following schedule:

- A. At an amount equal to one and one-half percent of the gross proceeds of sale or gross income from the business upon every person engaging or continuing within the Reservation in the following business:

1. Mining, quarrying, smelting or producing for sale, profit or commercial use, any oil, natural gas, limestone, sand, gravel, copper, gold, silver or other mineral product, compound or combination of mineral products, or felling, producing or preparing wood timber or any product of the forest for sale, profit or commercial use.
2. Transmitting local or long distance messages or conversations by telephone or radio from one point within the Reservation to any other point within the Reservation or the State of Arizona, including gross income derived from tolls, subscriptions, services and lease of equipment.
3. Job printing, engraving, embossing and copying, advertising by billboards, direct mail, radio or by any means calculated to appeal to prospective purchasers.
4. Operating or conducting theaters, movies, operas, shows of any type or nature, exhibitions, concerts, carnivals, circuses, horsestables, amusement parks, menageries, gold courses, golf driving ranges, fairs, races, contests, games, billard and pool parlors and bowling alleys, public dances, dance halls, boxing matches, and any business charging admission fees for exhibition amusement or instruction, other than projects of bona fide religious or educational institutions conducted for religious or educational purposes.
5. Leasing or renting for a consideration the use or occupancy of real property, including any improvements, rights or interests in such property, except that this subsection shall not apply to the Gila River Indian Community, or any cooperation or entity of which it is the owner, either in whole or in part.

B. 1. An amount equal to two percent of the gross proceeds of sale or gross income from the business upon every person engaging or continuing within the Reservation in the business of ~~land~~ **SEE ORDINANCE GR-03-89 ATTACHED** ~~land~~ cost of land and an amount equal to ~~thirty-five percent~~ **thirty-five percent** of gross proceeds of sale or gross income remaining after deduction of the original cost of such land shall not be subject to such tax.

2. The thirty-five percent standard exemption provided above is in lieu of all exemptions for costs and expenses of direct, indirect and shop labor employed in construction, improvements, repairs or demolition as well as payments to subcontractors for such work.
3. The tax levied in this subsection shall be effective on and after the effective date of this section, and shall apply only to contracts entered into after that date. In the absence of evidence to the contrary, as judged by the

Treasurer, it shall be presumed that every contract under which construction is begun after the effective date of this section shall have been entered into after that date.

4. Every person engaging in a contracting activity, shall be considered to be a prime contractor for tax purposes, unless it is demonstrated to the reasonable satisfaction of the Treasurer that such person is not a prime contractor.
5. Owner-builders shall not be liable for the tax imposed by this subsection with respect to improvements constructed by them for their own use, or for rental purposes, and they shall be considered as retail purchasers of materials purchased and incorporated into such improvements.
6. Every person subject to the tax imposed in this subsection shall be allowed as a deduction from gross income or gross proceeds of sales the amount of transaction privilege tax collected, provided that amount is separately stated in the accounts, books and records of the person taxed and in a written statement given to the purchaser.

13.304 BASIS FOR TAXATION UNDER CERTAIN CONDITIONS

- A. In determining value as applied to sales from one person to another person, or other circumstances where the relation between the buyer and seller is such that the gross proceeds from the sale are not indicative of the true value of the subject matter of the sale, the Treasurer shall determine the value upon which the tax shall be based, corresponding as nearly as possible to the gross proceeds from the sale of similar products of like quality or character by others where no common interest exists between the buyer and seller, but otherwise under similar circumstances and conditions.
- B. For the purpose of computing the taxes imposed by this chapter "conditional or time sales," shall be treated as credit sales and the tax shall be based only upon the amounts received under such security agreement, but if the seller transfers his interest in such agreement to a third person, he shall pay an amount based upon the full sale price of the commodity, unless a record is kept of payments thereafter made on the contract in such a manner that the Treasurer may at all times ascertain from the records of the seller the amount paid thereon by the purchaser. If at any time, the Treasurer cannot so ascertain the amount paid thereon, the tax shall be computed to include any amounts not shown to be paid by the records of the seller to the satisfaction of the Treasurer.

13.305 RETAIL SALES ACTIVITIES EXEMPTED

The following retail sales activities are exempted from taxation under Section 301:

- A. Sales of tangible personal property to a person holding a valid business license for engaging in or continuing in the business of contracting when the property so sold is incorporated or fabricated by the contractor into any structure, project, development or improvement in fulfillment of a contract therefore taxable under Section 13.303 B..
- B. Sales of tangible personal property made directly to the United States Government, its departments or agencies.
- C. Sales of tangible personal property by persons engaging in or continuing in the business of processing, manufacturing, fabricating, modifying, assembling, or repairing, when such sales are made for resale and not at retail or not to an ultimate consumer.
- D. Sales of tangible personal property to manufacturers, modifiers or assemblers where such property directly enters into and becomes an ingredient or component part of any manufactured, fabricated or processed article, substance or commodity for sale in the regular course of business.
- E. Services provided in connection with retail sales, if invoices to the customer, sales tickets, cash register tapes, and all other business records show separate charges for such services, but this exemption shall apply only where such service is not customarily included in the retail sale itself and where such service is not an essential element in the retail sale itself, and no deduction shall be allowed for fabrication labor of retail items sold.
- F. Sales of tangible personal property made directly to the Gila River Indian Community, its departments, agencies or enterprises.
- G. Sales of articles used by human beings for food, drink or condiment, or articles of jewelry, craftwork or art, where such articles are sold by persons acting as traveling merchants, food sellers, peddlars or otherwise without an established place of business.
- H. Sales of electricity and water.
- I. Sales to non-residents of the Reservation for use outside the Reservation when the vendor ships or delivers the tangible personal property out of the Reservation. For the purpose of this exemption, any person engaging or continuing in the business to which this exemption is applicable, shall maintain and keep accounting records or books indicating separately the gross proceeds of sale of tangible personal property or the gross income from sales of tangible personal property which occur outside the Reservation, and if not so maintained the tax to be imposed will be upon the total of such person's gross proceeds of sale or gross income.

- J. The sale of drugs on the prescription of a member of the medical, dental or veterinary profession who is licensed by law to administer such drugs.
- K. The sale of stocks and bonds.
- L. Sales of motor fuel or use fuel upon which a tax is paid to the State of Arizona under the provisions of A.R.S. 28-1501 et. seq. or A.R.S. 28-1551 et. seq.
- M. Sales of machinery or equipment used directly in manufacturing, processing fabricating, job printing, refining or metallurgical operations.
- N. Sales of machinery or equipment used directly in the process of extracting ores or minerals from the earth for commercial purposes, including equipment required to prepare the materials for extraction and the handling, loading or transportation of such extracted materials to the surface. "Mining" includes underground, surface and open-pit operations for the extraction of ores and minerals.
- Q. Sales of tangible personal property consisting of machinery, equipment or transmission lines used directly in the production or transmission of electrical power, but not including distribution and, in addition, transformers and control equipment used at transmission substation sites.
- P. Sales of tangible personal property by a person without a retail outlet or place of business on the Gila River Indian Reservation when such property is delivered directly from the location outside the Reservation to the purchaser at a location within the Reservation.
- Q. Sales of tangible personal property by a church or charitable organization.

13.306

GENERAL EXEMPTIONS

The following shall not be subject to taxation under this chapter.:

- A. Any business, calling, profession or occupation where the general law of the United States precludes the levying of such a tax.
- B. Sales in interstate or foreign commerce when prohibited from being so taxed by the Constitution or general laws of the United States.
- C. Professional services, instruction and other services not connected with the making of retail sales.

- D. The purchase of contracting or services by the Gila River Indian Community. This exemption shall not apply to any entity, corporation or enterprise of the Community which has its own governing body or board, or is otherwise administered apart from the Tribal Administration, except the seven Districts of the Community.

13.307 DEDUCTION

In any case where sales activities taxable under section 13.301 or 13.302 are also taxed under the provisions of Arizona Revised Statutes, Title 42, Chapter 8 or any other transaction privilege tax imposed by the State of Arizona, a deduction equal to fifty percent of such sales may be taken when computing the tax liability under Section 13.301 and Section 13.302 of this title.

Chapter 4. REAL ESTATE TRANSFER TAX.

13.401 REAL ESTATE TRANSFER TAX

- A. There is levied and there shall be collected a real estate transfer tax to be equal to thirty percent of the value of any real property located within the Gila River Indian Reservation sold or transferred for consideration in any way. This tax shall be paid and shall be the legal responsibility of the buyer, except that the proceeds paid to the seller may be acted upon as security for the buyer's payment of the tax.
- B. The tax levied by this section shall not apply to:
1. Leases for easements of real property, regardless of the length of term.
 2. A deed, patent or contract for sale or transfer of real property in which the Gila River Indian Community is named grantor or grantee.
 3. Land exchanges when all land involved is located within the Gila River Indian Reservation and owned by the Gila River Indian Community or held in trust by the United States.
 4. A deed, patent or contract for sale or transfer of real property when the grantor and grantee are both members of the Gila River Indian Community.
- C. For purposes of this chapter real estate or real property shall not include leasehold interests in or improvements located on land owned in trust by the United States for the benefit of individuals or the Gila River Indian Community.
- D. Placing an encumbrance on real property, either by mortgage or otherwise, shall be considered a contract of sale, and the foreclosure or sale on the mortgage or encumbrance shall be considered a sale or transfer taxable under this chapter. The tax shall be in addition to any money already paid under the

encumbrance, and shall be the legal responsibility of the mortgagee, buyer or foreclosure to the same degree that the tax is the legal responsibility of the buyer under subsection A of this section.

13.402

RECORDS

It is the duty of every person engaging in a sale or purchase of land within the Reservation to keep and preserve for a minimum of three years, suitable records of the purchase price, value and appraisal concerning the property. Such records shall be made available to the Treasurer upon request.

13.403

PAYMENT OF TAX

- A. The tax imposed by this chapter shall be payable to the Gila River Indian Community, and shall be due on the day title and/or possession of the property is transferred to the buyer.
- B. All persons selling or buying property within the Gila River Indian Reservation shall report the same or purchase to the Treasurer. The report shall be in writing and shall include copies of all bills of sale, deed, contracts or other documents concerning the transaction. Such reports shall be due on the day the title and/or possession of the property is transferred to the buyer.
- C. If the buyer of the property does not pay the tax provided for in this chapter within five days of the purchase date, the seller shall be considered responsible for the payment of the tax shall not be affected by the seller's being jointly responsible, or by the sellers partial payment of the tax.

GILA RIVER INDIAN COMMUNITY
ORDINANCE GR-06-94

AN AMENDMENT TO TITLE 13, CHAPTER 3, SECTION 13.301 AND 13.302
LEVYING A TAX ON THE SALE OF TOBACCO PRODUCTS.

THE GILA RIVER INDIAN COMMUNITY COUNCIL HEREBY ENACTS THE FOLLOWING
AMENDMENTS TO SECTION 13.301 AND 13.302 OF THE COMMUNITY TAXATION
CODE:

1. Section 13.301 Tangible Personal Property:

There is levied and there shall be collected a privilege tax upon every person engaging or continuing within the Gila River Indian Reservation in the business of selling or leasing any tangible personal property whatever at retail, such tax being levied at an amount equal to two percent of the gross proceeds of sale or gross income of the business; provided; however, that the gross proceeds of or gross income from the sales of food or tobacco products are exempt from the said privilege tax.

2. Section 13.302 Alcohol and Tobacco:

In addition to the tax levied by Section 301 there is levied and there shall be collected a privilege tax upon every person engaging or continuing within the gila River Indian Reservation in the business of selling alcoholic beverages or tobacco products at retail, such tax being levied on the sale of tobacco products in the following amounts:

- A. On each cigarette, 2 cents.
- B. On smoking tobacco, snuff, fine cut chewing tobacco, cut and granulated tobacco, shorts and refuse of fine cut chewing tobacco, and refuse, scraps, clippings, cuttings and sweepings of tobacco, excluding tobacco powder or tobacco products used exclusively for agricultural, horticultural or religious purposes and unfit for human consumption, 4.5 cents per ounce or major fraction thereof.
- C. On all cavendish, plug or twist tobacco, 1.1 cents per ounce or fractional part thereof.
- D. On each twenty small cigars or fractional part thereof weighing not more than three pounds per thousand, 8.9 cents.

- E. On cigars of all descriptions except those included in paragraph 4 above, made of tobacco or any substitute therefor, if manufactured to retail at not more than 5 cents each, 4.4 cents on each three cigars, but if manufactured to retail at more than 5 cents each, 4.4 cents on each cigar, and such tax being levied on the sale of alcoholic beverages at an amount equal to six percent of the gross proceeds of sale or gross income of the business from such sales.

3. The effective date of this Ordinance is November 28, 1994.

CERTIFICATION

Pursuant to authority contained in Article XV, Section 1, (a), (7), (9), (12), (19), (b), (3), (5), (8), and Section 4 of the amended Constitution and Bylaws of the Gila River Indian Community, ratified by the Tribe January 22, 1960 and approved by the Secretary of the Interior on March 17, 1960, the foregoing Ordinance was adopted this 7th day of DECEMBER, 1994, at a Regular Community Council Meeting held in District #3, SACATON, ARIZONA, at which a quorum of 13 members were present by a vote of: 12 FOR; 0 OPPOSE; 1 ABSTAIN; 4 ABSENT; 0 VACANCY.

GILA RIVER INDIAN COMMUNITY

Mary V. Thomas
GOVERNOR 12-14-94

ATTEST:

Janice J. Oskaw
COMMUNITY COUNCIL SECRETARY



GILA RIVER INDIAN COMMUNITY

SACATON, AZ 85247

ORDINANCE GR-08-96

AMENDMENT TO TITLE 13, CHAPTER 3, SECTION 13.302 - TAX ON THE SALE OF TOBACCO PRODUCTS

THE GILA RIVER INDIAN COMMUNITY COUNCIL HEREBY ENACTS INTO ORDINANCE THE FOLLOWING AMENDMENTS TO THE GILA RIVER INDIAN COMMUNITY CODE, TITLE 13, CHAPTER 3, SECTION 13.302

13.302 ALCOHOL AND TOBACCO

- 4. A Tobacco Tax and Health Care Fund is established in the Community Budget. The Fund shall consist of all revenues deposited pursuant to Section 13.302 2. above. The Community Treasurer shall deposit all monies received under this Section 13.202 into this Fund. Monies deposited into this Fund shall be used for health promotion, prevention, wellness, and health care programs and projects, including educational programs for the Community showing the harmful effects of smoking. These community based programs and projects should include components designed to discourage tobacco use among minors in particular as well as among the general Community membership. Monies in the Fund may also be used to support programs and projects that will assist adults and children who suffer from health problems caused by smoking.

Allocation of monies from the Tobacco Tax and Health Care Fund shall be determined by the Community Council. Applications for monies from the Tobacco Tax and Health Care Fund shall be made to the Community Council's Health and Social Standing Committee, which shall establish Guidelines for applications, review applications, and provide recommendations on funding to the Community Council.

All provisions set forth in Tax on the Sale of Tobacco Products Ordinance GR-08-94, and attached amendments thereto, differing from the above identified Sections and Sub-Sections, are hereby rescinded.

CERTIFICATION

Pursuant to authority contained in Article XV, Section 1, (a), (7), (9), (18), (b), (8), (10), and Section 4 of the amended Constitution and Bylaws of the Gila River Indian Community, ratified by the Tribe January 22, 1960 and approved by the Secretary of the Interior on March 17, 1960, the foregoing Resolution was adopted this 6th day of November, 1996, at a Regular Community Council Meeting held in District #3, Sacaton, Arizona, at which a quorum of 15 members were present by a vote of 15 FOR; 0 OPPOSE; 0 ABSTAIN; 1 ABSENT; 1 VACANCY.

GILA RIVER INDIAN COMMUNITY

Mary V. Thomas
GOVERNOR 11/3/96

ATTEST:

[Signature]
COMMUNITY COUNCIL SECRETARY



GILA RIVER INDIAN COMMUNITY
ORDINANCE NO. 05 -89

AN AMENDMENT TO TITLE 13, CHAPTER III, SECTION 301, 302, AND 303 LEVYING A TAX ON SALES, ON THE SALE OF ALCOHOLIC BEVERAGES, ON THE SALE OF TOBACCO PRODUCTS, AND ON THE BUSINESS OF PRIME CONTRACTING.

THE GILA RIVER INDIAN COMMUNITY COUNCIL HEREBY ENACTS THE FOLLOWING AMENDMENTS TO SECTION 301 AND 302 OF THE COMMUNITY TAXATION CODE:

1. Section 13.301. Tangible Personal Property:

There is levied and there shall be collected a privilege tax upon every person engaging or continuing within the Gila River Indian Reservation in the business of selling or leasing any tangible personal property whatever at retail, such tax being levied at an amount equal to two percent of the gross proceeds of sale or gross income of the business; Provided; however, that the gross proceeds of or gross income from the sales of food are exempt from the said privilege tax.

