

SR89 White Spar Waterline Relocation

Project Specifications and Contract Documents

DESCRIPTION: This project generally consists of construction of a new 12" DIP water main and appurtenances on SR89-White Spar Rd. from Copper Basin Rd. to Apache Dr. in advance of the upcoming ADOT road improvement project. Additional improvements include installation of new water meters, fire hydrants, tie-ins to existing water mains and services, and removal of an existing 6" water main and appurtenances within the same corridor.

SPONSOR: CITY OF PRESCOTT, ARIZONA

PROJECT NUMBER: 13-7007810-8930-13101

BID OPENING: August 23, 2012, 2:00 PM
Public Works Department
433 N. Virginia Street, Prescott, Arizona

PREPARED BY: Public Works Department
July 2012

Table of Contents

SPECIAL NOTICE.....	5
NOTICE INVITING BIDS.....	6
INFORMATION FOR BIDDERS.....	7
BIDDING SCHEDULE	9
SUBCONTRACTORS LIST BID FORM.....	10
INSTRUCTIONS FOR PREPARING PROPOSAL.....	11
PROPOSAL.....	12
BIDDERS AFFIDAVIT.....	13
BIDDERS AFFIDAVIT.....	14
INSURANCE REQUIREMENTS	15
CONTRACT.....	17
CONTRACTOR'S AFFIDAVIT REGARDING SETTLEMENT OF CLAIMS.....	20
AND CERTIFICATION OF COMPLETION OF WARRANTIES.....	20
GENERAL CONDITIONS	21
COMMENCEMENT, PROSECUTION AND PROGRESS.....	22
PRECONSTRUCTION CONFERENCE.....	22
COMMENCEMENT	22
PUBLIC NOTICE.....	22
SUBCONTRACTORS.....	23
CONTRACTOR'S REPRESENTATIVE AND EMERGENCIES.....	23
CONTRACTOR AND SUBCONTRACTOR RECORDS.....	23
ADDENDA, REVISIONS AND SUPPLEMENTARY DRAWINGS	24
ERROR AND OMISSIONS.....	24
CHARACTER OF WORKMEN.....	24
SUSPENSION OF WORK.....	24
DELAYS AND EXTENSION OF TIME.....	25
TERMINATION FOR BREACH OF CONTRACT	25
METHODS AND EQUIPMENT	25
DATE OF ACTUAL COMPLETION.....	25
FINAL ACCEPTANCE.....	25
SAFETY, HEALTH AND SANITATION PROVISIONS	26
TRAFFIC CONTROL.....	26
WATER.....	26
PROTECTION OF WORK.....	26
CLEANUP AND DUST CONTROL	26
GUARANTEE OF WORK	26
CONTINGENCIES.....	26
NOTICE AND SERVICE THEREOF	27
PROJECT MEETINGS.....	27
CONSTRUCTION SCHEDULE	27
ACCIDENT PREVENTION.....	28

CONSTRUCTION FACILITIES.....	28
TEMPORARY FACILITIES.....	28
WARNING DEVICES AND BARRICADES.....	28
HAZARDS IN PUBLIC RIGHT-OF-WAY.....	28
HAZARDS IN PROTECTED AREAS.....	28
PROTECTION OF EXISTING ITEMS.....	28
PROJECT SECURITY.....	28
FIRE EXTINGUISHER.....	28
OFF-SITE ROADS.....	28
NOISE ABATEMENT.....	29
DRAINAGE CONTROL.....	29
PROJECT CLOSE-OUT.....	29
WASTE DISPOSAL.....	29
PROJECT RECORD DOCUMENTS.....	29
CONTROL OF WORK.....	30
ABBREVIATIONS.....	30
AUTHORITY AND DUTIES OF INSPECTOR.....	30
INSPECTION.....	30
AUTHORITY OF THE ENGINEER.....	30
FORMAL PROTEST.....	31
PLANS.....	31
CONFORMITY WITH PLANS AND ALLOWABLE DEVIATIONS.....	31
COORDINATION AND INTERPRETATION OF PLANS AND SPECIFICATIONS.....	31
ORDER OF WORK.....	32
CONSTRUCTION STAKES, LINES AND GRADES.....	32
REMOVAL OF UNACCEPTABLE AND/OR UNAUTHORIZED WORK.....	32
MAINTENANCE DURING CONSTRUCTION.....	32
COOPERATION BETWEEN CONTRACTORS.....	32
COORDINATION OF WORK.....	32
LINES AND GRADES.....	32
MATERIALS AND WORKMANSHIP.....	32
GENERAL.....	32
SUBSTITUTION OF MATERIAL OR EQUIPMENT.....	33
FABRICATED MATERIALS AND SHOP DRAWINGS.....	33
MATERIALS FURNISHED BY THE CITY.....	33
STORAGE AND HANDLING OF MATERIALS.....	33
REJECTED MATERIALS.....	33
UTILITIES.....	33
DRIVEWAYS AND WALKS.....	33
ROADS AND FENCES.....	33
TREES AND SHRUBBERY.....	34
IRRIGATION DITCHES AND STRUCTURES.....	34
SUBMITTALS.....	34
MATERIALS AND EQUIPMENT SCHEDULES.....	34
QUALITY CONTROL.....	34
SAMPLES AND TESTS.....	34
LEGAL RELATIONS AND RESPONSIBILITY.....	35
LAWS TO BE OBSERVED.....	35
ALIEN LABOR.....	35
CONTRACTOR IMMIGRATION WARRANTY.....	35
COMPLIANCE WITH FEDERAL AND STATE LAWS.....	35
EMPLOYMENT PROVISIONS.....	36
INDEPENDENT CONTRACTOR STATUS.....	36
NONDISCRIMINATION.....	36
AMERICANS WITH DISABILITIES ACT.....	36