2. Section 13.302. Alcohol and Tobacco:

In addition to the tax levied by Section 301 there is levied and there shall be collected a privilege tax upon every person engaging or continuing within the Gila River Indian Reservation in the business of selling alcoholic beverages or tobacco products at retail, such tax being levied on the sale of tobacco products at an amount equal to two percent of the gross proceeds of sale or gross income of the business from such sales, and such tax being levied on the sale of alcoholic beverages at an amount equal to six percent of the gross proceeds of sale or gross income of the business from such sales.

3. Section 13.303. Mining, Services, Contracting:

13.303 B.1. An amount equal to three percent of the gross proceeds of sale or gross income from the business upon every person engaging or continuing within the Reservation in the business of prime contracting, but the original cost of land sold as part of any contracting project, and an amount equal to thirty-five percent of gross proceeds of sale or gross income remaining after deduction of the original cost of such land, shall not be subject to such tax.

4. No waiver of any tax provided for and described in this Title shall be granted to any person.

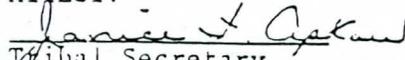
CERTIFICATION

Pursuant to authority contained in Article XV, Section 1(b) 3, 5, 8 & Section 4 of the amended Constitution and Bylaws of the Gila River Indian Community ratified by the Tribe, January 22, 1960, and approved by the Secretary of the Interior on March 17, 1960, the foregoing Ordinance was adopted this 4th day of October, 1989, at a Regular Council Meeting held in District # 3, Sacaton, Arizona, at which a quorum of 9 members were present by a vote of 6 FOR: 2 OPPOSE: 0 ABSTAIN: 8 ABSENT: 0 VACANCY: 1 CHAIRING.

GILA RIVER INDIAN COMMUNITY


Lt. Governor

ATTEST:


Tribal Secretary

THE DISCOVERY, TREATMENT AND DOCUMENTATION OF HUMAN REMAINS

The following procedures should be used when prehistoric or historic human remains are inadvertently encountered on Gila River Indian Community lands.

All human remains and potential human remains are to be treated with respect and dignity at all times.

No person associated with the GRIC CRMP will be required to be involved in any aspect of excavation, documentation, or processing of any human remains and associated funerary objects if they feel uncomfortable in doing so.

Discovery of Surface Human Remains During Survey

- If human remains are encountered during a survey, either within a defined archaeological site or as an isolated occurrence, the remains will not be disturbed, moved, or photographed, and no surface collections of artifacts or other material will be made in the immediate vicinity. If the discovered bones cannot be positively identified as human in the field, they should be treated as if they are until a positive identification can be made.
- A Human Remains Discovery Form will be completed for all encountered human remains. The type of probable burial represented, the condition and exposure of the remains, and whether accompanying funerary objects are present will be entered on this form. The location of the human remains will be noted on either a site or project map. All of this information will be kept on file in the repository, will be not be included in any public or professional publications having an unrestricted distribution, and will be used only for future planning in order to avoid specific areas.
- After discovery at the end of the day, the Crew Chief will inform the Field Director, who will in turn notify the **Tribe's Ordinance Officer** (Elaine Notah) at the Land and Water Department of the discovery and location of the human remains (562-3301, ext. 28; 1-602-610-0294 [mobile]). If the Ordinance Officer cannot be reached, then the **Cultural Resources Coordinator** (John Ravesloot) should be notified (562-3301, ext.37). If there is a possibility that the discovered human remains might be of recent origin, such as a homicide victim, the Crew Chief will immediately inform the Field Director, who will contact the Tribal Police (562-3361).

Discovery of Buried Human Remains During Testing or Monitoring

- The reporting responsibilities outlined above will be followed if human remains are inadvertently discovered during a testing or monitoring project.
- Whenever possible, any human remains that will not be directly impacted by ongoing, planned, or future construction or surface disturbing activities will be avoided and protected in place.
- Human remains that are discovered during trench monitoring or site testing projects and that cannot be protected in place will be secured at all times until they are removed to ensure that no other damage, or vandalism and desecration occur. The type of protection that is necessary will depend on the extent of exposure of the remains either along a trench or near the surface and the location of the remains near a populated area. If the identified remains are near the surface and mostly exposed, and/or if the remains are identified in or near a residential or business area, the remains should be protected both from disturbance and unauthorized view until they are removed. This protection minimally will include covering the remains with plastic and dirt and cordoning off the immediate area around the remains by whatever means available.
- Every attempt should be made to completely remove any remains on the day that they are identified, particularly if the remains and/or associated funerary objects are exposed and vulnerable to detection and disturbance. Once the excavation of the burial has been started, sufficient personnel and field time must be allocated to complete the removal of the remains by the end of the field day.
- Human remains and associated funerary objects that cannot be fully documented and removed during the same day of their discovery will be secured and protected overnight and be removed no later than the following day. Exceptions for postponing the immediate excavation of identified remains will be allowed only after consultation with the Project Director. Exceptions will be granted if the remains are only minimally exposed and can be covered so that they are secure and undetected overnight, if substantial deposits that cover the remains require more time and effort to excavate in a single day, or if the remains are discovered late in the field day preventing their complete removal by the end of the field day.
- If possible, all associated remains, soil containing bone fragments, and funerary objects will be kept together at all times and distinctly labeled as to specific feature. If more than one burial (cremation or inhumation) is associated with the same feature, each burial will be assigned a distinct sub-feature number.
- Remains contained within cremation urns will not be separated in the field, and every attempt will be made to keep all remains together, even if the container is broken. For inhumations, all fill within burial pits will be screened using 1/8 inch mesh to ensure complete recovery of all remains. For cremations, all pit fill containing remains will be completely collected. If distinct clusters of cremated remains are identified, each cluster will be assigned a sub-feature number and completely collected.
- Any artifact or remains that *could* be associated with a particular burial, but which could not be determined in the field due to disturbance or its recovery from backdirt, will be treated as part of that burial to ensure that all remains and associated funerary objects are collected. All of this material will be separately provenienced and labeled as being "possibly associated" and kept together with that particular burial assemblage.

Treatment of Human Remains

- All human remains from both inhumations and cremations will be wrapped in cotton batting/cloth and then placed in a labeled bag with relevant provenience information (site number, feature and/or sub-feature number, and specimen number). If remains and associated materials are contained in a vessel, the vessel will be wrapped intact, if possible, in cotton batting/cloth and then placed in a labeled bag. Remains and associated funerary objects from each burial will be placed in a labeled box and marked "R" to alert the lab that the remains need to be housed in the repository.
- All human remains and funerary objects will be transferred directly to the GRIC CRMP repository for temporary storage on the day they are recovered. The Lab Director or Assistant Lab Director will immediately take the remains to the repository where they will be checked-in and secured. If remains come in from the field and there is no authorized person with a key to the repository (Cultural Resources Coordinator or Lab Director), then the remains will be secured temporarily in the Lab Director's office until earliest possible access to the repository can be obtained.
- All materials associated with a burial will be physically stored together in the repository. If previously undetected burial material, e.g. fragments of human remains from screened backdirt, is subsequently recovered from the same feature, this material will be provenienced accordingly, and then stored together with the previously recovered material in the repository.
- The documentation of skeletal human remains and associated funerary objects will be limited to non-destructive techniques, and will include dry-brush or similar surficial cleaning to remove any dirt so that visual observations and measurements can be made and the material can be inventoried, or making. No human remains or funerary objects will be washed. All documentation will take place within the repository and no unauthorized personnel will be allowed access.
- If calcined human remains are contained within a vessel, the contents of the vessel will be carefully poured out through a fine-mesh screen over a piece of paper to ensure that all the soil from the vessel is recovered. The contents will then be inventoried and described. Following this documentation, all of the vessel contents, including the soil, will be replaced.
- After documentation, all of the remains and associated funerary objects will be repackaged as they were when they were brought in from the field. They will then be placed in cabinets at the back of the repository to prevent their disturbance until they are reburied.

APPENDIX "E"

ADOT STORED SPECIFICATIONS
SECTION 701

* USE IN CONJUNCTION WITH THE FOLLOWING STORED SPECIFICATIONS, AS APPROPRIATE: *

*	702SNDBL	*
*	705PVMRK	*
*	706PVMRK	*
*	1007REFS	*

(701PDMPT, 09/24/97)

SECTION 701 - MAINTENANCE AND PROTECTION OF TRAFFIC:

701-1 Description: the first paragraph of the Standard Specifications is revised to read:

The work under this section shall consist of providing flagging services and pilot trucks, and furnishing, installing, maintaining, moving and removing barricades, warning signs, lights, signals, cones, and other traffic control devices to provide safe and efficient passage through and/or around the work and to protect workers in or adjacent to the work zone. The work shall be done in accordance with the requirements of Part VI of the Manual on Uniform Traffic Control Devices (MUTCD) and the associated Arizona Department of Transportation supplement. When referred to herein, these documents will be referred to as MUTCD and associated ADOT Supplement.

701-2.02 Flashing Arrow Panels: the first sentence of the Standard Specifications is revised to read:

Flashing arrow panels shall conform to the requirements of Section 6F-3 of the MUTCD and associated ADOT Supplement with the following additions:

701-2.05(A) Temporary Pavement Markers and Chip Seal Pavement Markers: the first three paragraphs of the Standard Specifications are revised to read:

Temporary Pavement Markers may be Temporary Reflective Markers, Permanent Reflective Markers (used as Temporary) or Non-Reflective Markers, as required on the Project Plans or as approved by the Engineer.

Temporary Pavement Markers shall be in conformance with Standard Drawings 4-M-2.02, 4-M-2.05, and Subsections 706-2 and 706-3 of these specifications and shall be included on a list of pre-approved products maintained by the Department.

Chip Seal Pavement Markers shall conform to Standard Drawing 4-M-2.05. The Chip Seal marker body and cover shall be manufactured from a polyurethane material conforming to the following requirements:

701-2.05(A) **Temporary Pavement Markers and Chip Seal Pavement Markers:** the "Modulus" data line of the table in the Standard Specifications is revised to read:

	Requirement	ASTM Test Method
Modulus @ 300 %, MPa	6.9	D 412

701-2.06 **Temporary Sign Supports:** the first paragraph of the Standard Specifications is revised to read:

Temporary Sign Supports may be wood, steel or aluminum, at the option of the contractor and shall be approved by the Engineer prior to installation. Wood posts shall be Southern Pine, Douglas Fir or other soft wood. Wood posts need not be treated. Embedded posts shall meet the criteria established under NCHRP Report 350 for breakaway sign supports.

701-2.07 **Delineators:** of the Standard Specifications is revised to read:

Delineators shall be as shown on the plans and shall be in conformance with Standard Drawing 4-M-4.01 and Subsection 703-2 of these specifications.

701-2 **Materials (Equipment, Workers, Devices and Facilities):** of the Standard Specifications is modified to add:

701-2.08 **Barricades:**

Type I barricades having a minimum of 0.175 square meters of retroreflective area facing traffic, and otherwise conforming to Section 6F-5(f) of the MUTCD, may be used in lieu of Type II barricades in freeway or other high speed applications, unless specifically excepted in the project plans.

All sheeting for barricades shall be a minimum of Type II sheeting, conforming to AASHTO M 268.

701-3.01 **General:** the second paragraph of the Standard Specifications is revised to read:

At the pre-construction conference, the contractor shall provide the Engineer with the name of the contractor's employee who is responsible for implementing, monitoring, and altering, as necessary, the traffic control plan. The Engineer will then advise the local law

enforcement agency having jurisdiction, of the names of the contractor's representative and a representative of the Department who will act in a similar capacity. The contractor's designee shall be available at any time to respond to calls involving damage or displacement to barricades, lights, signs and other devices resulting from vandalism, traffic accident or other causes.

701-3.02 Maintenance and Protection of Traffic: the last two paragraphs of the Standard Specifications are revised to read:

Types of barricades, supports or devices not specifically described in the MUTCD and associated ADOT Supplement, but which would cause a hazard to traffic if used by the contractor, will not be permitted in the work area. The methods used by a contractor to control traffic when there are no details included in the contract, shall produce a safe condition for travel to the maximum extent possible at all times.

701-3.03 Temporary Concrete Barriers: the four subparagraphs at the end of the Standard Specifications are revised to read:

- (1) When hit, the device shall not penetrate the passenger compartment of the errant vehicle or present a hazard to workers and other traffic.
- (2) The device shall perform in a predictable manner when hit.
- (3) The device shall effectively reduce glare from oncoming vehicle head lights.
- (4) The device shall be resistant to vandalism and vehicle damage, and shall be easy to repair.

701-3.05 Temporary Pavement Markings (Application): the title of the Standard Specifications is revised to read:

701-3.05 Temporary Pavement Markings (Application and Removal):

701-3.05(A) General: the first paragraph of the Standard Specifications is revised to read:

Application of temporary pavement markings shall conform to the requirements of Subsection 708-3 of these specifications, the MUTCD and associated ADOT Supplement, and other provisions of these specifications as applicable. Placement of new markings shall be done immediately when the need for each arises, in conjunction with changes in the traffic pattern.

701-3.05(B) Temporary Pavement Markers: the title and text of the Standard Specifications are revised to read:

(B) **Raised Pavement Markers:**

The adhesive shall be applied uniformly to the cleaned pavement surface and the raised pavement marker shall be placed in the correct position on the adhesive area with the application of pressure as specified by the manufacturer.

701-3.06 Obliteration of Existing Pavement Markings: the second paragraph of the Standard Specifications is revised to read:

Pavement markings shall be removed to the fullest extent possible from the pavement by any method that does not materially damage the surface color, or texture of the usable pavement. Abrasive blasting, using air or water, is an acceptable method for removing pavement markings, however, other methods may be approved by the Engineer. Overpainting of markings with paint or asphalt will not be permitted.

701-3.06 Obliteration of Existing Pavement Markings: of the Standard Specifications is modified to add:

If obliteration of lead-based striping is necessary, it shall be accomplished by a method that is in compliance with 29 CFR, Lead Exposure in Construction, Interim Final Rule. If lead exposure prevention measures are required, the contractor shall ensure that all contractor personnel, subcontractors, and ADOT personnel present on the job site are notified of the activity and advised of precautions necessary to avoid contamination by lead compounds. The contractor shall submit a lead exposure plan to the Engineer for review at least 48 hours prior to the start of any striping obliteration activities. Payment for additional work to remove lead-based striping shall be in accordance with Subsections 104.02 or 109.04.

701-3.07 Truck-Mounted Attenuator: the subparagraphs of the second paragraph of the Standard Specifications are revised to read:

- (1) A back-up support structure for attaching the back-up to the truck;
- (2) A back-up; and
- (3) A crushable cartridge containing an energy absorbing material.

701-3.07 Truck-Mounted Attenuator: the subparagraphs of the fifth paragraph of the Standard Specifications are revised to read:

- (1) For impacting vehicles weighing from 815 to 2050 kilograms, the average over-all longitudinal deceleration shall be less than 120 meters per second squared; the 600-millimeter flail space velocity shall be less than 12 meters per second; and the roll-ahead distance of the truck, with

wheels locked and parking brake set, on clean, dry pavement, shall be less than 4.5 meters.

- (2) For impacting vehicles weighing up to 815 kilograms, the average over-all longitudinal deceleration shall be less than 150 meters per second squared; the 600-millimeter flail space velocity shall be less than 12 meters per second; and the roll-ahead distance of the truck, with wheels locked and parking brake set, on clean, dry pavement, shall be less than three meters.

701-3.08 Changeable Message Board: of the Standard Specifications is revised to read:

Changeable message boards shall be furnished and maintained by the contractor at the locations shown on the plans and as specified by the Engineer. The operations and messages programmed into the board controller shall be as directed by the Engineer. The changeable message board shall be a complete and operational portable unit which shall consist of a wheeled trailer with an adjustable, changeable message board, board message controller and self-contained power supply.

The power supply for the changeable message board shall be a fully independent self-contained trailer-mounted system. The power supply shall be either an internal combustion engine generator or batteries which are recharged from a solar panel mounted above the changeable message board.

The message characters shall be delineated by either electromagnetically actuated reflective dots or optically enhanced light emitting diode pixels (LED) operating under the control of a digital computer.

For changeable message boards using electromagnetically actuated reflective dots or for non solar-powered LED changeable message boards, the contractor shall submit, at the pre-construction conference, a Certificate of Compliance that the message board to be used on this project shall be as described herein.

The Department's Approved Products List (APL) provides a list of approved solar-powered LED changeable message boards which may be used in the performance of this work. For other solar-powered LED changeable message boards, the contractor shall submit, at the pre-construction conference, a Certificate of Compliance that the message board to be used shall be as described herein. The current APL is available from the Engineering Records Office, 1655 West Jackson, Phoenix, AZ 85007, Phone (602) 255-8216.