PERMITS, TAXES AND LICENSES	37
PATENTED DEVICES, MATERIALS AND PROCESSES	37
SURVEY LAND MONUMENTS	37
PROTECTION OF PERSON AND PROPERTY	37
PROTECTION OF ANTIQUITIES	37
PERSONAL LIABILITY OF PUBLIC OFFICIALS	37
NON-RESPONSIBILITY OF THE CITY	37
NO WAIVER OF LEGAL RIGHTS	37
PROPERTY RIGHTS IN MATERIAL	37
PAYMENT TO CONTRACTORS.....	37
GENERAL	37
PARTIAL PAYMENT	38
PAYMENT	38
PAYMENT OF ITEMS IN PROPOSAL.....	39
CHANGES IN THE WORK	39
FORCE ACCOUNT	39
EXTRA WORK	40
CONTRACT AMENDMENT	40
CLAIMS FOR EXTRA WORK	41
PARTIAL ACCEPTANCE OF WORK	41
NOTIFICATION OF CHANGED CONDITIONS AND DISPUTE RESOLUTION	41
PUBLICITY RELEASES	42
SCOPE OF WORK.....	42
TECHNICAL SPECIFICATIONS.....	43

SPECIAL NOTICE

BIDS WILL BE RETURNED UNOPENED IF NOT SUBMITTED PROPERLY SEALED AND PRIOR TO THE TIME SET FORTH IN THE NOTICE INVITING BIDS. ADDENDA SHALL BE ATTACHED INSIDE THE FRONT COVER OF THIS BOOKLET.

BIDS SHALL BE ENCLOSED IN SEALED ENVELOPES, ADDRESSED TO THE CITY OF PRESCOTT AND MARKED ON THE OUTSIDE LOWER RIGHT-HAND CORNER INDICATING:

1. The Bidder's name;
2. The Project Title;
3. The Time and Date bids are to be received;
4. Acknowledgment of Addenda received.

NOTICE INVITING BIDS

PROJECT: SR89 White Spar Waterline Relocation

DESCRIPTION: This project generally consists of construction of a new 12" DIP water main and appurtenances on SR89-White Spar Rd. from Copper Basin Rd. to Apache Dr. in advance of the upcoming ADOT road improvement project. Additional improvements include installation of new water meters, fire hydrants, tie-ins to existing water mains and services, and removal of an existing 6" water main and appurtenances within the same corridor.

BID OPENING: August 23, 2012, 2:00 PM

MANDATORY PRE-BID MEETING: August 8, 2012, at 2:00 PM, City of Prescott Public Works Department

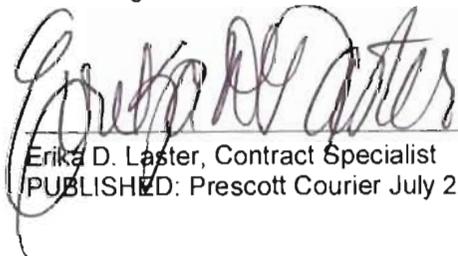
BID SECURITY REQUIRED: Certified check, cashier's check or bid bond in the amount of not less than 10% (TEN PERCENT) of the bid.

Sealed bids will be received at Public Works, addressed to the attention of the Public Works Director, City of Prescott, 433 N Virginia Street, Prescott, AZ, 86301, before 2:00 pm on August 23, 2012 for furnishing all plant, materials, and labor and performing work for construction of the SR89 White Spar Waterline Relocation Project.

The outside of the bid envelope shall indicate the name and address of the bidder, and shall be marked: "Bid: SR89 White Spar Waterline Relocation Project." All bids will be opened and read aloud at 2:00 pm on Thursday, August 23, 2012 in the Public Works Conference Room.

Any bid received at or after 2:00 pm on the above stated date will be returned unopened. The City of Prescott reserves the right to accept or reject any or all bids, and/or some or all of the alternates bid, and waive any informality deemed in the best interest of the City and to reject the bids of any persons who have been delinquent or unfaithful to any contract with the City of Prescott.

Copies of the Notice Inviting Bids, plans and contract documents, specifications, and necessary information are available for public inspection in the office of the Public Works Director, 433 N. Virginia Street, Prescott, Arizona, 86301, (Voice: (928) 777-1130; TDD: 778-5680). Those interested in having individual sets of the Contract Documents may obtain them upon payment of \$50.00 per set, which cost is refundable upon return of the Plans and Contract Documents in good order within 30 days of bid closing. A non-refundable check for \$5.00 will be required for mailing.



Erika D. Laster, Contract Specialist

PUBLISHED: Prescott Courier July 22 & July 29, 2012

INFORMATION FOR BIDDERS

PROPOSAL. All standard specifications and details referenced unless otherwise noted shall conform to all the City of Prescott Department of Public Works Standard Specifications and Detail Drawings, most current revision, and to the most current edition of the Uniform Standard Specifications and Details for Public Works Construction by the Maricopa Association of Governments, Arizona, including revisions thereto.

BIDDING REQUIREMENTS AND CONDITIONS. MAG Specifications, Sections 102.1 through 102.13, including: Bids shall be delivered to the office of the City Clerk, City of Prescott, Arizona, before the day and hour set for the submittal of bids in the Notice Inviting Bids as published. Bids shall be enclosed in a sealed envelope bearing the title of the work and the name of the bidder. It is the SOLE responsibility of the bidder to see that his bid is received in proper time. Any bids received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.

CONFIRMATION OF BID. At any time after the opening of the bids the Public Works Director may require any bidder on the project to confirm such bid in writing prior to contract award. The following certification language shall be submitted by separate letter on company letterhead when requested by the Public Works Director:

I, the undersigned hereby certify the prices bid for the _____ Project have been reviewed and I hereby confirm work can be completed in accordance with the requirements of the contract documents, plans and specifications in the total bid amount of \$ _____ as stated in the Bidding Schedule.

SUBCONTRACTORS LIST BID FORM. The Subcontractors List Bid Form must be completed, attached and submitted along with the Bidding Schedule.

BID SECURITY. A bid bond in the amount of 10% of the bid shall be required at the time the bid or proposal is submitted, in accordance with ARS Section 34-201(A)(3).

WITHDRAWAL OF BID. Any bidder may withdraw his bid, either personally, telegraphic, or by written request, at any time prior to the scheduled closing time for receipt of bids.

INTERPRETATION OF PLANS AND DOCUMENTS. MAG Specifications, Section 102.4, including: If any person contemplating submitting a bid for the proposed Contract is in doubt as to the true meaning of any part of the Plans, specifications, or other proposed Contract Documents, or finds discrepancies in or omissions from the Plans or Specifications, he shall submit to the City of Prescott Public Works Director a written request for an interpretation or correction thereof no later than five working days before bid or proposal opening. The person submitting the request will be responsible for its prompt delivery. Any interpretation or correction of the proposed documents will be made or delivered to each person receiving a set of such documents. Interested bidders may call or visit the office of the City of Prescott Public Works Director with any questions up to 5:00 PM on the last Thursday prior to the bid opening date. The City of Prescott will no longer address or interpret any general questions or comments after 5:00 PM on the last Thursday prior to the bid opening date. Comments or questions received after the above referenced time will not be given consideration by the Department. Should any issue be determined significant to the project by the Public Works Director, appropriate action will be taken. Voice: (928) 777-1130; TDD (928) 777-1100.

AWARD AND EXECUTION OF CONTRACT. MAG Specifications, Section 103.1 through 103.8, Award of Contract, first paragraph, 103.1, to be revised as follows:

The Contract will be awarded to the lowest qualified bidder complying with these instructions and with the Notice Inviting Bid. The City, however, reserves the right to accept or reject any or all bids if it deems it best for the public good, and to waive any informality in the bids received. The award, if made, will be within sixty (60) calendar days after the opening of bids.

ASSIGNMENT OF CONTRACT. No partial or full assignment by the Contractor of any contract to be entered into hereunder, or any part thereof, or of funds to be received there under by the Contractor, will be recognized by the City unless such assignment has had prior written approval of the City and the surety has been given due notice of such assignment in writing and has been given due notice of such assignment in writing and has consented thereto in writing.

PLANS AND SPECIFICATIONS TO SUCCESSFUL BIDDER. The successful bidder may obtain six (6) sets of Plans and Specifications for this project at no extra cost. If he desires more than the six (6) sets, he may purchase additional sets of Plans and Specifications from the Public Works Director at the cost set forth in the Notice Inviting Bids.

NON-PERFORMANCE OF WORK TASKS BY THE CONTRACTOR. If the Contractor fails, neglects, or refuses to perform work tasks necessary for the completion of the total job; replace defective work; to repair or resurface, in a manner that is acceptable to the City and Engineer, public rights-of-way disturbed by his work which are a nuisance, hazard, impedes or endangers vehicular traffic and the public; the City may serve written notice upon the Contractor of its intention to have the work performed by others. Unless, within 3 calendar days after the service of such notice, the Contractor has made such arrangement & scheduled the accomplishment of said work tasks to the satisfaction of the City & Engineer, the City will proceed to have the work accomplished by others or by itself & deduct the costs thereof from amounts due to the Contractor.

INDEMNIFICATION OF CITY AGAINST LIABILITY. The Contractor agrees to defend, indemnify and hold harmless the City of Prescott, and its employee officers, agents and representatives from all suits, including attorneys' fees and cost of litigation, actions, loss, damage, expense, cost or claims, of any character or any nature arising out of the work done in fulfillment of the construction of the improvement under the terms of this contract or on account of any act, claim or amount whether arising or recovered under Workmen's Compensation law, or arising out of the failure of the Contractor or those acting under Contractor to conform to any statutes, ordinance, regulation, law or court decree. It is the intent of the parties to this contract that the City of Prescott shall, in all instances, be indemnified against all liability, losses and damages of any nature whatever for or on account of any injuries to or death of persons or damages to or destruction of property belonging to any person arising out of or in any way connected with the performance of this contract, whether the liability, loss or damage is caused by, or alleged to be caused in whole or in part by the negligence or fault of the Contractor or of its officers, agents or employees, or subcontractors.

DEFINITIONS. According to MAG Specifications, Section 101.2, including:

- A. **AWARD:** The formal action of the governing body in accepting a proposal.
- B. **BID SECURITY:** Refers to the certified check, cashier's check, or surety bond, which is required to be submitted with the proposal to insure execution of the contract and the furnishing of the required bonds.
- C. **CITY:** City of Prescott
- D. **CITY'S REPRESENTATIVE:** The authorized representative of the City, which may be an individual or a firm, or his assistants assigned to the project work, the project site, or any part thereof during the performance of the work by the Contractor and until final acceptance.
- E. **PUBLIC WORKS DIRECTOR:** The City of Prescott Public Works Director or his designee, representative or assistants.
- F. **DESIGN ENGINEER:** The firm or person and his properly authorized assistants, designated by the City to prepare Plans and Specifications for the work.
- G. **NOTICE TO BIDDERS:** Refers to the standard forms inviting proposals or bids.

ADDENDA. MAG Specifications, Sections 102.1 through 102.13, including: Any Addenda issued during the time of bidding, forming a part of the documents issued to the bidder for the preparation of his bid, shall be covered in the bid and shall be made a part of the contract.

**BID SCHEDULE
SR89-White Spar Waterline Replacement**

Item #	Item Description	Unit	Quantity	Unit Price	Amount
104-3	Mobilization	LS	1		
105-8	Construction Staking	LS	1		
105-9	As-built Preparation and Coordination	LS	1		
107-1	As-built Preparation and Coordination	LS	1		
109-1	Contract Allowance	ALLOW	1	\$60,000.00	\$60,000.00
336-1a	Temporary Pavement & Trench Detail, Type A, Detail 1	SY	668		
400-1a	Traffic Control Plan & Devices	LS	1		
400-1b	Off-Duty Police Officers	HR	160		
601-2	Rock Removal (Trench)	CY	300		
610-1a	4-inch Waterline (DIP CL 350)	LF	17		
610-1b	6-inch Waterline (DIP CL 350)	LF	17		
610-1c	8-inch Waterline (DIP CL 350)	LF	440		
610-1d	12-inch Waterline (DIP CL 350)	LF	2053		
610-2	Temporary Waterlines, Valves, and Appurtenances	LS	1		
610-9a	Furnish and Install Fire Hydrant Assembly	EA	6		
610-11a	1-inch Copper Water Service, COP Std Det 3-16P & 3-21AP	EA	8		
610-11b	2-inch Copper Water Service, COP Std Det 3-16AP & 3-21AP	EA	1		
610-20	Concrete Encasement	LF	125		
610-40a	Remove Existing Waterline, Valves, Fire Hydrants, Water Services and Appurtenances	LS	1		
630-3a	4-inch Gate Valve, Box, & Cover	EA	1		
630-3b	8-inch Gate Valve, Box, & Cover	EA	8		
630-3c	12-inch Gate Valve, Box, & Cover	EA	4		
630-4	8-inch Tapping Sleeve, Valve, Box, and Cover	EA	1		
630-6a	Air/Vacuum Release Valve Assembly	EA	4		
630-6b	Blow - Off Assembly	EA	4		
	TOTAL				