The character formation system and components shall conform to the following requirements:

- (1) The changeable message board shall have a minimum of three separate lines with eight characters per line.
- (2) The changeable message board matrix configuration shall be 35 dots or pixels per character in a five horizontal by seven vertical arrangement of the dots or pixels.
- (3) The dot or pixel size shall be a 64-millimeter high by 41-millimeter wide rectangle (minimum), or equivalent area.
- (4) Each character shall be 455 millimeters in height and 305 millimeters in width (minimum).
- (5) The horizontal character separation shall be 75 millimeters or more.
- (6) Dot color shall be fluorescent yellow upon activation and flat black when not activated. The LED pixels shall emit amber light upon activation and be dark when not activated.
- (7) The line separation shall be 125 to 305 millimeters.
- (8) Changeable message boards shall be protected with a clear lexan-type or equivalent shield that shall not interfere with or diminish the visibility of the sign message.
- (9) The programmable message board shall be capable of displaying moving arrow patterns as one of the operator-selected programs.
- (10) The programmable message board shall be capable of displaying a minimum of three lines of message copy, with a minimum of eight characters per line, in various alphanumeric combinations.
- (11) The message board shall also be capable of displaying a minimum of four messages in sequence, with variable timing in a minimum of quarter-second increments.
- (12) The message board shall be clearly visible and legible from a distance of 245 meters under both day and night conditions. The dot-matrix board shall have an internal illumination system that shall automatically activate under low light conditions to achieve the visibility requirements. The LED-pixel matrix board shall adjust light output (pulse width modulation) to achieve the visibility requirements.

- (13) The power supply achieved from an internal combustion engine generator shall be capable of operating the changeable message board for 72 continuous hours without refueling.
- (14) The power supply achieved from the battery and solar panel recharging system shall have sufficient capacity to operate the changeable message board for a minimum of 20 days without direct sunshine. The solar panel array shall be capable of recharging the batteries such that 2.5 to 3.5 hours of direct sunshine shall provide for a minimum of one 24-hour period of usage. Additionally, the battery recharging controller shall have an ambient temperature sensing device which will automatically adjust the voltage supplied from the solar panels to the batteries. The sensing device shall ensure that the batteries are properly charged in hot or cold weather and shall provide the sign with sufficient power to operate the sign as specified.

When in operation, the changeable message board trailer shall be offset a minimum of 2.4 meters from the nearest traffic lane. Where possible, a six-meter or more offset shall be used. When positioned on the highway, a minimum of ten 700-millimeter reflectorized traffic cones shall be set around the sign unit at a spacing of up to three meters.

When not in operation, the changeable message board shall be turned away from oncoming traffic.

The changeable message board trailer shall be placed on a level surface and be secured as recommended by the manufacturer and as directed by the Engineer. The contractor shall provide any necessary incidental grading and clearing work required to provide a level surface and clear area for the sign.

701-3.10 Sign Sheetings: of the Standard Specifications is revised to read:

All sign sheeting shall be Type II sign sheeting, conforming to AASHTO M 268, unless otherwise shown on the project plans.

701-3 Construction Requirements: of the Standard Specifications is modified to add:

701-3.13 Flagging Services:

Flagging services shall consist of either civilian, local enforcement officers and their vehicles, or DPS (Department of Public Safety) officers and their vehicles. The Engineer will determine the type of flagger needed, and may adjust the relative number of hours of each type of flagger specified in the traffic control plan.

If available, only DPS officers shall be used on Interstate Highways and Urban Freeways. DPS officers shall also be used on other construction projects except when a local agency has jurisdiction, in which case a local law enforcement officer and vehicle shall be used.

The Engineer will make all the necessary arrangements to procure DPS flagging services. The contractor shall notify the Engineer a minimum of three working days prior to the start of any operation involving DPS officers for flagging.

Procurement of civilian flaggers, or local enforcement officers used for flaggers, will be the responsibility of the contractor.

For operations in which DPS officers are to be used for flagging, the contractor shall be responsible to notify the Engineer a minimum of six hours in advance of any operation which is to be canceled. Should such notification not be received as specified, and DPS officers are dispatched to provide flagging services for the canceled operation, a charge of \$70.00 per DPS officer will be deducted from the monies due the contractor.

In the event that local enforcement officers or DPS officers are temporarily unable to provide flagging services, the contractor shall ensure that traffic control is maintained and all personnel are protected, either by providing civilian flaggers or through other means as approved by the Engineer. No adjustments to the contract will be allowed for any delays resulting from the unavailability of local enforcement officers or DPS officers.

A local enforcement officer shall not work more than 12 consecutive hours unless an emergency situation exists which, in the opinion of the Engineer, requires that the officer remain in the capacity of a flagger.

The contractor shall furnish verification to the Engineer that civilian flaggers have had training in safe flagging procedures.

701-4.01 **General:** the first paragraph of the Standard Specifications is revised to read:

The Department will reimburse the contractor for the work of maintaining and protecting traffic on the basis of unit bid prices for the various Elements of Work. No additional measurement for payment to the contractor will be made for any Elements of Work other than those listed in the bidding schedule.

701-4.03(E) **Limitation of Measurement:** of the Standard Specifications is revised to read:

Elements of Work listed herein under Subsection 701-4.01(B) that are measured on a unit per day basis will be measured for payment for each 24-hour day. Measurement will be based on the maximum number of units of the specific element of work that are in

simultaneous use during any given period regardless of the length of time that the elements are in use and regardless of the number of times the elements are relocated.

Measurement will be made after the initial installation and once weekly thereafter for items in continuous use and at any other times changes are made in the use of traffic control elements listed under Subsection 702-4.01(B). The contractor shall notify the Engineer when any changes are made in the use or location of traffic control elements.

701-4.04 Measurement of Work Elements: Subparagraphs (A) through (F) of the Standard Specifications are revised to read:

- (A) Temporary Concrete Barrier will be measured by the linear meter along the center line of the uppermost surface upon its initial installation (Complete-in-Place). Barrier will be measured by linear meter for each 24-hour day for the "In-Use" condition.
- (B) Temporary Impact Attenuators, such as Sand Barrels and Energy Absorbing Terminals, will be measured by the unit for each complete device upon its initial installation (Complete-in-Place). Temporary Impact Attenuators will be measured by the day for each 24-hour day that a temporary impact attenuator is in place and functional for the "In-Use" condition.
- (C) Truck-Mounted Attenuators, including driver, will be measured by the day for each 24-hour day that a truck-mounted attenuator and operator are used to protect the work site.
- (D) Flashing Arrow Panels will be measured by the day for each 24-hour day that each panel is in place and operating.
- (E) Pilot Vehicles, including driver, will be measured by the hour for each approved hour of operation.
- (F) Civilian flagging services will be measured by the hour for each hour that a civilian flagger is provided. Flagging services by local enforcement officers will be measured for each hour that a uniformed, off-duty law enforcement officer with police vehicle is employed directly by the contractor as a flagger, when authorized in advance by the Engineer. No measurement will be made when DPS officers and their vehicles are used to provide flagging services.

Civilian or local enforcement flagging services and traffic control required to permit contractors' traffic to enter safely into normal traffic within the project limits will be paid under this item. Flaggers required by a written local permit agreement will be measured for payment under this item. Additional civilian or local enforcement flagging services used within the project limits shall be measured for payment under this item, subject to the approval of the Engineer.

Civilian or local enforcement flagging services and traffic control devices used outside the project limits will be measured under this item. The Department will pay 50 percent of the unit bid price for such flaggers and traffic control devices used as described in this paragraph, subject to the approval of the Engineer. The project limits are defined as the construction work zone as shown on the approved traffic control plan for the specific section of highway under construction.

The contractor shall be responsible for obtaining and paying all costs for local enforcement officers and vehicles.

701-4.04 Measurement of Work Elements: Subparagraph (J) of the Standard Specifications is revised to read:

- (J) Changeable Message Boards will be measured by the day for each 24-hour day that the sign is utilized to maintain and control traffic.

701-4.04 Measurement of Work Elements: Subparagraphs (M) and (N) of the Standard Specifications are revised to read:

- (M) Vertical Panels, Barricades (Types II and III), Tubular Markers, Warning Lights (Types A, B, and C), Traffic Cones (700-millimeter), High-Level Flag Trees, Drums, Embedded Sign Posts, and Portable Sign Stands (Spring-Type and Rigid), will be measured as a unit for each device furnished and subsequently utilized at the project site for each 24-hour day.

Temporary Signs will be measured as Small (less than one square meter) with either Type II or Type III/IV sheeting, and Large (one square meter or more) either Type II or Type III/IV sheeting. Temporary Signs will be measured as a unit for each sign furnished and subsequently utilized at the project site for each 24-hour day. Quantities may be determined on a weekly basis for signs in continuous use.

Utilization shall be defined as including those devices ordered to remain on site or covered in accordance with Subsection 701-4.03(D) and approved by the Engineer.

- (N) Specialty Signs are signs which are required on the job, as determined by the Engineer or shown on project plans, and are not reusable as traffic control signs. Specialty Signs shall contain information which is project and location specific. The sign sheeting shall be Type II; and the size, type and legend of the Specialty Signs will be determined by the Engineer, unless specified on the project plans. Specialty Signs will be measured for payment by the square

meter, inclusive of borders. Any sign over two square meters in area shall be considered a Specialty Sign.

701-5.02 Temporary Impact Attenuators (Installation and Removal): the first paragraph of the Standard Specifications is revised to read:

Temporary Impact Attenuation Devices shall include Sand Barrels and Energy Absorbing Terminals, measured as provided above, and paid for at the contract unit price, which price shall be full compensation for the work complete in place, as specified herein and as shown on the plans, including furnishing the devices with replacement parts, installing, removing and stockpiling the devices.

701-6.01 Quantity Variances: of the Standard Specifications is revised to read:

Payment for variances in quantities shall be in accordance with Subsection 104.02, except that, for decreases in quantities, the following items will be considered as major items:

- (1) Temporary Concrete Barrier (In-Use);
- (2) Barricades; and
- (3) Temporary Signs.

701-6.03(A) Vertical Panels, Barricades (Type II), Traffic Cones (700-Millimeter), and Tubular Markers: the first two paragraphs of the Standard Specifications are revised to read:

The accepted quantities of Vertical Panels, Barricades (Type II), Traffic Cones (700-millimeter), and Tubular Markers, measured as provided above, will be paid for at the unit bid price, which price shall be full compensation for the use and maintenance of each device (in-use), including labor and equipment.

Type I barricades which are substituted for Type II barricades in accordance with Subsection 701-2.08 shall be paid for at the unit bid price for Type II barricades.

701-6.03(B) Barricades (Type III) and High-Level Flag Trees: the first paragraph of the Standard Specifications is revised to read:

The accepted quantities of Barricades (Type III) and High-Level Flag Trees, measured as provided above will be paid for at the unit bid price, which price shall be full compensation for the use and maintenance of each device (in-use), including labor and equipment.

701-6.03(C) Drums: the first paragraph of the Standard Specifications is revised to read:

The accepted quantities of Drums, measured as provided above, will be paid for at the unit bid price, which price shall be full compensation for the use and maintenance of each device (in-use), including labor and equipment.

701-6.03(D) Warning Lights (Types A, B, and C): of the Standard Specifications is revised to read:

The accepted quantities of Warning Lights (Types A, B, and C), measured as provided above, will be paid for at the unit bid price, which price shall be full compensation for the use and maintenance of each device (in-use), including labor and equipment.

701-6.03(E) Embedded Sign Posts, Portable Sign Stands (Spring-Type or Rigid) and Portable Sign Posts-Barrier Mounted: the first paragraph of the Standard Specifications is revised to read:

The accepted quantities of Embedded Sign Post, Portable Sign Stands (Spring-Type and Rigid) and Portable Sign Posts-Barrier Mounted, measured as provided above will be paid for at the unit bid price, which price shall be full compensation for the use and maintenance of each device (in-use), including labor and equipment.

701-6.04 Temporary Signs: the first paragraph of the Standard Specifications is revised to read:

The accepted quantities of Temporary Signs, measured as provided above, will be paid for at the unit bid price, which price shall be full compensation for the use and maintenance of each device (in-use), including labor and equipment.

701-6.06 Flashing-Arrow Panels and Changeable Message Signs: the title and text of the Standard Specifications are revised to read:

701-6.06 Flashing-Arrow Panels and Changeable Message Boards:

The accepted quantity of flashing-arrow panels, measured as provided above, will be paid for at the unit bid price, which price shall be full compensation for the work, complete, including furnishing, operating, maintaining, and relocating the panels on the work site, and providing all necessary labor and equipment.

The accepted quantities of Changeable Message Boards, measured as provided above, will be paid for at the unit bid price per day, which price shall be full compensation for the work, complete, including incidental grading; traffic cones; and furnishing, operating, maintaining, and relocating the boards on the work site, and providing all necessary labor and equipment. No payment will be made for incidental grading or traffic cones, the cost being considered a part of contract items.

701-6.07 Pilot Services and Flagging Services: of the Standard Specifications is revised to read:

The accepted quantities of pilot and relocation service trucks, measured as provided above, will be paid for at the unit bid price, which price shall be full compensation for the work, complete, including, but not limited to, furnishing and maintaining the vehicle and furnishing the pilot truck driver. Overtime hours for pilot services worked will be paid at a rate determined by multiplying the straight-time hours times a factor of 1.35.

Basis of payment for a local enforcement officer, including vehicle, used as a flagger will be in accordance with the following:

Hours Per Day	Pay Rate
First eight hours	straight time
Hours nine through twelve	time and one half
Over 12 hours	double time

Overtime hours will be converted into straight-time hours for measurement.

The accepted quantities of flagging services provided by civilian flaggers, measured as provided above, will be paid for at the unit bid price, which price shall be full compensation for the work, complete, including all overhead costs and fringe benefits.

No payment will be made when DPS officers and their vehicles are used to provide flagging services.

701-6 Basis of Payment for Elements of Work (In Use): of the Standard Specifications is modified to add:

701-6.08 Temporary Impact Attenuators (In-Use):

The accepted quantities of temporary impact attenuators, measured as provided above, will be paid for at the unit bid price, which price shall be full compensation for the use of the complete attenuating device and for furnishing all material, equipment and labor for maintaining, realigning and adjusting the attenuator installation, as specified herein and as shown on the plans. No payment will be made for attenuators not in service, such as attenuator stockpiled for replacement parts or awaiting phase construction change.

- * USE IN CONJUNCTION WITH THE FOLLOWING, AS APPROPRIATE: *
- * STORED SPECIFICATIONS: 702SNDBL *
- 705PVMRK *
- 706PVMRK *
- * BID ITEMS: 7010001 (All Projects) *
- 7010006 (All Projects) *
- 7010010 (If on Plans) *
- 7010012 (If on Plans) *

(701MPTPD, 09/15/93)

SECTION 701 - MAINTENANCE AND PROTECTION OF TRAFFIC:

701-4 Method Of Measurement: the title and text of the Standard Specifications are revised to read:

701-4 Reimbursement:

701-4.01 General:

The Department will reimburse the contractor for the work of maintaining and protecting traffic on the basis of the predetermined reimbursement rates hereinafter specified under Subsection 701-4.02 for the various elements of work except for Temporary Concrete Barrier, Temporary Impact Attenuation Devices, and Furnish and Install Temporary Traffic Control Devices.

No additional reimbursement will be made to the contractor for any elements of work other than those listed herein under Subsection 701-4.02, unless approved in writing by the Engineer prior to use. The cost for elements of work required for traffic control and not listed under Subsection 701-4.02 will be negotiated with the Engineer prior to approval.

Elements of work specified under this subsection which are lost, stolen, destroyed, or are deemed unacceptable by the Engineer, while in use on a project shall be replaced by the contractor and, except as hereinafter specified for temporary impact attenuation devices, at no additional cost to the Department.

701-4.02 Predetermined Reimbursement Rates:

(A) General:

Item 7010001 - MAINTENANCE AND PROTECTION OF TRAFFIC is included in the Bidding Schedule for the purpose of establishing an account from which the contractor will be reimbursed for the work of maintaining and protecting traffic on the basis of the predetermined reimbursement rates specified herein under Subsections 701-4.02(B) and 701-4.02(C) for the various elements of work.

The methods of measurement and basis of payments will be as specified herein under Subsections 701-5 and 701-6.

(B) Elements of Work (Complete-in-Place):

The elements of work listed under this subsection will be measured for payment upon the satisfactory completion of the initial installation or obliteration. Except as hereinafter specified under Basis of Payment, no subsequent measurements will be made.