Total Base Bid:

Dollars

(Written Words)

Signature of Company Official

Title

Company Name

Phone Number

Address

Fax Number

City/State

Zip Code

City of Prescott Public Works Department

SUBCONTRACTORS LIST BID FORM

SR89 White Spar Waterline Relocation

	Company Name and License Number	Mailing Address	Phone Number	Bid Item(s)	Total Sub-contract Amount
1					\$
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
	Total Sub-Contract Amount				\$

INSTRUCTIONS FOR PREPARING PROPOSAL

Payment for all work performed under this Contract shall be based on the units as shown in the Bidding Schedule. Payment of the bid items as stated in the Contractor's proposal for the completed work, shall be compensation in full for the furnishing of all overhead, labor, materials, devices, equipment and appurtenances included in the work as are necessary to complete the total work under this Contract in a good, neat, and satisfactory manner as indicated on the Plans, as described in the Specifications, and as otherwise implied or required to fulfill the objective of the work. It is the intent of the contract that maximum payment shall not exceed the agreed unit price without duly authorized contract amendments. Each item, fixture, piece of equipment, work, etc., as indicated on the Plans, or specified anywhere in these Documents shall be completed with all necessary connections and appurtenances for the satisfactory use and operation of said item, and the total system or systems.

Any and all patents, license fees, insurance premiums, etc., for the right to use equipment or processes included in this Contract shall be included in the total bid price.

Cost of testing, and other incidental operations, profit and overhead cost, including the cost of supervision, temporary field offices, move-in, move-out, insurance, taxes, equipment not a permanent part of the job, and other incidental items, shall be included in the total bid price.

The "Total Amount of Bid" must be filled out by the bidder. In case of any discrepancy between the price in figures and price in written words, as written or corrected, the price in written words shall be presumed to be correct unless obviously in error, and shall be considered as the Contractor's correct and intended bid.

Bids shall not contain any recapitulations of the work to be done. Alternative proposals will not be considered unless called for. If anyone is in doubt as to the true meaning of any part of the Plans, Specifications, or other Contract Documents, or finds discrepancies in or omissions from the Plans or Specifications, he must submit to the Engineer a written request for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery.

Any interpretation or correction of the Contract documents will be made only by an Addendum duly issued by the City and a copy of such Addendum will be mailed, faxed, or delivered to each person receiving a set of such Documents. The City will not be responsible for any other explanations or interpretations of the Documents.

If the Proposal is made by an individual, it shall be signed and his full name and address shall be given. If it is made by a partnership, it shall be signed with the partnership name and by a general partner of the firm who shall also sign his own name, and the name and address of each partner shall be given; and, if it is made by a corporation, the name of the corporation shall be signed by its duly authorized officer or officers.

The Subcontractors List Bid Form must be completed, attached and submitted along with the Bidding Schedule.

PROPOSAL

Place: _____

Date: _____

Proposal of _____

(Name)

Corporation organized and existing under the laws of the State of Arizona; a partnership consisting of _____ or an individual trading as _____

TO THE HONORABLE MAYOR AND COUNCIL
CITY OF PRESCOTT
PRESCOTT, ARIZONA

Ladies and Gentlemen:

The Undersigned hereby proposes and agrees to furnish any and all required labor, material, construction equipment, transportation, and services for completion of the ** Project, in strict conformity with the plans and specifications, at the total bid price of:

_____ Dollars (\$ _____).

The Undersigned hereby declares that he has visited the site and has carefully examined the Contract Documents relating to the work covered by the above bid or bids.

The Bid Security (Certified Check, Cashier's Check, or Bid Bond) attached, payable to the City of Prescott in the sum of not less than ten percent (10%) of the total bid price bid for the complete project, to insure that the undersigned, if his bid is accepted, shall enter into contract and give the bonds and certificates of insurance required. In the event that the contract and bonds and certificates of insurance required are not furnished to the City within the time required, then and in that event the City may retain from the bid bond an amount, not to exceed the amount of the bid bond, representing the difference between the amount specified in the proposal or bid, and such larger amount that the City in good faith contracts with another party to perform the work covered by the proposal or bid.

The project shall be completed within seventy five (75) calendar days after the starting date set forth in the NOTICE TO PROCEED.

The undersigned hereby declares, as bidder, that the only persons or parties interested in this PROPOSAL as principals are those named herein; that no elected official or employee of the City is in any manner interested directly or indirectly in this PROPOSAL or in the profits to be derived from the Contract proposed to be taken, other than as permitted by law; that this bid is made without any connection with any other person or persons making a separate bid for the same purpose; that the bid is in all respects fair and without collusion or fraud; that he has read the NOTICE INVITING BIDS and the INFORMATION FOR BIDDERS hereto attached, and as more fully described in the attached contract and specifications, and agrees to furnish the items and perform the work called for in accordance with the provisions of said form of Contract and the Specifications and to deliver the same within the time stipulated herein, and that he will accept in full payment therefore the total bid price named in this Proposal.

The bidder shall be an A-General Engineering contractor properly licensed at the time of bidding to perform construction in connection with fixed works, including streets, roads, power and utilities plants, dams, hydroelectric plants, sewage and waste disposal plants, bridges, tunnels, and overpasses and shall also be licensed to perform work within residential and commercial property lines, or shall be properly licensed to sub-contract residential or commercial work, as may be required in the Scope of Work.

Any bid submitted without the proper contracting license to perform the required work shall be considered non-responsive and rejected.

The bidder further agrees that, upon receipt of written notice of the acceptance of this PROPOSAL, he will execute the Contract in accordance with the PROPOSAL as accepted and furnish the required bonds TEN (10) days from

the date of mailing of said notice of award to him at his address as given below, or within such additional time as may be allowed by the City; and that upon his failure or refusal to do so within said time, then the certified or cashier's check or bid bond accompanying this bid shall be cashed or enforced and the money payable pursuant thereto shall be forfeited to and become the property of the City as liquidated damages for such failure or refusal; provided that if said bidder shall execute the Contract and furnish the required bonds within the aforesaid time, his certified or cashier's check, if furnished, shall be returned to him within three (3) days thereafter, and the bid bond, if furnished, shall become void.

Bidder understands and agrees that the City reserves the right to reject any or all bids and to waive any informality in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

Bidder acknowledges receipt of the following Addenda: _____

The undersigned is the holder of Arizona State Contractor's License No. and Classification: _____

Respectfully submitted,

Bidder

Corporate Seal

By: _____

Title: _____

Bidders Address, Telephone and Fax Number:

Names and addresses of all members of the firm or names and titles of all officers of the corporation:

BIDDERS AFFIDAVIT

SR89 White Spar Waterline Relocation

State of _____)
County of _____) ss.

_____, being first duly sworn, deposes and says:

That he/she is _____ of _____
(Title) (Bidder)

who submits herewith to the City of Prescott, Arizona, a proposal:

That all statements of fact in such proposal are true;

That said proposal was not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization or corporation;

That said bidder has not, directly or indirectly by agreement, communication or conference with anyone attempted to induce action prejudicial to the interest of the City of Prescott, Arizona, or of any bidder or anyone else interested in the proposed contract; and further,

That prior to the public opening and reading of proposal, said bidder:

1. Did not directly or indirectly, induce or solicit anyone else to submit a false or sham proposal;
2. Did not directly or indirectly collude, conspire, connive or agree with anyone else that said bidder or anyone else would submit a false or sham proposal, or that anyone should refrain from bidding or withdraw his proposals;
3. Did not in any manner, directly or indirectly, seek by agreement, communication or conference with anyone to raise or fix the proposal price of said bidder or of anyone else, or to raise or fix any overhead, profit or cost element of his proposal price, or of that of anyone else;
4. Did not, directly or indirectly, submit his proposed price or any breakdown thereof, or the contents thereof, or divulge information or data relative thereto, to any corporation, partnership, company, association organization, bid depository or to any member or agent thereof, or to any individual or group of individuals, except the City of Prescott, Arizona, or to any person or persons who have a partnership or other financial interests with said bidder in his business.

By: _____

SUBSCRIBED AND SWORN to before me by _____ this _____ day of _____, 2012.

Notary Public

Commission Expires

INSURANCE REQUIREMENTS

INSURANCE

A. Contractor and subcontractors shall procure and maintain until all of their obligations have been discharged, including any warranty periods under this Contract are satisfied, insurance against claims for injury to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors.

The insurance requirements herein are minimum requirements for this Contract and in no way limit the indemnity covenants contained in this Contract.

The City in no way warrants that the minimum limits contained herein are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this Contract by the Contractor, his agents, representatives, employees, or subcontractors. Contractor is free to purchase such additional insurance as may be determined necessary.

ADDITIONAL INSURANCE REQUIREMENTS: The policies shall include, or be endorsed to include, the following provisions:

1. On insurance policies where the City of Prescott is named as an additional insured, the City of Prescott shall be an additional insured to the full limits of liability purchased by the Contractor even if those limits of liability are in excess of those required by this Contract.
2. The Contractor's insurance coverage shall be primary insurance and non-contributory with respect to all other available sources.

VERIFICATION OF COVERAGE: Contractor shall furnish the City with certificates of insurance (ACORD form or equivalent approved by the City) as required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf.

All certificates and any required endorsements are to be received and approved by the City before work commences. Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the project and warranty period as set forth in Paragraph 3 of the "Contractor's Affidavit Regarding Settlement of Claims and Certification of Completion of Warranties". Failure to maintain the insurance policies as required by this Contract or to provide evidence of renewal is a material breach of contract.

All certificates required by this Contract shall be sent directly to the Public Works Department, 433 N. Virginia Street, Prescott, AZ 86301. The City project/contract number and project description shall be noted on the certificate of insurance. The City reserves the right to require complete, certified copies of all insurance policies required by this Contract at any time.

B. MAG Specifications, Sections 103.1 through 103.8, including: Unless otherwise specifically required by the Special Conditions, the minimum limits of public liability and property damage liability shall be as follows:

C. Contractor shall provide coverage with limits of liability not less than those stated below. An excess liability policy or umbrella liability policy may be used to meet the minimum liability requirements provided that the coverage is written on a following form basis.

Commercial General Liability – Occurrence Form –

Policy shall include bodily injury, property damage, broad form contractual liability and XCU coverage.

- | | |
|--|-------------|
| • General Aggregate | \$3,000,000 |
| • Products – Completed Operations Aggregate | \$3,000,000 |
| • Personal and Advertising Injury | \$1,000,000 |
| • Each Occurrence | \$1,000,000 |
| • Fire Legal Liability (Damage to Rented Premises) | \$ 100,000 |

The policy shall be endorsed to include the following additional insured language:

"The City of Prescott shall be named as an additional insured with respect to liability arising out the activities performed by, or on behalf of the Contractor including Completed Operations", using form CG2011 (10/01 and CG 2037 (10/01), or equivalent.