Element of Work	Unit	Rate (\$)
Specialty Sign (High Intensity Reflective Sheeting)	m ²	107.64
Specialty Sign (Std. Intensity Reflective Sheeting)	m ²	78.04
Preformed Pavement Marking (Taped Line) (Type II)	m	5.25
Preformed Pavement Marking (Taped Line) (Type III)	m	2.63
Temporary Pavement Marking (Painted Line)	m	0.43
Obliterate Pavement Marking	m	1.64
Obliterate Pavement Legends	Each	10.00
Obliterate Pavement Arrows	Each	20.00
Delineator (Std. Dwg. 4-M-4.01)	Each	27.00
Reflective Raised Pavement Marker (Temporary)	Each	4.00
Reflective Raised Pavement Marker (Permanent) (Used As Temporary)	Each	4.50
Non-Reflective Raised Pavement Marker (Temporary)	Each	2.50
Remove Raised Pavement Marker	Each	0.10
Chip Seal Pavement Marker (Single Capped)	Each	2.00
Chip Seal Pavement Marker (Double Capped)	Each	3.00

(C) Elements of Work (In Use):

The elements of work listed under this subsection will be measured from the point at which the element is put into active use on the project and accepted by the Engineer until such times that the Engineer determines that the element is no longer required:

Element of Work	Unit	Rate (\$)
Temporary Concrete Barrier(In Use)	m./Day	0.16
Impact Attenuation Device (Sand Barrel) (In Use)	Ea./Day	0.05
Impact Attenuation Device (Energy Absorbing Terminal)(In Use)	Ea./Day	1.00
Impact Atten Dev. (Truck Mounted)	Hour	27.00

Flashing Arrow Panel	Hour	5.00
Pilot Truck	Hour	6.36
Relocation Service, Truck	Hour	9.00
Flagger	Hour	20.20
Flagger (Uniformed Police Officer)	Hour	27.11
Official Police Vehicle	Hour	2.50
Truck Driver: Pilot, Reloc Svcs, Truck Mount Atten. Devices	Hour	15.24
Relocation Service, Barricade Setter	Hour	10.93
Maintain Changeable Message Board	Hour	1.45
Vertical Panels	Ea./Day	0.50
Tubular Marker	Ea./Day	0.35
Barricade (Type II)	Ea./Day	0.50
Barricade (Type III)	Ea./Day	0.75
Flashing Warning Light (Type A)	Ea./Day	0.25
Flashing Warning Light (Type B)	Ea./Day	2.50
Steady-Burn Warning Light (Type C)	Ea./Day	0.80
High Intensity Reflective Sheeting, Small Sign (Less than 1 m ²)	Ea./Day	1.10
High Intensity Reflective Sheeting, Medium Sign (1 -1.5m ²)	Ea./Day	1.30
High Intensity Reflective Sheeting, Large Sign (More than 1.5m ²)	Ea./Day	1.50
Std. Intensity Reflective Sheeting, Small Sign (Less than 1 m ²)	Ea./Day	0.50
Std. Intensity Reflective Sheeting, Medium Sign (1-1.5m ²)	Ea./Day	0.65
Std. Intensity Reflective Sheeting, Large Sign (More than 1.5m ²)	Ea./Day	1.00
Embedded Sign Posts	Ea./Day	0.10
Portable Sign Stand (Spring Type)	Ea./Day	2.10
Port. Sign Stand (0.8 m ² or More)	Ea./Day	1.00
Port. Sign Stand (Under 0.8 m ²)	Ea./Day	0.70
High Level Flag Tree	Ea./Day	0.80
Traffic Cones, 700 mm	Ea./Day	0.40
Drum (450 by 900 mm)	Ea./Day	1.20

701-4.03 Relocation Services:

Following the initial installation of the elements of work described in Subsection 701-4.02, the Engineer may direct the contractor to move any element of work from one location and re-erect it at another location. Except as hereinafter specified for Temporary Concrete Barrier (New Installation) or the exceptions specified in the remainder of this subsection or Subsection 701-4.04, measurement for reimbursement of the work associated with such relocation will be made as specified for the Relocation Service elements of work.

When work of a progressive nature is involved, such as resurfacing a road under traffic, or closing a lane or lanes for work to be accomplished during a shift, no measurement for

reimbursement will be made for setting up or relocating the necessary traffic control equipment, workmen, devices, facilities, signs (except semi-permanent signs on embedded posts), etc., that are moved concurrently with the advancing operation, or removal at the end of a shift. The cost of such work to be considered as included in item 7010006.

701-4.04 Reimbursement Exceptions:

(A) Deficient Elements of Work:

Any deficiencies in the traffic control plan, devices, equipment, services, or other elements of work listed under Subsection 701-4.02 will be brought to the attention of the contractor by the Engineer and all deficiencies shall be corrected before the close of that work day or work shift.

Reimbursement will not be withheld from the contractor for those elements of work that are restored to full usefulness prior to the close of the work day or work shift in which notice of the defect is given.

No reimbursement will be made to the contractor for those deficient elements of work listed herein under Subsection 701-4.02(C) that are not restored to full usefulness prior to the close of the work day or work shift in which notice of the defect is given. Measurement for reimbursement will not resume until the beginning of the work day or work shift following that work day or work shift in which those elements are restored to usefulness.

(B) Substantial Deficiencies:

For each work day or work shift during which there are, as determined by the Engineer, substantial deficiencies in the contractor's traffic control plan, devices, and/or services, no reimbursement will be made to the contractor for any element of work listed under Subsection 701-4.02(C).

Measurement for reimbursement will not resume for any element of work until the beginning of the work day or work shift following that work day or work shift in which all corrective measures have been performed by the contractor and approved by the Engineer.

In cases of serious or willful disregard for the safety of the public or his employees by the contractor, the Engineer may proceed forthwith to place the traffic control measures in proper condition and deduct the cost thereof from monies due or becoming due the contractor.

(C) Nondiligent Prosecution of Work:

In the event that the Engineer determines that the contractor's construction operations are not resulting in the diligent prosecution of the work under contract, no reimbursement will be made to the contractor for the elements of work listed under Subsection 701-4.02 until such time as the Engineer determines that the contractor is devoting appropriate efforts toward completion of the work. Payment will be suspended effective with the end of the work day or work shift in which written notice is issued to the contractor by the Engineer notifying the contractor of his failure to prosecute the work. Payment will resume with the beginning of

the work day or work shift following that work day or work shift in which the Engineer determines that satisfactory efforts are being made by the contractor toward completion of the work. In any case, the contractor shall continue to be responsible for maintaining all barriers, attenuators, signs, lights and other traffic control devices in proper functioning condition at all times.

(D) Non-Working Periods:

Measurement for reimbursement of the elements of work listed under Subsection 701-4.02(C) will begin on the day they are installed in place for traffic control and direction. When the elements are not needed for traffic control, they shall be removed or covered and will not be measured. During non-working periods such as holidays, Sunday, etc. the elements in place and in satisfactory condition will be measured for reimbursement on the day following such downtime. During these non-working periods the contractor shall conduct a minimum of one check per day to see that the elements are in place and in satisfactory condition.

No reimbursement will be made to the contractor for the elements of work listed under Subsection 701-4.02(C) for non-working periods resulting from a suspension of work that, in the opinion of the Engineer, is due to the fault of the contractor. In any case, the contractor shall continue to be responsible for maintaining all barriers, attenuators, signs, lights and other traffic control devices in proper functioning condition at all times.

(E) Limitation of Measurement:

Elements of work listed under 701-4.02(C) that are measured on a unit per day basis will be measured for reimbursement once and only once for each full work day or work shift. Measurement will be based on the maximum number of units of the specific element of work that are in simultaneous use during any given period regardless of the length of time that the elements are in use and regardless of the number of times the elements are relocated.

(F) Expiration of Contract Time:

No reimbursement will be made to the contractor for the elements of work listed under Subsection 701-4.02(C) when they are required in association with construction work being performed after the expiration of the contract time and all approved extensions.

In any case, the contractor shall continue to be responsible for maintaining all barriers, attenuators, signs, lights and other traffic control devices in proper functioning condition at all times.

701-5 **Basis of Payment for Elements of Work (Complete-in-Place):** the title and text of the Standard Specifications are revised to read:

701-5 **Method of Measurement:**

Maintenance and Protection of Traffic will be measured by the approved elements of work that are both (1) utilized by the contractor during the course of approved construction

operations and (2) included as an item in the bidding schedule or listed as an element of work under Subsection 701-4. Measurement will be made as follows:

Temporary Concrete Barrier will be measured by the linear meter along the center line of the uppermost surface.

Temporary Impact Attenuation Devices (Sand Barrel and Energy Absorbing Terminal) will be measured by the unit for each complete device.

Truck mounted attenuators will be measured by the hour for each hour that a truck mounted attenuator is used to protect the work site.

Flashing Arrow Panels will be measured by the hour for each hour that each panel is in place and operating.

Pilot Trucks and Relocation Service Trucks will be measured by the hour for each approved hour of operation.

Flagging Services will be measured by the hour for each hour that a civilian flagger is provided and for each hour that a uniformed, off-duty law enforcement officer is employed directly by the contractor as a flagger, when authorized in advance by the Engineer. The time for a uniformed off-duty law enforcement officer used as a flagger will be measured in accordance with the following table:

Consecutive Hours Worked	Reimbursement Time Factor
First eight hours	straight time
Hours nine through twelve	time and one half
Over 12 hours	double time

Overtime hours will be converted into straight time hours for measurement. An off-duty law enforcement officer shall not work more than 12 consecutive hours unless an emergency situation exists which, in the opinion of the Engineer, requires that the officer remains in the capacity of flagger. In the event an off duty officer reports to the project site and the work shift is canceled within the first two hours, the contractor will be reimbursed for two hours at the appropriate rate. Flaggers which are required to permit contractor's traffic to safely enter into normal traffic within the project limits will be paid under this item. Flaggers required by a written local permit agreement will be paid under this item. Additional Flaggers used within the project limits will be measured for payment under this item, subject to the approval of the Engineer.

Flaggers and traffic control devices used outside the project limits will be measured under this item. The state will pay fifty percent of the designated rates for flaggers and traffic control devices used as described in this paragraph, subject to the approval of the Engineer. The project limits are defined as the beginning and ending stations as shown on the plans of the specific section of highway under construction.

Use of Official Police Vehicles will be measured by the mile of operation within the project limits and to and from the project site, as approved by the Engineer.

Truck Drivers (Pilot Truck, Relocation Service Truck, and Truck Mounted Attenuation Device) will be measured by the hour for each hour that a Driver operates a vehicle. Overtime hours will be converted to straight time hours for measurement.

Relocation Service Barricade Setters will be measured by the hour for each man hour of the approved relocation operation. Overtime hours will be converted to straight time hours for measurement.

Preformed Pavement Markings, Type II and Type III, will be measured in accordance with the requirements of Subsection 705-4.

Temporary Pavement Marking, Painted Line, will be measured in accordance with the requirements of Subsection 708-4.

Obliterate Pavement Marking will be measured by the linear meter of existing marking obliterated, regardless of width or type of material.

Maintenance of the Changeable Message Board will be measured by the hour for each hour that the board is utilized to maintain and control traffic.

Delineators (Std. Dwg. 4-M-4.01) and pavement markers will be measured as a unit for each delineator and marker furnished and subsequently utilized at the project site. No measurement will be made for delineators and markers that are furnished to replace damaged units as specified under Subsection 701-4.01.

Vertical Panels, Barricades, Warning Lights, Signs, Sign Stands/Post, Traffic Cones, Tubular Markers, Flag Trees, and Drums will be measured as a unit for each device furnished and subsequently utilized at the project site.

Item 7010006 will be measured by the unit "lump sum" and shall include the furnishing and installation of all necessary temporary traffic control devices measured individually as provided above.

Overtime hours for flagging services flaggers and for relocation service barricade setters shall be converted into straight time hours for measurement on the basis of one and one half times the number of man hours for all approved flagging and relocation service barricade setter hours worked in excess of 40 hours per week.

Specialty Signs are signs which are required on the job, as determined by the Engineer, but which are not indicated on the project plans and are not included in item 7010006 or among reusable traffic control signs. The size, type and legend on Specialty Signs will be determined by the Engineer and will be measured for payment by the square meter.

Obliterate Pavement Legends or Arrows will be measured by each separate symbol, arrow or single letter.

701-6 Basis of Payment for Elements of Work (In-Use): the title and text of the Standard Specifications are revised to read:

701-6 Basis of Payment:

The contractor will be compensated for accepted quantities of Maintenance and Protection of Traffic in accordance with the procedures described herein and in Subsection 701-4 of the Standard Specifications.

701-6.01 Elements of Work (Bid Items):

(A) Temporary Concrete Barrier (New Installation):

Temporary concrete barrier, measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete, as specified herein and as shown on the plans, including, but not limited to, furnishing, placing, dismantling, and removal. The price bid shall also include any required connection devices and barrier markers. Should it be necessary to dismantle, pick up and relocate the entire barrier installation or portion thereof during construction, the removed and relocated barrier will be considered a new installation and measured for payment at the contract unit price. No additional payment will be made for the realigning or adjusting of barrier installations, for lateral movement of 3.6 meters or less.

The Engineer will be the sole judge as to whether barriers are to be dismantled, picked up and relocated and paid for as a new installation or are to be adjusted or realigned and paid for as specified for Temporary Concrete Barrier (In Use).

Fifty percent of the unit price bid will be paid upon satisfactory installation. The remaining 50 percent will be paid upon removal.

(B) Temporary Impact Attenuation Devices (Sand Barrel and Energy Absorbing Terminal):

Temporary Impact Attenuation Devices (Sand Barrel and Energy Absorbing Terminal), measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work complete-in-place, as specified herein and as shown on the plans, including but not limited to furnishing the devices with replacement parts, and installing, dismantling, realigning and adjusting, removing and stockpiling the devices.

Should it be necessary to dismantle, pick up and relocate attenuation device installations during construction, the work of removing and relocating the devices will be measured for reimbursement as herein specified for Relocation Services.

The Engineer will be the sole judge as to whether devices are to be dismantled, picked up and relocated or are to be adjusted or realigned.

Fifty percent of the unit price bid will be paid upon satisfactory installation. The remaining 50 percent will be paid upon final removal.

Measurement and payment for furnishing materials, equipment and labor and repairing attenuation devices that are damaged by the traveling public will be made in accordance with the requirements of Subsection 109.04.

No measurement or direct payment will be made for furnishing replacement parts and repairing devices damaged by other than the traveling public.

(C) Furnish and Install Temporary Traffic Control Devices:

Item 7010006 - Furnish & Install Temporary Traffic Control Devices is included in the Bidding Schedule to establish a bid item which shall be full compensation for furnishing to the jobsite, stockpiling, and installation of flashing arrow panels, changeable message boards, vertical panels, barricades, warning lights, signs, sign stands/posts, traffic cones, tubular markers, flag trees, and drums, complete-in-place. Item 7010006 also includes the cost of relocation of all necessary traffic control devices or the moving of devices for the Contractor's advancing operation as specified herein and as shown on the plans, except for items directed by the Engineer.

The cost of additional information traffic control signs, shown on the project plans, furnished by the contractor and not included as reusable traffic control signs as listed in Subsection 701-4.02(C), will be included in Item 7010006, which costs shall include all materials, labor and other additional costs for the installation, any relocation and removal of the signs.

Item 7010006 also included removal of all temporary traffic control devices used for maintenance and protection of traffic on the project and included in the Elements of Work (In Use) and Elements of Work (Complete-in-Place), unless such cost is included in the predetermined reimbursement rates as specified in this Subsection.

Sign mounted on posts set in the ground shall be removed at the completion of the project, the post holes filled and compacted, and the immediate area restored to match the surrounding area. The cost of such removal and restoration shall be considered as included in the cost of Item 7010006.

Furnish and install temporary traffic control devices will be paid for at the contract lump sum price, which shall be full compensation for furnishing, installing, and removing all devices and the labor, tools, equipment, and incidentals necessary to complete the work.

Twenty five percent of the unit price bid will be paid upon satisfactory initial installation of temporary traffic control devices. The remaining seventy five percent will be paid in monthly increments based on the current month's percentage of project completion.

701-6.02 Elements of Work (Complete-in-Place):

(A) Preformed Pavement Markings:

The accepted quantities of preformed pavement markings, measured as provided above, will be paid for at the predetermined reimbursement rate for the type specified, which rate shall be full compensation for the work, complete in place, including necessary pavement cleaning, removal of type II temporary markings, and maintaining Type II and Type III

temporary markings in construction work zones. Installation for accepted quantities shall be considered satisfactory when the markings are installed within 25 millimeters of the true alignment.

Additional reimbursement will be made for replacement of temporary markings when the contractor is required by the Engineer to install marking materials on distressed pavements or during adverse weather conditions and subsequent failure occurs. Distressed pavement conditions are defined as alligator cracking, bleeding, or spalling of bituminous pavements and spalling of PCC pavements. Adverse weather conditions are defined as any occurrence where application is required at pavement temperatures less than 16 °C or when precipitation occurs within 24 hours before or after application. The Department will pay for the replacement, where failures occur, at the reimbursement rate for the initial occurrence.

In the event a second failure occurs when markings have been reapplied on distressed pavements or under weather conditions described above, the Engineer shall determine if conditions require primer, alternate methods of marking or reapplication of preformed markings. Preformed markings will be paid for at the reimbursement rate. Primers or other methods of markings deemed necessary by the Engineer will be paid for in accordance with the provisions of Subsection 109.04.

(B) Temporary Pavement Marking (Painted Line):

The accepted quantities of Temporary Pavement Marking (Painted Line), measured as provided above, will be paid for at the predetermined reimbursement rate per linear meter, which rate shall be full compensation for the work, complete in place, as specified herein.

(C) Obliterate Pavement Marking:

Obliterate Pavement Marking, measured as provided above, will be paid for at the predetermined reimbursement rate per linear meter which rate shall be full compensation for the work, complete, including furnishing all labor and equipment required and restoring the pavement surface to a condition deemed suitable by the Engineer.

(D) Delineators (Standard Drawing 4-M-4.01) and Pavement Markers:

The accepted quantities of delineators, and pavement markers, measured as provided above, will be paid for at the predetermined reimbursement rate each, which rate shall be full compensation for the work, complete in-place, as specified herein and as shown on the plans. If it is necessary to remove and relocate delineators, measurement for reimbursement of the work associated with such relocations will be made as specified for the Relocation Service element of work.

(E) Specialty Signs:

The accepted quantities of Specialty Signs will be paid for at the predetermined rate per square meter listed in Subsection 701-4.02(B). The rate established shall be full compensation for manufacturing, delivery to the job site, erection complete in place, and eventual removal.

(F) Remove Raised Pavement Markers:

The accepted quantities for removal of Raised Pavement Markers will be paid for at the predetermined rate each listed in Subsection 701-4.02(B).

(G) Obliterate Pavement Legends or Arrows:

The accepted quantities of Arrows, Symbols or individual Letters obliterated shall be paid for at the predetermined rate each listed in Subsection 701-4.02(B).

701-6.03 Elements of Work (In Use):

(A) Temporary Concrete Barrier (In Use):

The accepted linear meter quantities of temporary concrete barrier, measured as provided above on a daily basis, will be paid for at the predetermined reimbursement rate, which rate shall be full compensation for the use of the barrier installation(s) and for the work of furnishing all material, equipment and labor and maintaining, realigning and adjusting the barrier installation(s) as specified herein and as shown on the plans. No reimbursement will be made for barrier not in service, such as, barrier in stockpiled configuration awaiting phase construction change.

There will be no reimbursement for each day that the Engineer determines the barrier traffic reflectors are not in good reflective condition, or for each day that the Engineer determines the barrier is out of alignment.

(B) Temporary Attenuation Device (Sand Barrel and Energy Absorbing Terminal) (In Use):

The accepted unit quantities of temporary attenuation devices, measured as provided above on a daily basis, will be paid for at the predetermined reimbursement rate, which rate shall be full compensation for the use of the devices and for the work of realigning and adjusting the devices as specified herein and as shown on the plans.

There will be no measurement and payment for temporary impact attenuation devices in a stockpiled configuration.

(C) Truck Mounted Attenuators:

The accepted quantities of truck mounted attenuators, measured as provided above, will be paid for at the predetermined reimbursement rate per hour of work site protection, which rate shall be full compensation for the work, complete, including, but not limited to, furnishing all materials, equipment and labor (exclusive of the operator) and maintaining and repairing the truck and truck mounted attenuator as specified herein and on the project plans. It shall be the contractor's responsibility to replace any damaged or destroyed parts of the attenuator at no additional expense to the Department.

(D) Flashing Arrow Panels:

The accepted quantity of flashing arrow panels, measured as provided above, will be paid for at the predetermined reimbursement rate, which rate shall be full compensation for the work, complete, including, but not limited to, operation, maintenance and movement on the job site.

(E) Pilot Trucks and Relocation Service Trucks:

The accepted quantities of pilot and relocation service trucks, measured as provided above, will be paid for at the predetermined hourly reimbursement rate, which rate shall be full compensation for the work, complete, including, but not limited to, furnishing and maintaining the vehicle.

(F) Flagging Services:

The accepted quantities of flagging services, measured as provided above, will be paid for at the predetermined hourly rate, which rate shall be full compensation for the work, complete, including, but not limited to, all overhead costs and fringe benefits. No additional compensation will be made to the contractor if the rate he is required to pay exceeds the predetermined reimbursement rate.

(G) Official Police Vehicle:

The accepted quantities of official police vehicles, measured as provided above, will be paid for at the predetermined reimbursement rate per kilometer, complete, including, but not limited to, furnishing and maintaining the vehicle.

(H) Truck Drivers (Pilot Truck, Relocation Service, and Truck Mounted Attenuation Device):

The accepted quantities of Truck Drivers, measured as provided under Subsection 701-5 of the Specifications, will be paid for at the predetermined reimbursement rate per hour, which rate shall be full compensation for the work, complete, including, but not limited to, all overhead costs and fringe benefits. No additional payment will be made to the contractor if the rate he is required to pay exceeds the predetermined reimbursement rate.

(I) Relocation Service, Barricade Setter:

The accepted quantities of relocation service barricade setters, measured as provided above, will be reimbursed at the predetermined reimbursement rate per hour, which rate shall be full compensation for the work, complete, including, but not limited to, all overhead costs and fringe benefits. No additional payment will be made to the contractor if the rate he is required to pay exceeds the predetermined reimbursement rate.

(J) Maintain Changeable Message Board:

The accepted quantities of maintaining changeable message boards, measured as provided above, will be paid for at the predetermined reimbursement rate per hour, which

rate shall be full compensation for the work, complete, including, but not limited to, furnishing, moving, and maintaining the board as specified herein.

(K) Vertical Panels, Barricades, Warning Lights, Signs, Sign Stands/Posts, Traffic Cones, Tubular Markers, Flag Trees, and Drums:

The accepted unit quantities of vertical panels, barricades, warning lights, signs, sign stands/posts, traffic cones, tubular markers, flag trees and drums, measured as provided above on a daily basis, will be paid for at the predetermined reimbursement rate, which rate shall be full compensation for the use and maintenance of each device (in use).

Payment for relocation of vertical panels, barricades, warning lights, signs, sign stands, traffic cones, tubular markers, flag trees, drums, and work of a progressive nature will be made in accordance with the procedures of Subsection 701-4.03.

The work of removing and reinstalling signs on embedded posts will be reimbursed at the relocation service rates, regardless of the type of work or operation, when directed by the Engineer.

The predetermined reimbursement rate for signs, vertical panels, and flag trees includes the cost of flags and ballasting.

The predetermined reimbursement rate for barricades includes the cost of ballasting.

SECTION 702 - ATTENUATION DEVICES:

702-2 **Materials:** of the Standard Specifications is modified to add:

A list of approved manufacturers and distributors of components for sand barrel crash cushions which meet the requirements of NCHRP 230 is given below:

(1) Manufacturer:

Energy Absorption Systems, Inc.
One East Wacker Drive
Chicago, Illinois 60611

Roadway Safety Service, Inc.
700-3 Union Parkway
Ronkonkoma, New York 11779

(2) Distributor:

Energy Absorption Systems, Inc
8585 Thys Court
Sacramento, California 95828

Jerry Fondaw & Associates
P.O. Box 50280
Phoenix, Arizona 85076

Components supplied by manufacturers other than those listed above shall be approved by the Department prior to use.

SECTION 704 - THERMOPLASTIC STRIPES AND MARKINGS: the title and text of the Standard Specifications are revised to read:

SECTION 704 - THERMOPLASTIC PAVEMENT MARKINGS:

704-1 Description:

The work under this section shall consist of cleaning and preparing pavement surfaces and furnishing and applying either white or yellow thermoplastic reflectorized pavement markings using extrusion, ribbon or spray dispensing devices of the required shape and thickness to the prepared pavement surface at the locations and in accordance with the details shown on the project plans, the manufacturer's specifications, and the requirements of these specifications.

704-2 Materials:

704-2.01 General Requirements:

The thermoplastic reflectorized material shall consist of a solid mixture of heat-stable resins, white or yellow pigment, inter-mixed glass beads, filler, and other materials in granular or block form specifically compounded for reflectorized pavement markings to be applied to the pavement in a molten state. The characteristics of the liquefied material shall be such that complete and even coverage of specified areas to the required thicknesses is provided by the required application method and rate. Upon cooling to normal pavement temperature, this material shall produce an adherent reflectorized marking capable of resisting deformation and wear in the roadway.

Only thermoplastic materials currently shown on the Department's Approved Products List shall be used. The current Approved Products List is available from the Engineering Records Office, 1655 West Jackson, Phoenix, AZ 85007, Phone (602) 255-8216.

704-2.02 Composition:

The thermoplastic composition shall conform to the following requirements:

	Percent by Weight	
	White	Yellow
Binder (hydrocarbon or alkyd)	18 - 26	18 - 26
Titanium dioxide	10 - 15	-----
Basic lead chromate	-----	2 - 10

Reflective glass inter-mix beads	30 - 40	30 - 40
Calcium carbonate or equivalent filler	20 - 40	25 - 45

The ingredients of the thermoplastic composition shall be thoroughly mixed and in a solid or sectionalized block, or free-flowing granular form. When heated in a melting apparatus, the material shall readily liquefy into a uniform solution. This solution shall be free from all skins, dirt, foreign objects or any other ingredient which would cause bleeding, staining, blotting, or discoloration when applied to the bituminous or concrete pavement surfaces.

The thermoplastic shall be one of the following two types based on the binder composition:

Hydrocarbon: Shall consist mainly of synthetic petroleum hydrocarbon resins with appropriate fillers and pigments.

Alkyd: Shall consist of a mixture of synthetic resins, at least one of which is solid at room temperature, and of high-boiling-point plasticizers. At least one third of the binder composition and no less than eight percent by weight of the entire material formulation shall be solid maleic-modified glycerol ester resin. The alkyd binder shall not contain any petroleum-based hydrocarbon resins.

An alkyd thermoplastic formulation shall be used for all symbols, legends, and transverse lines, including stop bars and crosswalks. Either an alkyd or hydrocarbon thermoplastic formulation may be used for longitudinal lines, including lane lines and edge lines, unless otherwise shown on the project plans or specified herein. Extrusion or spray formulations shall be used in accordance with requirements of the application equipment used to install the markings.

(A) Reflective Glass Beads:

In addition to incorporating glass beads in the thermoplastic mix, glass beads shall be evenly applied to the surface of the molten material, immediately after application, at a minimum rate of 0.5 kilograms of glass beads per square meter of line (10 linear meters of 100-millimeter stripe).

(B) Filler:

The filler shall be a white calcium carbonate or equivalent filler with a compressive strength of at least 34 megapascals.

(C) Titanium Dioxide:

Titanium Dioxide shall conform to the requirements of ASTM D 476 for Type II (92 percent).

(D) Lead Chromate Pigment:

The lead chromate pigment shall be silica double encapsulated heat resistant lead chromate pigment.

704-2.03 Physical Characteristics of the Composition:

(A) General Requirements:

The thermoplastic material shall not exude fumes which are toxic, injurious, or require specialized breathing apparatus when heated to the temperature range specified by the manufacturer for application. The material shall remain stable when held for four hours at this temperature, or when subjected to four reheatings, not exceeding a total of four hours, after cooling to ambient temperature. The temperature viscosity characteristics of the plastic material shall remain constant throughout the reheatings and shall show like characteristics from batch to batch. There shall be no obvious change in color of the thermoplastic material as a result of reheating, and the color of the material shall not vary from batch to batch.

(B) Color:

The thermoplastic material, after heating for four hours \pm five minutes at $218 \pm$ two $^{\circ}\text{C}$ and cooled to $25 \pm$ two $^{\circ}\text{C}$, shall meet the following:

White: Daylight reflectance at 45 degrees - 0 degrees shall be 70 percent minimum.

The color shall match Federal Test Standard Number 595, color chip no. 17925.

Yellow: Daylight reflectance at 45 degrees - 0 degrees shall be 43 percent minimum.

The color shall match Federal Test Standard Number 595, color chip no. 13538.

(C) Retroreflectance:

The white and yellow thermoplastic materials shall have the following minimum retroreflectance values at 86.5 degrees illumination angle and 1.5 degrees observation angle as measured by a Mirolux 12 portable retroreflectometer or similar approved device within 30 days after application to the roadway surface:

Product	Retroreflectance (Millicandelas)
---------	----------------------------------

White	200
Yellow	125

(D) Softening Point:

After heating the thermoplastic material for four hours \pm five minutes at $218 \pm$ two $^{\circ}\text{C}$ and testing in accordance with ASTM D 36, the thermoplastic materials shall have a softening point of $102 \pm$ eight $^{\circ}\text{C}$.

(E) Water Absorption and Specific Gravity:

The thermoplastic material shall not exceed 0.5 percent by weight of retained water when tested in accordance with the requirements of ASTM D 570.

The specific gravity of the material, as determined by Section 11 of AASHTO T 250, shall be between 1.85 and 2.3.

(F) Impact Resistance:

After heating the thermoplastic material for four hours \pm five minutes at $218 \pm$ two $^{\circ}\text{C}$ and forming test specimens, the impact resistance shall be not less than 1.13 joules when tested in accordance with Section 9 of AASHTO T 250.

(G) Bond Strength:

After heating the thermoplastic material for four hours \pm five minutes at $218 \pm$ two $^{\circ}\text{C}$, the bond strength to portland cement concrete shall be not less than 1.2 megapascals. The bond strength shall be determined in accordance with the procedures specified in Section 7 of AASHTO T 250.

(H) Abrasion Resistance:

The abrasion resistance of the thermoplastic material shall be determined by forming a representative lot of the material at a thickness of 3.2 millimeters on a 100- by 100-millimeter square monel panel (thickness 1.27 ± 0.02 millimeters), on which a suitable primer has been previously applied, and subjecting it to 200 revolutions on a Taber Abraser at 25°C , using H-22 calibrated wheels weighted to 250 grams. The wearing surface shall be kept wet with distilled water throughout the test.

The maximum loss of thermoplastic material shall be 0.5 grams.

(I) Cracking Resistance at Low Temperature:

After heating the thermoplastic material for four hours \pm five minutes at $218 \pm$ two $^{\circ}\text{C}$, applying to concrete blocks, and cooling to (-) nine \pm two $^{\circ}\text{C}$, the material shall show no cracks when observed from a distance exceeding 300 millimeters. Testing for low temperature crack resistance shall be in accordance with the procedures specified in Section 8 of AASHTO T 250.

(J) Flowability:

After heating the thermoplastic material for four hours \pm five minutes at $218 \pm$ two $^{\circ}\text{C}$ and testing for flowability in accordance with Section 6 of AASHTO T 250, the white thermoplastic shall have a maximum percent residue of 18, and the yellow thermoplastic shall have maximum percent residue of 21.

(K) Yellowness Index:

The white thermoplastic material shall not exceed a yellowness index of 0.12 when tested in accordance with Section 4 of AASHTO T 250.

(L) Flowability (Extended Heating):

After heating the thermoplastic material for eight \pm 1/2 hours at $218 \pm$ two $^{\circ}\text{C}$, with stirring the last six hours, and testing for flowability in accordance with Section 12 of AASHTO T 250, the thermoplastic shall have a maximum percent residue of 28.

(M) Flash Point:

The thermoplastic material shall have a flash point not less than 246°C when tested in accordance with the requirements of ASTM D 92.

(N) Storage Life:

The materials shall meet the requirements of this specification for a period of one year from the date of manufacture. The month and year of manufacture shall be clearly marked on all packages of thermoplastic material. The thermoplastic material must also melt uniformly with no evidence of skins or unmelted particles for this one year period. Any material which does not meet the above requirements, or which is no longer within this one year period at the time of application, shall not be used. The contractor shall replace any outdated material with material meeting the above performance and time requirements at no additional cost to the Department.

(O) Primer Sealer:

Primer-sealers shall be used on portland cement concrete, or existing hot mix asphaltic concrete surfaces prior to application of the thermoplastic material, and shall be applied as

recommended by the thermoplastic material manufacturer. The primer-sealer shall be compounded specifically for use with the specified thermoplastic material.

Application of primer-sealer will not be required on newly placed hot-mix asphaltic concrete surfaces prior to application of the thermoplastic material.

704-2.04 Physical Requirements for Glass Beads:

Inter-mix and drop-on reflective glass beads shall conform to the requirements of Subsection 708-2.02, except as noted herein.

The inter-mix beads shall conform to AASHTO M 247-81 (1986), type I, and may be coated or uncoated as recommended by the manufacturer. If uncoated beads are used, the thermoplastic formulation shall be configured to minimize settling of the intermix beads when the material is heated and applied.

If recommended by the manufacturer, the drop-on beads shall have an adherence coating.