- D. Such policy shall not exclude coverage for the following:
1. Injury to or destruction of any property arising out of the collapse of/or structural injury to any building or structure due to grading of land, excavation, borrowing, filling, backfilling, tunneling, pile driving, cofferdam work or caisson work.
 2. Injury to or destruction of wires, conduits, pipes, mains, sewers, or other similar property or any apparatus in connection therewith, below the surface of the ground, if such injury or destruction is caused by and occurs during the use of mechanical equipment for the purpose of grading of land, paving, excavating, drilling; or injury to or destruction of any property at any time resulting there from.
 3. Injury to or destruction of any property arising out of blasting or explosion.
 4. Motor vehicle public liability and property damage insurance to cover each automobile, truck, and other vehicle used in the performance of the Contract in an amount of not less than \$1,000,000.00 for one person, and \$1,000,000.00 for more than one person, and property damage in the sum of \$1,000,000.00 resulting from any one accident which may arise from the operations of the Contractor in performing the work provided for herein.
- E. The Contractor shall carry and maintain fire and extended coverage with an endorsement for vandalism and malicious mischief in his name and also in the name of the City in an amount of at least ONE HUNDRED PERCENT (100%) of the Contract amount.
- F. The Contractor shall secure "all risk"-type builder's risk insurance for work to be performed. Unless specifically authorized by the City, the amount of such insurance shall not be less than ONE HUNDRED PERCENT (100%) of the contract price. Such policy shall include coverage for earthquake, landslide, flood, collapse, or loss due to the results of faulty workmanship, during the contract time and until final acceptance of work by the City.
- G. Worker's compensation insurance –
- Statutory
 - Employers Liability
 - Each Accident - \$1,000,000
 - Disease – each employee - \$1,000,000
 - Disease – policy limit - \$1,000,000
 - a. Policy shall contain a waiver of subrogation against the City of Prescott.
 - b. This requirement shall not apply when a Contractor or Subcontractor is exempt under A.R.S. section 23-901, and when such Contractor or Subcontractor executes the appropriate sole proprietor waiver form.

NOTICE TO PROCEED. The Contractor or subcontractor shall not work on any part of the project or incur any expenses or obligations until a Notice to Proceed has been issued by the City. The Notice to Proceed will be sent to the Contractor by first class mail or delivered to him in person.

ASSIGNMENT OF PAYMENTS. MAG Specifications, Section 109.3, including assignment of contract clause included in the "Information for Bidders" in this set of specifications.

CONTRACT

SR89 White Spar Waterline Relocation

THIS AGREEMENT, made and entered into this _____ day of _____, 2012, by and between _____ of the City of _____, County of _____, State of Arizona, hereinafter designated "Contractor", and the City of Prescott, a municipal corporation, organized and existing under and by virtue of the laws of the State of Arizona, hereinafter designated "City".

WITNESSETH: That the said Contractor, for and in consideration of the sum to be paid him by the said City, and of the other covenants and agreements herein contained, and under the penalties expressed in the bonds provided, hereby agrees, for himself, his heir, executors, administrators, successors and assigns as follows:

ARTICLE I - SCOPE OF WORK: The Contractor shall furnish any and all labor, materials, equipment, transportation, utilities, services and facilities, required to perform all work for the construction of the project described as City of Prescott: ** Project and install the material therein for the City, in a good and workmanlike and substantial manner and to the satisfaction of the City through its Engineers and under the direction and supervision of the Public Works Director, or his properly authorized agents and strictly pursuant to and in conformity with the Plans and Specifications prepared by the Engineers for the City, and with such written modifications of the same and other documents that may be made by the City through the Public Works Director or his properly authorized agents, as provided herein.

ARTICLE II - CONTRACT DOCUMENTS: The Notice Inviting Bids, Plans, Standards Specifications and Details, Special Conditions, Addenda, if any, Proposal and Insurance Requirements as accepted by the Mayor and Council per Council Minutes of _____, 2012, Performance Bond, Payment Bond, Bid Bond, Certificate of Insurance and Contract Amendments, if any, are by this reference made a part of this Contract to the same extent as if set forth herein in full.

ARTICLE III - TIME OF COMPLETION: The Contractor hereby agrees to commence work on or before the tenth (10th) day after written notice to do so, and to fully complete the same within seventy five (75) calendar days after the date of the written notice to commence work, subject to such extensions of time as are provided by the General Conditions.

ARTICLE IV - COMPENSATION: Contractor shall be paid, pursuant to the provisions as set forth in the Contract documents, the total sum of _____ Dollars (\$ _____), plus any approved contract amendments, for the full and satisfactory completion of all work as set forth in the Project Specifications and Contract Documents. Retention shall be in accordance with Arizona Revised Statutes Section 34-221.

ARTICLE V - CONFLICT OF INTEREST: Pursuant to ARS Section 38-511, the City of Prescott may cancel this contract, without penalty or further obligation, if any person significantly involved in initiating, negotiation, securing, drafting or creating the contract on behalf of the City of Prescott 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. In the event of the foregoing, the City of Prescott further elects to recoup any fee or commission paid or due to any person significantly involved in initiating, negotiation, securing, drafting or creating this contract on behalf of the City of Prescott from any other party to the contract, arising as a result of this contract.

ARTICLE VI - AMBIGUITY: This Agreement is the result of negotiations by and between the parties. Although it has been drafted by the Prescott City Attorney, it is the result of the negotiations between the parties. Therefore, any ambiguity in this Agreement is not to be construed against either party.

ARTICLE VII - NONDISCRIMINATION: The Contractor, with regard to the work performed by it after award and during its performance of this contract, will not discriminate on the grounds of race, color, national origin, religion, sex, disability or familial status in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The Contractor will not participate either directly or indirectly in the discrimination prohibited by or pursuant to Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973,

Section 109 of the Housing and Community Development Act of 1974, the Age Discrimination Act of 1975, and Executive Orders 99-4 and 2000-4 as amended.

ARTICLE VIII - INDEPENDENT CONTRACTOR STATUS: It is expressly agreed and understood by and between the parties that the Contractor is being retained by the City as an independent contractor, and as such the Contractor shall not become a City employee, and is not entitled to payment or compensation from the City or to any fringe benefits to which other City employees are entitled other than that compensation as set forth in Article IV - Compensation above. As an independent contractor, the Contractor further acknowledges that he is solely responsible for payment of any and all income taxes, FICA, withholding, unemployment insurance, or other taxes due and owing any governmental entity whatsoever as a result of this Agreement. As an independent contractor, the Contractor further agrees that he will conduct himself in a manner consistent with such status, and that he will neither hold himself out nor claim to be an officer or employee of the City by reason thereof, and that he will not make any claim, demand or application to or for any right or privilege applicable to any officer or employee of the City, including but not limited to workmen's compensation coverage, unemployment insurance benefits, social security coverage, or retirement membership or credit.

ARTICLE IX - CITY FEES: Prior to final payment to the Contractor, the City shall deduct therefrom any and all unpaid privilege, license and other taxes, fees and any and all other unpaid moneys due the City from the Contractor, and shall apply to those moneys to the appropriate account. Contractor shall provide to the City any information necessary to determine the total amount(s) due.

ARTICLE X - LIQUIDATED DAMAGES: All time limits stated in the contract documents are of the essence and should the Contractor fail to complete the work required to be done on or before the time of completion as set forth in these contract documents, including any authorized extension of time, it is mutually agreed and understood by and between the parties that the public will suffer great damages; that such damages, from the nature of the project, will be extremely difficult and impractical to fix; that the parties hereto wish to fix the amount of said damages in advance; and that the sum of \$**.00 per day for each and every day's delay in completion and acceptance of the work required to be done by the Contractor subsequent to the time of completion, including any authorized extensions of time, is the nearest and most exact measure of damages for such breach that can be fixed now or could be fixed at or after such breach and that, therefore, the Owner and Contractor agree to fix said sum of \$**.00 per day for each and every said day's delay as liquidated damages, and not as a penalty or forfeiture for the breach of the agreement to complete the work required to be done by the Contractor on or before the time of completion and acceptance and, in the case of such breach, the Owner shall deduct said amount from the amount due the Contractor under the contract. In the event the remaining balance due the Contractor is insufficient to cover the full amount of assessed liquidated damages, then the Contractor or the surety on the bonds shall pay the difference due the Owner.

ARTICLE XI – OTHER WORK IN PROJECT AREA

The City of Prescott, any other contractors, whether under contract with the City, a third party, and/or utilities, may be working within the project area while this Contract is in progress. The Contractor herein acknowledges that delays and disruptions may, and in all likelihood, will occur due to other work. The Contractor's bid shall be deemed to have recognized and included costs arising from and associated with other work in the project area disclosed by the Contract Documents or which would be apparent to an experienced contractor exercising due diligence during inspection of the project documents, the question and answer session in the pre-bid process or during site inspection. No payment will be made for any delays or disruptions in the work schedule that are wholly the fault of the contractor, its agents, employees or any of the contractor's subcontractors. In the event that the contractor encounters delay or disruption in the project schedule due to factors not wholly the fault of the contractor or within the contractors control then the Contract may be adjusted pursuant to the Delay's and Extension of Time provisions of this Contract and a timely request submitted for Contract Amendment. Failure to submit a timely request for Contract Amendment shall be deemed a waiver of any entitlement to additional compensation.

ARTICLE XII - BONDS

- A. On or before the execution of the contract, the Contractor shall obtain in an amount equal to the full contract price a performance bond pursuant to ARS Section 34-222, conditioned upon the faithful performance of this contract in accordance with the plans, specifications and conditions herein. Such bond shall be solely for the protection of the City of Prescott. A copy of this bond shall be filed with the Prescott City Clerk.
- B. Contractor shall also obtain a payment bond, pursuant to the provisions of ARS Section 34-222, in an amount equal to this full contract price herein, said bond to be solely for the protection of claimants supplying labor or

materials to the Contractor or his subcontractors in the prosecution of the work provided for in this contract. A copy of this bond shall be filed with the Prescott City Clerk.

- C. All bonds must be written by an insurance company authorized to do business in the State of Arizona, to be evidenced by a Certificate of Authority as defined in ARS Section 20-217, a copy of which certificate is to be attached to the applicable bid bond, payment bond and performance bond. In addition, depending upon the nature of the contract and amount thereof, the City Manager may also require insurance companies and/or bonding companies to have an "A" rating or better with Moody's or A.M. Best Company, and/or to be included on the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended) by the audit staff, Bureau of Accounts, US Treasury Department.

ARTICLE XIII - MISCELLANEOUS

- A. The parties hereto expressly covenant and agree that in the event of a dispute arising from this Agreement, each of the parties hereto waives any right to a trial by jury. In the event of litigation, the parties hereby agree to submit to a trial before the Court. The Contractor further agrees that this provision shall be contained in all subcontracts related to the project, which is the subject of this Agreement.
- B. The parties hereto expressly covenant and agree that in the event of litigation arising from this Agreement, neither party shall be entitled to an award of attorney fees, either pursuant to the Contract, pursuant to ARS Section 12-341.01 (A) and (B), or pursuant to any other state or federal statute. The Contractor further agrees that this provision shall be contained in all subcontracts related to the project that is the subject of this Agreement.

IN WITNESS WHEREOF, three (3) identical counterparts of this Contract, each of which shall for all purposes be deemed an original thereof, have been duly executed by the parties herein above named, on the date and year first above written.

ATTEST:

Witness, if Contractor is an Individual

Contractor

By: _____

Title: _____

City of Prescott, a municipal corporation

Marlin D. Kuykendall, Mayor

Attest:

Approved as to Form:

Kim M. Kapin, Interim City Clerk

Gene Neil, Interim City Attorney

GENERAL CONDITIONS

COMMENCEMENT, PROSECUTION AND PROGRESS

PRECONSTRUCTION CONFERENCE

Within 15 days of the date of the Notice of Award, the Contractor is required to attend a Pre-construction Conference. The City will contact the Contractor to schedule a specific date, time and location for the Pre-construction Conference. The purpose of the meeting is to outline specific construction items and procedures and to address items, which require special attention on the part of the Contractor. The Contractor may also present proposed variations in procedures, which the Contractor believes may be of benefit to the project, reduce cost, or will reduce inconvenience to the public. Communication and coordination issues will be also addressed during the Pre-construction Conference. The Contractor will be required to provide five sets of the following information at the Pre-construction Conference:

- A. Names and emergency telephone number of key personnel involved in the project.
- B. A copy of each subcontractor's contract or purchase order agreement for each and every item of work under subcontract on the project.
- C. The Construction Schedule as defined elsewhere in the General Conditions.
- D. A payment schedule showing the estimated dollar volume of work for each calendar month during the life of the project.
- E. The Traffic Control and access management plan providing for continuous access to residents and businesses affected by the project.
- F. The Contractor's Company Safety Plan.
- G. The Contractor's Quality Control Plan.
- H. An itemized list of shop drawings, materials, mix designs, equipment submittals and a schedule indicating the dates each of these items will be transmitted to the Public Works Director for review.