704-3 Construction Requirements:

704-3.01 Equipment:

The equipment used to install hot applied thermoplastic material shall be constructed to provide continuous uniform heating to temperatures exceeding 204 °C while mixing and agitating the material. The heating mechanism of the kettle shall be equipped with a heat transfer medium consisting of oil or air. The burner flame shall not directly contact the material vessel surface. The mixing and agitating mechanism shall be capable of thoroughly mixing the material at a rate which ensures constant uniform temperature distribution. The kettle shall be equipped with two temperature gauges: one to indicate the temperature of the oil or air heat transfer medium, and the other to indicate the temperature of the thermoplastic material. The kettle shall also be equipped with an automatic thermostatic control device that allows for positive temperature control to prevent overheating or underheating of the material.

The conveying portion of the equipment, between the kettle and the line dispensing device shall be configured to prevent accumulation and clogging, and shall maintain the material at the specified application temperature. The dispensing device shall be capable of applying the required shapes and thicknesses. All parts of the equipment which will come in contact with the material shall be constructed for easy accessibility for cleaning and maintenance.

All melting and application equipment shall have functioning and calibrated temperature sensing devices to verify that temperature requirements are being met. The contractor shall provide proof that the temperature sensing devices and verification thermometers are fully functional.

The application equipment to be used on roadway long line installations shall consist of either truck-mounted units or motorized ride-on equipment. The truck-mounted or motorized ride-on units used for center lines, lane lines, gore lines, and edge lines shall consist of a mobile self-contained unit carrying its own material capable of operating at a minimum speed of five miles per hour while applying striping, and shall be sufficiently maneuverable to install curved and straight lines, both longitudinally and transversely.

The truck shall be equipped with high pressure air spray jets in front of the pavement marking material applicators to remove loose matter from the pavement surface where the marking material is to be applied.

Hand applicator equipment, to be used for all other roadway installations, shall be either self-contained melter application units or reservoir application units that are filled from a separate melter unit. Both types of units shall be equipped to maintain and measure the required application temperatures. The hand applicator equipment shall be sufficiently maneuverable to install symbols and legends, and curved and straight lines, both longitudinally and transversely.

The application equipment shall be so constructed as to assure continuous uniformity in the dimensions of the pavement marking. The applicator shall provide a means for cleanly cutting off square pavement markings edges and provide a method of applying "skip" and solid lane lines. The equipment shall be constructed to provide varying widths and thicknesses of pavement markings. The application equipment shall be mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. The equipment operator shall be located in such a position as to enable full visibility of the striping apparatus.

A glass bead top dressing shall be applied to the completed thermoplastic stripe by an automatic glass bead dispenser attached to the striping machine in such a manner that the beads are applied to the molten thermoplastic material immediately after it has been applied to the pavement. The bead dispenser shall use pressure-type spray guns for truck-mounted or motorized ride-on units, and a drop-on bead dispenser for hand applicators. The bead dispenser shall be capable of evenly distributing glass beads at the required application rate immediately after the application of the thermoplastic. The bead dispenser shall dispense the beads in such a manner that they shall be embedded in the surface of the molten thermoplastic to an anchoring depth of from 55 to 60 percent of the bead diameter. The bead dispenser shall be equipped with an automatic cut-off which is synchronized with the cut-off of the thermoplastic material.

The heating kettle and application equipment shall meet the requirements of the National Fire Underwriters, the National Fire Protection Association, and other applicable federal, state and local authorities. Thermoplastic melting units, trucks or trailers, shall be equipped with foam-type fire extinguishers suitable for application to thermoplastic material that is at the flash point.

704-3.02 Application:

(A) Placement Locations:

Pavement markings shall be positioned as defined on the plans and in the specifications. When it becomes necessary for proper installation, the Engineer may revise individual marking locations as necessary to accommodate the following requirements:

Marking lines shall not be placed on parallel construction or expansion joints. Longitudinal lines shall be offset to provide 50 to 100 millimeters of clearance from parallel construction and expansion joints unless directed otherwise by the Engineer.

Placement of symbols and legends on construction joints, expansion joints or uneven pavement surfaces shall be avoided. Where the location of construction joints, expansion joints or otherwise unsuitable surfaces conflicts with specified locations for symbols or legends, the Engineer will designate the symbol or legend location. The contractor shall identify such location conflicts for the Engineer's determination.

(B) Materials Selection and Compatibility:

All thermoplastic material, drop-on glass beads, and primer-sealer will be inspected and approved by the Engineer prior to their application. The contractor shall also provide samples of said materials if requested by the Engineer.

All materials shall be properly packaged and stored. Each container to be used on the project shall be clearly labeled to indicate the following information:

- Nature, type, and formulation of the material, including whether it is an alkyd or hydrocarbon;
- Manufacturer, batch number, and date of manufacture;
- Application requirements and constraints; and
- Compatibility requirements and constraints, particularly those pertaining to equipment, storage, and other materials to be used.

Preparation and application equipment shall be in accordance with the plans and specifications, and shall conform to the recommendations of the materials manufacturer.

Incompatible materials shall not be used together. The contractor shall not combine alkyd and hydrocarbon materials in preparation or application equipment. The contractor shall completely clean preparation and application equipment when materials are changed.

The contractor shall dispose of excess materials, cleaning fluids, and all empty material containers at a site approved by the Engineer.

(C) Equipment Inspections and Deficiencies

The contractor shall make daily maintenance and operation inspections of all application equipment to ensure that it is operable within the requirements of the specifications. The contractor shall inform the Engineer of any equipment breakdowns, intermittent malfunctions, or other conditions that may impact the proper application of specified markings. Any equipment judged to be unsuitable by the Engineer shall be repaired or replaced.

(D) Pavement Surface

The contractor shall remove all dirt, dust, grease, oil, loose surfacing materials, poorly adhered existing markings, or other detrimental material from the road surface prior to application of the thermoplastic material.

The method of cleaning the surface is subject to approval by the Engineer and shall include sweeping and the use of high-pressure air spray. The method of surface preparation shall also be in accordance with the recommendations of the thermoplastic material manufacturer. Loose material including all grindings and obliterated markings shall be removed from the pavement surface and disposed of properly.

When thermoplastic markings are to be applied to new portland cement concrete pavement, any curing compound present shall be removed by means of a high-pressure water jet or sandblasting, followed by sweeping and high-pressure air spray. The curing compound shall be removed at least 50 millimeters beyond the entire perimeter of each marking to be installed.

At the time of application of primer-sealer and thermoplastics, the road surface shall be absolutely dry with no detectable or measurable surface or near-surface dampness. If precipitation or other surface wetting is imminent, all marking operations shall be stopped. If any surface dampness is detected during marking activities, marking operations shall be stopped until the pavement dries. If the hot-applied thermoplastic marking blisters upon application, marking operations shall be stopped until the cause, potentially including subsurface moisture, is determined and corrected.

(E) Primer Application

On both old and new portland cement concrete pavement, a primer-sealer shall be used if recommended by the thermoplastic manufacturer. The primer-sealer shall be applied at the manufacturer's recommended application rates prior to placing the thermoplastic material. The primer-sealer shall be allowed to set up for the manufacturer's specified cure or evaporation time, and shall be free of solvent and water when the thermoplastic is applied.

The thermoplastic material shall be applied to primed pavement surfaces within the working time specified by the primer-sealer and thermoplastic materials manufacturers. If the primed surfaces are not marked within these time limits, the contractor shall re-prime the

surfaces as required by the manufacturer at no additional cost to the Department. If an epoxy primer is used, the thermoplastic application shall be completed before the epoxy has cured.

Improper primer-sealer application may result in bond failure between the thermoplastic and the pavement surface and may cause the thermoplastic surface to pinhole or blister. Should these conditions occur, all application operations shall stop until the cause is determined and corrected. All such defective markings shall be removed and replaced at no additional cost to the Department.

(F) Pavement Temperatures

Ribbon-gun application procedures shall not be used if the wind chill factor is below 18 °C.

For other application procedures, the road surface temperature at the time of application shall be a minimum of 13 °C and rising.

If at any time during marking operations the air or pavement temperature falls below these requirements, all marking operations shall stop.

The contractor shall measure pavement surface temperatures one half hour prior to the start of the striping installation activities and as deemed necessary by the Engineer until the end of the application period. For elevation changes greater than 300 meters, temperature readings at the highest elevation shall govern unless otherwise directed by the Engineer. The lowest temperature so measured shall govern, unless otherwise directed by the Engineer. The temperature measurements shall be recorded in a log book and provided to the Engineer when required. The pavement surface temperature shall be measured with a standard surface temperature thermometer or a non-contact infrared thermometer.

(G) Thermoplastic Application

The thermoplastic pavement marking material shall be extruded or sprayed on to the pavement surface at a material temperature between 204 and 227 °C, depending on manufacturer's recommendations, ambient air and pavement temperatures, and the nature of the pavement surface. The contractor shall verify temperature requirements with a non-contact infrared thermometer as directed by the Engineer.

The alkyd and hydrocarbon thermoplastic material temperatures shall not exceed 232 °C. Material temperatures exceeding 227 °C shall be allowed for short periods of time; however, in no case shall the material be held for more than four hours at temperatures above 227 °C. Total heating time for any batch of material shall not exceed six hours. The contractor shall note in the temperature log the time when each batch of thermoplastic material is first heated. The start of heating time shall also be marked on the side of the kettle to which it applies.

Specified temperature requirements shall be maintained at all times during application. The contractor shall monitor material temperature at thirty minute intervals, unless otherwise directed by the Engineer, and maintain a log of temperature readings taken. Readings shall be taken at the melting kettle or the application outlet point, as determined by the Engineer.

The contractor shall minimize the thermoplastic material remaining in the kettle at the end of the work day and shall blend a minimum of 80 percent fresh material the start of each day. During project delays, the contractor may transfer heated thermoplastic material into approved containers for later re-use, subject to specified limits on total acceptable heating time for each batch.

Drop-on glass beads shall be mechanically deposited, at the specified rate, into the thermoplastic material immediately after the thermoplastic marking is applied. The bead dispenser shall evenly distribute the beads such that they embed in the surface of the thermoplastic to a depth of between 50 and 60 percent of the bead diameter. If the glass beads do not adhere to the thermoplastic marking, operations shall be stopped until the problem has been corrected. All markings which do not meet the requirements of Subsection 704-2.03(C), as determined by the Engineer, shall be removed by the contractor and replaced at no additional cost to the Department.

Unless otherwise specified, thermoplastic pavement markings for legends and symbols, and for crosswalks, stop bars and other transverse elements, shall be extruded, and shall be 2.3 ± 0.05 millimeters thick. Longitudinal markings, such as edge lines, lane lines, gore lines, and other markings parallel to traffic, shall be sprayed thermoplastic, and shall be 1.5 ± 0.05 millimeters thick. Longitudinal markings of approximately 60 meters or less may be extruded, and shall be a minimum of 1.5 ± 0.05 millimeters thick. The thermoplastic thickness shall be uniform and consistent throughout the total length of the marking project.

The contractor shall perform periodic spot checks of thermoplastic material to verify that the required thickness has been attained. Random spot checks of the thermoplastic thickness will be made by the Engineer to ensure conformance with the required criteria. Suggested spot check procedures include the following:

- Wet: Thickness can be field tested immediately after the thermoplastic marking is applied by inserting a thin, graduated machinist rule or similar instrument into the molten thermoplastic to the depth of the pavement surface. The thickness is then determined visually by noting on the scale the depth of the penetration or coating of the instrument.
- Dried: Thickness can be field tested by placing a small flat sheet of metal with a known thickness immediately ahead of the striping apparatus. After striping, remove the sample and use a suitable measuring device, such as a caliper or micrometer, to determine the thickness of the dried marking.

The finished thermoplastic line shall have well defined edges and be free from waviness. Lateral deviation of the thermoplastic line shall not exceed 25 millimeters in 30 meters. The longitudinal deviation of a painted segment and gap shall not vary more than 150 millimeters in a 12-meter cycle. The actual width of line shall be within the limits specified in the following table, according to the width of line called for on the plans:

Plan Width	Actual Width
100 millimeters	100 to 115 millimeters
200 millimeters	200 to 225 millimeters
Over 200 millimeters	± 25 millimeters

After application and sufficient drying time, the thermoplastic marking shall show no appreciable deformation or discoloration under local traffic conditions with air and road temperatures ranging from (-) 23 to (+) 82 °C. The drying time shall be defined as the minimum elapsed time, after application, when the thermoplastic pavement markings shall have and retain the characteristics required herein, and after which normal traffic will leave no impression or imprint on the newly applied marking. When applied within a temperature range of 211 ± seven °C and thickness range of 1.5 to 2.3 millimeters, the material shall set to bear traffic in not more than two minutes when the air and pavement surface temperatures are approximately 10 ± two °C, and not more than ten minutes when the air and road surface temperatures are approximately 32 ± two °C. The Engineer may conduct field tests in accordance with ASTM D 711 to verify actual drying times.

704-4 Method of Measurement:

Thermoplastic pavement longitudinal and transverse markings, such as edge lines, lane lines, gore lines, cross-walks and stop bars, will be measured by the linear meter along the center line of the pavement marking line and will be based on a 100-millimeter-wide line. Measurement for striping with a plan width greater or less than the basic 100 millimeters as shown on the plans or directed by the Engineer will be made by the same method and then adjusted by the following factor:

$$\frac{\text{Plan Width of Striping (millimeters)} \times \text{Linear Meters}}{100 \text{ (millimeters)}}$$

No measurement will be made of the number of linear meters of gaps in dashed lines.

Double marking lines, consisting of two 100-millimeter-wide stripes, will be measured as two individual marking lines. Crosswalk lines, stop bars, stop lines, gore lines, cross hatch lines, chevron lines and railroad marking transverse lines will be measured for centerline length and adjusted for widths other than 100-millimeters, as defined above.

Thermoplastic pavement marking symbols, such as diamonds, or single, double, or triple arrows, will be measured by each unit applied. Each pavement symbol, as shown on the plans, will be considered a unit.

Thermoplastic pavement marking legends, defined as a complete letter grouping such as "SCHOOL," "XING," "STOP," "RR," or "ONLY.", will be measured by each unit applied. Each pavement legend, as shown on the plans, will be considered a unit.

No separate measurement or payment will be made for cleaning and preparing the pavement surface, including abrasive sweeping and high-pressure air spray, and for disposal of excess materials, cleaning fluids, and empty material containers, the cost being considered as included in contract items.

Removal of curing compound from new portland cement concrete pavement and the application of primer-sealer, which is to be applied to both old and new portland cement concrete pavement prior to application of thermoplastic marking, shall be measured by the linear meter for striping lines regardless of width, or unit each for symbols and legends, and in accordance with the items of work established in the bid schedule.

704-5 Basis of Payment:

The accepted quantities of thermoplastic pavement markings of the type specified in the bidding schedule, measured as provided above, will be paid for at the contract unit price, complete in place, including pavement surface preparation and glass beads.

The accepted quantities for removal of curing compound from new portland cement concrete pavement and the application of primer-sealer, measured as provided above, will be paid for at the respective contract unit prices, under the items of work established in the bid schedule.

(705PVMRK, 07/31/90)

SECTION 705 - PREFORMED PLASTIC PAVEMENT MARKING:

705-2.01 **Preformed Pavement Markings - Type I (Permanent):** of the Standard Specifications is modified to add:

(D) Performance Testing:

The following are approved Type I Preformed Pavement Marking Materials:

Stamark Brand Series 5730/5731
3M Corporation
St. Paul, Minnesota 55144

Stamark Brand Series 350/351
3M Corporation
St. Paul, Minnesota 55144

Ferro/Cataphote
Ferro Corporation
P.O. Box 2369
Jackson, Mississippi 39225-2369

Materials other than those listed above may be used but must be approved by the Department prior to use.

SECTION 706 - RAISED PAVEMENT MARKERS:

706-2.05 Bituminous Adhesive: of the Standard Specifications is modified to add:

The bituminous adhesive for pavement markers shall be a hot-melt adhesive manufactured by one of the following approved manufacturers:

Signal Products Division
Amerace Corporation
7542 N. Natchez Avenue
Niles, Illinois 60648

or

Crafco, Incorporated
6975 West Crafco Way
Chandler, Arizona 85226

Materials by manufacturers other than those listed above may be used but must be approved by the Department prior to use.

APPENDIX "F"

**SAMPLE CONTRACTOR'S RIGHT OF ENTRY AGREEMENT
FOR THE UNION PACIFIC RAILROAD**

**SAMPLE CONTRACTOR'S APPLICATION FOR PRIVATE ROAD CROSSING
FOR THE UNION PACIFIC RAILROAD**

UNION PACIFIC RAILROAD COMPANY

Real Estate Department

R. D. Uhrich
Assistant Vice President
J. A. Anthony
Director-Contracts
D. D. Brown
Director-Real Estate
M. W. Casey
General Director-Special Properties
J. P. Gade
Director-Facility Management



1800 Farnam Street
Omaha, Nebraska 68102
Fax (402) 997-3601

J. L. Hawkins
Director-Operations Support
M. E. Heenan
Director-Administration & Budgets
D. H. Lightwine
Director-Real Estate
T. K. Love
Director-Real Estate

Folder No.: 1607-41

To the Contractor:

Before the Railroad Company can permit you to perform work on its right of way for the installation of an underground storm water discharge concrete box culvert crossing/encroachment, for Arizona Department of Transportation, it will be necessary to complete the enclosed Contractor's Right of Entry Agreement as follows:

1. Fill in the complete legal name of the contractor in the space provided on Page 1 of the Contractor's Right of Entry Agreement. If a corporation, give the state of incorporation. If a partnership, give the names of all partners.
2. Fill in the date construction will begin and be completed in Article 6, Paragraph A.
3. Fill in the name of the contractor in the space provided in the signature block at the end of the Contractor's Right of Entry Agreement. If the contractor is a corporation, the person signing on its behalf must be an elected corporate officer.
4. Return all copies of the Contractor's Right of Entry Agreement together with your Certificate of Insurance as required in Exhibit B-1, in the attached, self-addressed envelope.
5. Check made payable to the Union Pacific Railroad Company in the amount of \$500.00. If you require formal billing, you may consider this letter as a formal bill. In compliance with the Internal Revenue Services' new policy regarding their Form 1099, I certify that 13-6400825 is the Railroad Company's correct Federal Taxpayer Identification Number and that Union Pacific Railroad Company is doing business as a corporation.

After approval of the Contractor's Right of Entry Agreement and the Insurance Certificate, your fully-executed document will be returned to you, with instructions to proceed. In no event should you begin work until you have received a copy of the signed Contractor's Right of Entry Agreement.

Yours truly,

A handwritten signature in cursive script that reads "Mary C. Gross".

MARY C. GROSS
CONTRACT - REPRESENTATIVE
(402) 997-3623

CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

THIS AGREEMENT is made and entered into as of the _____ day of _____, 199____, by and between **UNION PACIFIC RAILROAD**, a Delaware corporation (hereinafter referred as the "Railroad"); and _____ a _____ corporation (hereinafter referred to as the "Contractor").

RECITALS:

The Contractor has been hired by The Flood Control District of Maricopa County for the Arizona Department of Transportation for the purpose of constructing (hereinafter "work") an underground reinforced concrete box culvert crossing/encroachment on property of the Railroad at or near Mile Post 924.0, at or near Chandler, Maricopa County, AZ.

The Contractor has requested the Railroad to permit it to perform the work and Railroad is agreeable thereto, subject to the following terms and conditions.

AGREEMENT:

NOW, THEREFORE, it is mutually agreed by and between the Railroad and Contractor, as follows:

ARTICLE 1 - ADMINISTRATIVE HANDLING FEE

Upon the execution of this Agreement, the Licensee shall pay to the Licensor a one-time administrative handling fee of **FIVE HUNDRED DOLLARS (\$500.00)**.

ARTICLE 2. DEFINITION OF CONTRACTOR

For purposes of this agreement, all references in this agreement to the Contractor shall include the Contractor's contractors, subcontractors, officers, agents and employees, and others acting under its or their authority.

ARTICLE 3. RIGHT GRANTED; PURPOSE

The Railroad hereby grants to the Contractor the right, during the term hereinafter stated and upon and subject to each and all of the terms, provisions and conditions herein contained, to enter upon and have ingress to and egress from the property described in the Recitals hereof and as shown on the attached print dated November 18, 1997, marked Exhibit A for the purpose of performing the work described in the Recitals above. The right herein granted to Contractor is limited to those portions of the Railroad's property specifically described herein, or designated by the Railroad representative named in Article 5.

ARTICLE 4. TERMS AND CONDITIONS CONTAINED IN EXHIBITS B AND B-1

The terms and conditions contained in Exhibits B and B-1, heretoattached, are hereby made a part of this agreement.

ARTICLE 5. ALL EXPENSES TO BE BORNE BY CONTRACTOR; RAILROAD REPRESENTATIVE

The Contractor shall bear any and all costs and expenses associated with any work performed by the Contractor, or

any costs or expenses incurred by the Railroad relating to this agreement. All work performed by Contractor on Railroad's property shall be performed in a manner satisfactory to the respective local Superintendent of Transportation Services of the Railroad or his authorized representative (hereinafter the Railroad Representative).

ARTICLE 6. **TERM; TERMINATION**

- a). The grant of right herein made to Contractor shall commence on _____, and continue until _____, unless sooner terminated as herein provided, or at such time as Contractor has completed its work on Railroad's property, whichever is earlier. Contractor agrees to notify the Railroad Representative in writing when it has completed its work on Railroad property.
- b). This agreement may be terminated by either party on ten (10) days written notice to the other party.

ARTICLE 7. **CERTIFICATE OF INSURANCE**

- a). Before commencing any work, the Contractor will provide the Railroad with a Certificate issued by its insurance carrier providing the insurance coverage required pursuant to Exhibit B-1 of this agreement in a policy which contains the following type of endorsement:

Union Pacific Railroad Company, is named as additional insured with respect to all liabilities arising out of Insured's, as Contractor, performance of any work on the property of the Railroad.

- b). Contractor warrants that this agreement has been thoroughly reviewed by its insurance agent(s)/broker(s) and that said agent(s)/broker(s) has been instructed to procure insurance coverage and an endorsement as required herein.
- c). All insurance correspondence shall be directed to:

File No. 1607-41
Union Pacific Railroad Company
Mary C. Gross, Contract Representative
1416 Dodge Street, WP001
Omaha, Nebraska 68179

ARTICLE 8. **CHOICE OF FORUM**

Litigation arising out of or connected with this agreement may be instituted and maintained in the courts of the states of Nebraska and California only, and the parties consent to jurisdiction over their person and over the subject matter of any such litigation, in those courts, and consent to service of process issued by such courts.

ARTICLE 9. **SPECIAL PROVISIONS**

1. Licensor's local Manager of Track Maintenance and Operating Department will allow closure of the track for 72 hours for open-cut installation, provided Licensor is notified at least 30 days in advance of the construction.
2. Contractor shall install the culvert by open-cut methods in one 72 hour period to be agreed upon with the Railroad at least 30 days in advance of the construction.

3. All open-cut installations to be installed by the Contractor at this location, including the culvert owned by the Arizona Department of Transportation and the three pipelines owned by the Gila River Indian Community, shall be installed in one 72 hour time period. The 72 hour time period excludes time required by the Railroad to remove the track prior to installation of the culvert and pipelines, and to replace the track after installation.

IN WITNESS WHEREOF, the parties hereto have executed this agreement in duplicate as the date first herein written.

UNION PACIFIC RAILROAD

By _____
CONTRACT REPRESENTATIVE

WITNESS:

(Name of Contractor)

X _____

By _____
Title:

CONTRACTOR NAME: _____

CONTRACTOR ADDRESS: _____

FAX NUMBER _____

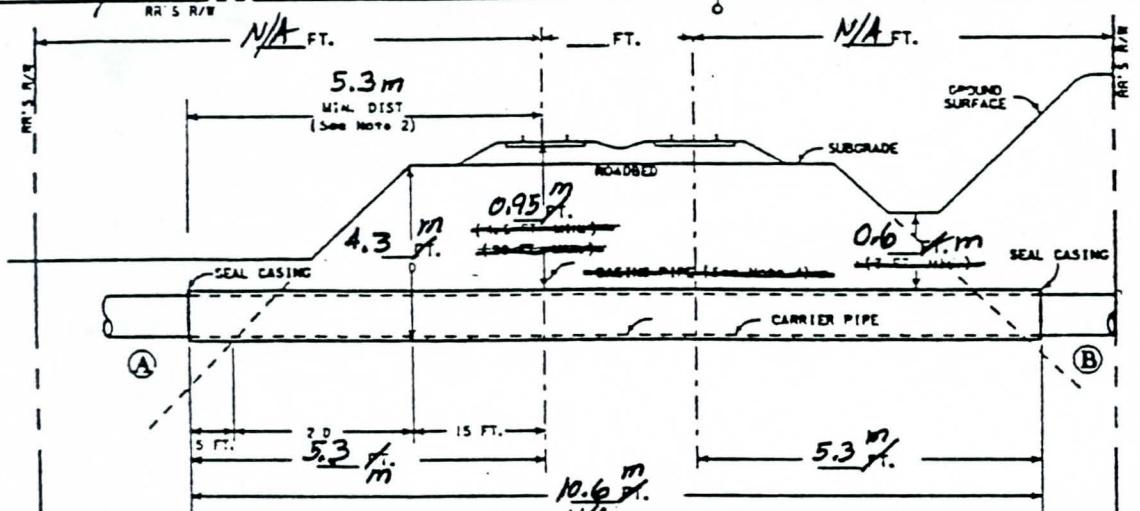
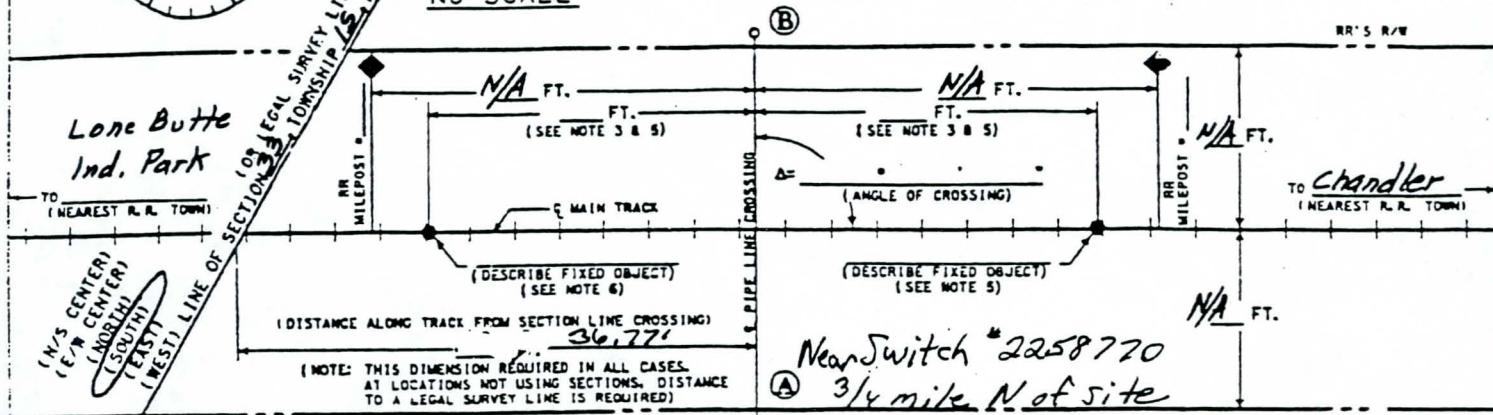
PLACE ARROW INDICATING NORTH
SECTION RELATIVE TO CROSSING



APPLICATION FOR ENCASED NON-FLAMMABLE PIPELINE CROSSING

NOTE: ALL AVAILABLE DIMENSIONS MUST BE
FILLED IN TO PROCESS THIS APPLICATION.

NO SCALE



MINIMUM THICKNESS	DIAMETER OF CASING PIPE
.2500" 1/4"	12" OR LESS
.3125" 5/16"	OVER 12"-18"
.3750" 3/8"	OVER 18"-22"
.4375" 7/16"	OVER 22"-28"
.5000" 1/2"	OVER 28"-34"
.5625" 9/16"	OVER 34"-42"
.6250" 5/8"	OVER 42"-48"

OVER 48" MUST BE APPROVED BY R. R. CO.
NOTE: THIS CHART IS ONLY FOR SMOOTH STEEL CASING PIPES WITH MINIMUM YIELD STRENGTH OF 35,000 PSI.

- NOTES:
- 1) ALL HORIZONTAL DISTANCES TO BE MEASURED AT RIGHT ANGLES FROM ϕ OF TRACK.
 - 2) CASING TO EXTEND BEYOND THE ϕ OF TRACK AT RIGHT ANGLES THE GREATER OF 20' FT., OR 30 FT., AND BEYOND LIMIT OF RAILROAD RIGHT-OF-WAY IF NECESSARY TO PROVIDE PROPER LENGTH OUTSIDE OF TRACK.
 - 3) MINIMUM OF 50' FROM THE END OF ANY RAILROAD BRIDGE, ϕ OF ANY CULVERT, OR FROM ANY SWITCHING AREA.
 - 4) SIGNAL REPRESENTATIVE MUST BE PRESENT DURING INSTALLATION IF RAILROAD SIGNALS ARE IN THE VICINITY OF CROSSING.
 - 5) ALLOWABLE FIXED OBJECTS INCLUDE: BACKBALLS OF BRIDGES; ϕ OF ROAD CROSSINGS & OVERHEAD VIADUCTS (GIVE ROAD NAME), OR CULVERTS.
 - 6) CASING AND CARRIER PIPE MUST BE PLACED A MINIMUM OF 2 FEET BELOW THE EXISTING FIBER OPTIC CABLE. ANY EXCAVATION REQUIRED WITHIN 5 FEET OF THE EXISTING FIBER OPTIC CABLE MUST BE HAND DUG.

A) IS PIPELINE CROSSING WITHIN DEDICATED STREET? YES; NO;

B) IF YES, NAME OF STREET N/A

C) DISTRIBUTION LINE _____ OR TRANSMISSION LINE

C) CARRIER PIPE:
COMMODITY TO BE CONVEYED Storm Water Discharge
OPERATING PRESSURE N/A PSI 2(3m @ 2.4m)
WALL THICKNESS _____; DIAMETER _____; MATERIAL RCB

E) CASING PIPE: N/A WALL THICKNESS N/A; DIAMETER N/A; MATERIAL N/A
NOTE: CASING MUST HAVE 2" CLEARANCE BETWEEN GREATEST OUTSIDE DIAMETER OF CARRIER PIPE AND INTERIOR DIAMETER OF CASING PIPE. WHEN FURNISHING DIMENSIONS, GIVE OUTSIDE OF CARRIER PIPE AND INSIDE OF CASING PIPE.

F) METHOD OF INSTALLING CASING PIPE UNDER TRACK(S): N/A
_____ DRY BORE AND JACK (WET BORE NOT PERMITTED);
_____ TUNNEL; OTHER _____

G) WILL CONSTRUCTION BE BY AN OUTSIDE CONTRACTOR? YES; _____ NO;

H) DISTANCE FROM CENTER LINE OF TRACK TO NEAR FACE OF BORING AND JACKING PITS WHEN MEASURED AT RIGHT ANGLES TO TRACK N/A (50' MIN.)

I) APPLICANT HAS CONTACTED Mark Moran OF U. P. COMMUNICATION DEPARTMENT AND HAS DETERMINED FIBER OPTIC CABLE _____ DOES; DOES NOT; EXIST IN VICINITY OF WORK TO BE PERFORMED. TICKET NO. 1025063

Note: Crossing is under a single track.

B
A SIN
C TRACK
B MIN. DIST. (NOTE 2)

EXHIBIT "A"
(FOR RAILROAD USE ONLY)

Union PACIFIC RAILROAD CO.
Gila Sub - TEMPE BRANCH - 2ND LGA
OPPOSITE 9238 (DIVISION)
BR. M. P. 924.0 E. S. 51+05'

ENCASED Pipeline CROSSING AT
Chandler Maricopa AZ
(NEAREST CITY) (COUNTY) (STATE)

Arizona Dept. of Transportation
(APPLICANT)

RR FILE NO. 1607-41 DATE 11-18-92

WARNING

IN ALL OCCASIONS, U. P. COMMUNICATIONS DEPARTMENT MUST BE CONTACTED IN ADVANCE OF ANY WORK TO DETERMINE EXISTENCE AND LOCATION OF FIBER OPTIC CABLE.
PHONE: 1-800-336-9193

EXHIBIT B TO CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

Section 1. NOTICE OF COMMENCEMENT OF WORK - FLAGGING.

The Contractor agrees to notify the Railroad Representative at least 48 hours in advance of Contractor commencing its work and at least 24 hours in advance of proposed performance of any work by the Contractor in which any person or equipment will be within 25 feet of any track, or will be near enough to any track that any equipment extension (such as, but not limited to, a crane boom) will reach to within 25 feet of any track. Upon receipt of such notice, the Railroad Representative will determine and inform the Contractor whether a flagman need be present and whether the Contractor need implement any special protective or safety measures. If any flagmen or other special protective or safety measures are performed by the Railroad, such services will be provided at Contractor's expense with the understanding that if the Railroad provides any flagging or other services the Contractor shall not be relieved of any of its responsibilities or liabilities set forth herein.

Section 2. NO INTERFERENCE WITH RAILROAD'S OPERATION.

No work performed by Contractor shall cause any interference with the constant, continuous and uninterrupted use of the tracks, property and facilities of the Railroad its lessees, licensees or others, unless specifically permitted under this agreement, or specifically authorized in advance by the Railroad Representative. Nothing shall be done or suffered to be done by the Contractor at any time that would in any manner impair the safety thereof. When not in use, Contractor's machinery and materials shall be kept at least 50 feet from the centerline of Railroad's nearest track, and there shall be no vehicular crossings of Railroad's tracks except at existing open public crossings.

Section 3. MECHANIC'S LIENS.

The Contractor shall pay in full all persons who perform labor or provide materials for the work to be performed by Contractor. The Contractor shall not create, permit or suffer any mechanic's or materialmen's liens of any kind or nature to be created or enforced against any property of the Railroad for any such work performed. The Contractor shall indemnify and hold harmless the Railroad from and against any and all liens, claims, demands, costs or expenses of whatsoever nature in any way connected with or growing out of such work done, labor performed, or materials furnished.

Section 4. PROTECTION OF FIBER OPTIC CABLE SYSTEMS.

a). Fiber optic cable systems may be buried on the Railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. Contractor shall telephone the Railroad at 1-800-336-9193 (a 24-hour number) to determine if fiber optic cable is buried anywhere on the Railroad's premises to be used by the Contractor. If it is, Contractor will telephone the telecommunications company(ies) involved, arrange for a cable locator, make arrangements for relocation or other protection of the fiber optic cable, and will commence no work on the right of way until all such protection or relocation has been accomplished.

b). In addition to other indemnity provisions in this Agreement, the Contractor shall indemnify and hold the Railroad harmless from and against all costs, liability and expense whatsoever (including, without limitation, attorneys' fees, court costs and expenses) arising out of any act or omission of the Contractor, its contractor, agents and/or employees, that causes or contributes to (1) any damage to or destruction of any telecommunications system on Railroad's property, and/or (2) any injury to or death of any person employed by or on behalf of any telecommunications company, and/or its contractor, agents and/or employees, on Railroad's property. Contractor shall not have or seek recourse against Railroad for any claim or cause of action for alleged loss of profits or revenue or loss of service or other consequential damage to a telecommunication company using Railroad's property or a customer or user of services of the fiber optic cable on Railroad's property.

Section 5. COMPLIANCE WITH LAWS.

In the prosecution of the work covered by this agreement, the Contractor shall secure any and all necessary permits and shall comply with all applicable federal, state and local laws, regulations and enactments affecting the work. The Contractor shall use only such methods as are consistent with safety, both as concerns the Contractor, the Contractor's agents and employees, the officers, agents, employees and property of the Railroad and the public in general. The Contractor (without limiting the generality of the foregoing) shall comply with all applicable state and federal occupational safety and health acts and regulations. All Federal Railroad Administration regulations shall be followed when work is performed on the Railroad's property. If any failure by the Contractor to comply with any such laws, regulations, and enactments, shall result

in any fine, penalty, cost or charge being assessed, imposed or charged against the Railroad, the Contractor shall reimburse and indemnify the Railroad for any such fine, penalty, cost, or charge, including without limitation attorneys' fees, court costs and expenses. The Contractor further agrees in the event of any such action, upon notice thereof being provided by the Railroad, to defend such action free of cost, charge, or expense to the Railroad.

Section 6. SAFETY INSTRUCTIONS.

Safety of personnel, property, rail operations and the public is of paramount importance in the prosecution of the work pursuant to this agreement. As reinforcement and in furtherance of overall safety measures to be observed by the Contractor (and not by way of limitation), the following special safety rules shall be followed:

a). The Contractor shall keep the job site free from safety and health hazards and ensure that its employees are competent and adequately trained in all safety and health aspects of the job. The Contractor shall have proper first aid supplies available on the job site so that prompt first aid services can be provided to any person that may be injured on the job site. The Contractor shall promptly notify the Railroad of any U.S. Occupational Safety and Health Administration reportable injuries occurring to any person that may arise during the work performed on the job site. The Contractor shall have a non-delegable duty to control its employees, while they are on the job site or any other property of the Railroad to be certain they do not use, be under the influence of, or have in their possession any alcoholic beverage, drug, narcotic or other substance that may inhibit the safe performance of work by the employee.

b). The employees of the Contractor shall be suitably dressed to perform their duties safely and in a manner that will not interfere with their vision, hearing or free use of their hands or feet. Only waist length shirts with sleeves and trousers that cover the entire leg are to be worn. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching. The employees should wear sturdy and protective work boots and at least the following protective equipment:

- (1) Protective head gear that meets American National Standard-Z89.1-latest revision. It is suggested that all hardhats be affixed with Contractor's or subcontractor's company logo or name.
- (2) Eye protection that meets American National Standard for occupational and educational eye and face protection, Z87.1-latest revision. Additional eye protection must be provided to meet specific job situations such as welding, grinding, burning, etc.; and
- (3) Hearing protection which affords enough attenuation to give protection from noise levels that will be occurring on the job site.

c). All heavy equipment provided or leased by the Contractor shall be equipped with audible back-up warning devices. If in the opinion of the Railroad Representative any of Contractor's or any of its subcontractor's equipment is unsafe for use on the Railroad's right-of-way, the Contractor, at the request of the Railroad Representative, shall remove such equipment from the Railroad's right-of-way.

Section 7. INDEMNITY.

a). As used in this Section, "Railroad" includes other railroad companies using the Railroad's property at or near the location of the Contractor's installation and their officers, agents, and employees; "Loss" includes loss, damage, claims, demands, actions, causes of action, penalties, costs, and expenses of whatsoever nature, including court costs and attorneys' fees, which may result from: (a) injury to or death of persons whomsoever (including the Railroad's officers, agents, and employees, the Contractor's officers, agents, and employees, as well as any other person); and/or (b) damage to or loss or destruction of property whatsoever (including Contractor's property, damage to the roadbed, tracks, equipment, or other property of the Railroad, or property in its care or custody).

b). As a major inducement and in consideration of the license and permission herein granted, the Contractor agrees to indemnify and hold harmless the Railroad from any Loss which is due to or arises from any cause and is associated in whole or in part with the work performed under this agreement, a breach of the agreement or the failure to observe the health and safety provisions herein, or any activity, omission or negligence arising out of performance or nonperformance of this agreement. However, the Contractor shall not indemnify the Railroad when the Loss is caused by the sole negligence of the Railroad.

c). The Contractor shall maintain whatever insurance coverage is necessary to adequately underwrite its general and contractual liability under the terms of this Agreement.

Section 8. RESTORATION OF PROPERTY.

In the event the Railroad authorizes the Contractor to take down any fence of the Railroad or in any manner move or disturb any of the other property of the Railroad in connection with the work to be performed by Contractor, then in that event the Contractor shall, as soon as possible and at Contractor's sole expense, restore such fence and other property to the same condition as the same were in before such fence was taken down or such other property was moved or disturbed.

Section 9. WAIVER OF BREACH.

The waiver by the Railroad of the breach of any condition, covenant or agreement herein contained to be kept, observed and performed by the Contractor shall in no way impair the right of the Railroad to avail itself of any remedy for any subsequent breach thereof.

Section 10. ASSIGNMENT - SUBCONTRACTING.

The Contractor shall not assign, sublet or subcontract this agreement, or any interest therein, without the written consent of the Railroad and any attempt to so assign, sublet or subcontract without the written consent of the Railroad shall be void. If the Railroad gives the Contractor permission to subcontract all or any portion of the work herein described, the Contractor is and shall remain responsible for all work of subcontractors and all work of subcontractors shall be governed by the terms of this agreement.

EXHIBIT B-1

Right of Entry Agreements Contract Insurance Requirements Third Party Contractors

Contractor shall, at its sole cost and expense, procure and maintain during the life of this Agreement the following insurance coverage:

(a) **General Liability** insurance providing bodily injury including death, personal injury and property damage coverage with a combined single limit of at least \$2,000,000 each occurrence or claim and an aggregate limit of at least \$4,000,000. This insurance shall contain broad form contractual liability with a separate general aggregate for the project (ISO Form CG 25 03 or equivalent). Exclusions for railroads (except where the Job Site is more than fifty feet (50') from any railroad tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings), and explosion, collapse and underground hazard shall be removed. Coverage purchased on a claims made form shall provide for at least a two (2) year extended reporting or discovery period if (a) the coverage changes from a claims made form to an occurrence form, (b) there is a lapse/cancellation of coverage, or (c) the succeeding claims made policy retroactive date is different for the expiring policy.

(b) **Automobile Liability** insurance providing bodily injury, property damage and uninsured vehicles coverage with a combined single limit of at least \$2,000,000 each occurrence or claim. This insurance shall cover all motor vehicles including hired and non-owned, and mobile equipment if excluded from coverage under the general public liability insurance.

(c) **Workers' Compensation** insurance covering Contractor's statutory liability under the workers' compensation laws of the state(s) affected by this Agreement, and Employers' Liability. If such insurance will not cover the liability of Contractor in states that require participation in state workers' compensation fund, Contractor shall comply with the laws of such states. If Contractor is self-insured, evidence of state approval must be provided.

Contractor and their insurers shall endorse the required insurance policy(ies) to waive their right of subrogation against Railroad. Contractor's insurance shall be primary with respect to any insurance carried by Railroad. The policies required under (a) and (b) above shall provide severability of interests and shall name Railroad as an additional insured.

Prior to commencing the Work, Contractor shall furnish to Railroad certificate(s) of insurance evidencing the required coverage and endorsements and upon request, a certified duplicate original of any required policy. The certificate(s) shall contain a provision that obligates the insurance company(ies) issuing such policy(ies) to notify Railroad in writing of any material alteration including any change in the retroactive date in any 'claims-made' policies or substantial reduction of aggregate limits, if such limits apply, or any cancellation at least thirty (30) days prior thereto.

The insurance policy(ies) shall be written by a reputable insurance company(ies) acceptable to Railroad or with a current Best's Insurance Guide Rating of B and Class VII or better, and authorized to do business in the state(s) in which the Job Site is located.

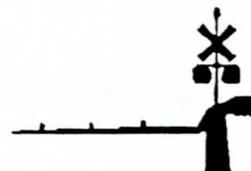
Contractor **WARRANTS** that this Agreement has been thoroughly reviewed by Contractor's insurance agent(s)/broker(s), who have been instructed by Contractor to procure the insurance coverage required by this Agreement.

If Contractor fails to procure and maintain insurance as required, Railroad may elect to do so at the cost of Contractor.

The fact that insurance is obtained by Contractor shall not be deemed to release or diminish the liability of Contractor, including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by Railroad shall not be limited by the amount of the required insurance coverage.



**UNION PACIFIC
RAILROAD**



Contracts and Real Estate Department
1416 Dodge Street - Room 1100
Omaha, Nebraska 68179-1100
Telephone (402) 271-2343 / Fax (402) 271-5493

Application for Private Road Crossing
and Encroachment

To the Applicant:

To enhance highway-rail grade crossing safety, Union Pacific endorses the concept of reducing the number of at-grade crossings, both public and private, through consolidation, elimination, grade separation and restriction of the number of new crossings installed. Because of safety concerns, every effort must be made to obtain alternative access to property adjacent to the railroad. Parallel or other roads leading to existing crossings and access from other directions must first be considered.

In making application, applicant understands and agrees that if permission for the crossing is granted:

- all construction work for new crossings from end of tie to end of tie within the track area must be performed by Union Pacific forces at applicant's sole expense;
- all grading and drainage work on roadway approaches, including maintenance, will be the responsibility of applicant at applicant's sole expense;
- all relocation of utilities due to construction of a new crossing (if any) is at applicant's sole expense;
- any maintenance work performed by Union Pacific forces will be at applicant's sole expense;
- any current or future warning devices required for the crossing (passive or active) will be installed and maintained by Union Pacific forces at applicant's sole expense;
- all liability for accidents or injuries which arise as a result of the construction, maintenance and use of the crossing is assumed by applicant;
- a current certificate evidencing insurance coverage in the following amounts is required:
 - New individual and residential private crossings and encroachments: General Public Liability providing \$500,000 for each occurrence and general aggregate limit of \$500,000; Automobile Public Liability providing \$500,000 for each occurrence.
 - Small commercial private crossings and encroachments: General Public Liability providing \$1 million for each occurrence and general aggregate limit of \$2 million; Automobile Public Liability providing \$1 million for each occurrence; Worker's Compensation covering the statutory liability determined by state law.
 - Large commercial, industrial, and contractors private crossings and encroachments: General Public Liability providing \$2 million for each occurrence and general aggregate limit of \$4 million; Automobile Public Liability providing \$2 million for each occurrence; Worker's Compensation covering the statutory liability determined by state law; Railroad Protective Liability providing \$2 million for each occurrence and aggregate limit of \$6 million.
- before any construction begins on a new crossing, applicant must enter into written agreement with Union Pacific and make payment to Union Pacific for the estimated cost of construction work;
- applicant will pay Union Pacific all required engineering review fees and license fees;
- before performing any work on Union Pacific property, applicant will telephone Union Pacific at 1-800-336-9193 (a 24-hour number) for fiber optic cable information, and will notify Union Pacific's Manager-Track Maintenance ten working days prior to start of construction.

Completed applications and payment of \$500.00 (made payable to UNION PACIFIC RAILROAD) for preliminary engineering

Review of new crossings are to be forwarded to the appropriate Manager of Industry and Public Projects shown on the listing included in this packet. Failure to complete the application in full may delay processing. Please allow a minimum of 30 days for processing existing crossing requests and a minimum of 180 days for new crossing requests.

SECTION 1 - TO BE COMPLETED FOR ALL CROSSINGS

NAME

ADDRESS

CITY STATE ZIP CODE

CONTACT PERSON TELEPHONE NUMBER FAX NUMBER

INDIVIDUAL PARTNERSHIP PROPRIETORSHIP CORPORATION OF THE STATE OF NAMES OF OFFICERS, PARTNERS OR PROPRIETOR

BILLING ADDRESS IF DIFFERENT THAN ABOVE

TYPE OF ROAD CROSSING PRIVATE FARM CROSSING PRIVATE COMMERCIAL CROSSING CONTRACTOR'S CROSSING PEDESTRIAN OVERPASS PEDESTRIAN UNDERPASS OTHER EXISTING CROSSING NEW INSTALLATION RELOCATION RECONSTRUCTION PERMANENT USE TEMPORARY USE FOR MONTHS

CROSSING WILL BE USED AS ACCESS TO

TYPE(S) OF VEHICLE(S) TO BE DRIVEN OVER CROSSING PASSENGER CARS PICKUP TRUCKS RECREATIONAL VEHICLES FARM EQUIPMENT HEAVY CONSTRUCTION EQUIPMENT OTHER

APPROXIMATE NUMBER OF DAILY ONE-WAY TRIPS OVER THE CROSSING

CROSSING IS LOCATED IN SECTION _____, TOWNSHIP _____, RANGE _____
 IN THE CITY OF _____ COUNTY/PARISH _____
 OF THE STATE OF _____

FURNISH county property map or topography map showing the location of the crossing. INDICATE on the map the distance measured along the track between the crossing and fixed objects in the vicinity (i.e., bridges, culverts, railroad mile markers, nearest public roads).

NAME OF OWNER OF PROPERTY TO BE SERVED BY CROSSING _____

ADDRESS IF DIFFERENT THAN ABOVE _____

Furnish legal description of property.

SECTION 2 - TO BE COMPLETED FOR EXISTING CROSSINGS ONLY

NAME(S) OF PREVIOUS USERS OF CROSSING _____

CROSSING IS CURRENTLY COVERED BY LICENSE AGREEMENT NUMBER _____
 DATED _____ WITH _____

SECTION 3 - TO BE COMPLETED FOR INSTALLATION OF NEW CROSSINGS ONLY

HOW IS PROPERTY CURRENTLY ACCESSED?

WHY WAS ACCESS TO PROPERTY NOT OBTAINED FROM PREVIOUS OWNER?

DESIRED CROSSING WILL BE _____ FEET NORTH/SOUTH/EAST/WEST OF NEAREST
 _____ PUBLIC/PRIVATE ROAD CROSSING.

TRACK IS IN _____-FT. CUT / FILL

NO./TRACKS CROSSED _____

TRACK IS: ON CURVE / STRAIGHT

SIGNED _____ DATE _____

FOR RAILROAD USE ONLY

RAILROAD MILEPOST	RAILROAD SUBDIVISION	DOT/AAR NUMBER
MGR.-IND. & PUBLIC PROJECTS Bob N. Prince TELEPHONE: 980-6956	MGR.-TRACK MAINTENANCE TELEPHONE:	MGR.-SIGNAL MAINTENANCE TELEPHONE:
SUPERINTENDENT-TRANSP. SVCS. APPROVAL RECEIVED:		
WIDTH OF CROSSING	WIDTH OF RR RIGHT-OF-WAY	CROSSING SURFACE
FLAGGING PROTECTION REQUIRED? NO		LOCKED GATES REQUIRED AT RIGHT-OF-WAY LINE?
SPECIAL PROVISIONS:		
WORK TO BE PERFORMED BY RAILROAD	ESTIMATED COST (ATTACH MATERIAL AND FORCE ACCOUNT ESTIMATE)	
ANNUAL LICENSE FEE	ANNUAL SIGNAL MAINTENANCE FEE	

SUBMITTED BY _____ DATE _____
 TITLE: _____