Each of the above items is subject to review and approval by the Public Works Director.

COMMENCEMENT

The Contractor shall commence work on or before the tenth (10th) calendar day after receiving the Notice to Proceed, and shall complete all work under the Contract within the period of time specified in the Special Conditions. The City reserves the right to issue Notice to Proceed at any time between zero (0) and sixty (60) days after contract award. Notice to Proceed will be issued not later than sixty (60) calendar days after the Contract has been awarded unless otherwise agreed upon in writing, or as may be specified in the Special Conditions. In addition, Contractor shall not commence work until all required documents, bonds, plans and schedules have been received and approved by the City. These submittals will not affect the issuance of Notice to Proceed by the City.

PUBLIC NOTICE

A. Contractor shall issue written notification to those residents affected by the ** Project. This notification shall contain at a minimum: (1) Type of Work; (2) Contractor; (3) Contractor's Phone Number and Point of Contact; (4) Duration of Project; (5) Date project commences; (6) Description of project site; (7) Contractor's after-hours Point of Contact and phone number.

B. The Contractor is required to post public notification signs at all entrances to the project specifying the following information: (1) Project Name/Description (2) Construction Calendar (3) Contractor Name/Phone Number Day & Night (4) City Public Works (928) 777-1130.

C. The sign size and legend shall be appropriate for the intended purpose and be easily read. Sign background shall be blue with white letters. The sign size and legend content shall be approved by the Public Works Department prior to sign manufacture. All signs shall be posted prior to commencement of any work on the project. Signs will be removed by the contractor upon final acceptance of the project. No direct payment shall be made for said signs, cost of such shall be considered incidental to the contract.

SUBCONTRACTORS

MAG Specifications, Section 108.2, including the following:

- A. All subcontractors and purchase orders for equipment shall state and establish guaranteed delivery dates, at such times as determined by the Contractor, which will allow the Contractor to complete the project within the Contract time.
- B. The Contractor shall perform more than forty percent (40%) of the work (by total contract amount) involved in this project with his own forces. Total subcontracted amounts shall be limited to less than sixty percent (60%) of the total contract amount. For purposes of this requirement, materials purchased directly from suppliers and installed by the Contractor's own forces shall be included in the Contractor's total and materials installed by subcontractors, regardless of who originally purchased them, will be included in the Subcontractors totals.
- C. The Contractor shall furnish the form list of subcontractors with his bid including the estimated amount of each subcontract. Additionally, a duplicate copy of each subcontract, including lower tier subcontracts, shall be delivered to the Public Works Director upon award of the project and prior to the issuance of the Notice to Proceed.

CONTRACTOR'S REPRESENTATIVE AND EMERGENCIES

MAG Specifications, Section 105.5, including: Plans and specifications to successful bidder clause in the "Information for Bidders" in this set of specifications.

CONTRACTOR AND SUBCONTRACTOR RECORDS

- A. The Contractor shall keep at the work site a copy of the Contract Documents and shall at all times give the Public Works Director access thereto.
- B. The Notice Inviting Bids, Information for Bidders, Special Conditions, Specifications, Plans, and all supplementary documents are intended to be complete and complementary and to prescribe a complete work. If any omissions are made of information necessary to carry out the full intent and meaning of the contract documents, the Contractor shall immediately call the matter to the attention of the Public Works Director for furnishing of detailed instructions. In case of discrepancies, the Specifications shall govern over the plans. Figured dimensions shall govern over scaled dimensions.
- C. Any drawings or plans listed anywhere in the Specifications or Addenda thereto shall be regarded as a part thereof and of the Contract. Anything mentioned in these Specifications and not indicated on the plans, or anything indicated on the plans and not mentioned in these Specifications, shall be in the same force and effect as if indicated or mentioned in both.
- D. The Contractor, subcontractors and all suppliers shall keep and maintain all books, papers, records, files, accounts, reports, bid documents with back-up data, including electronic data, and all other material relating to the contract and project for three years following completion and acceptance of the work. All records shall be accurately maintained in accordance with generally accepted accounting principles and practices uniformly and consistently applied in a format that will permit audit. The Public Works Director or his authorized representative(s) shall have access at all reasonable times to all applicable records of the Contractor and the records of the Contractor's subcontractors.

The Contractor and Subcontractors shall preserve all such materials for a period of three years after all payments to the Contractor or subcontractors, or until the final resolution of all claims made by the Contractor or subcontractor on this contract, whichever is later. The Contractor and subcontractors shall make all of the above materials available to the Public Works Director for auditing, inspection and copying and shall produce such materials upon written request at the office of the Public Works Director located at 433 N. Virginia St., Prescott Arizona.

The Contractor shall insert the above requirement in each subcontract, purchase order, lease agreement, or other document under which goods or services are provided for the performance of this contract and shall also include in all subcontracts a clause requiring subcontractors to include the above requirement in any lower-tier subcontract, purchase order, lease agreement or document under which goods or services are provided for the performance of this contract.

ADDENDA, REVISIONS AND SUPPLEMENTARY DRAWINGS

- A. The work shall conform to such other drawings relating thereto as may be furnished by the City prior to the opening of proposals, and to such drawings in the explanation of details or minor modifications as may be furnished from time to time during construction, including such minor modifications as the Public Works Director may consider necessary during the prosecution of the work.
- B. Scaled dimensions shall not be used in the construction of the work.

ERROR AND OMISSIONS

The written dimensions, calculations and quantities on the plans are presumed to be correct, but the Contractor shall be required to check carefully all dimensions, calculations and quantities before beginning work. If any errors or omissions are discovered, the Public Works Director shall be so advised in writing and will make the proper corrections. If the Contractor claims that any such errors or omissions should change the cost of any Pay Item or the construction as identified in the plans, the Contractor shall also submit to the Public Works Director a written proposed Contract Amendment. Any such adjustments made by the Contractor that are claimed to change the cost of any Pay Item or the construction as identified in the plans, without prior review and acceptance of a proposed Contract Amendment, shall be at the Contractor's own risk. The settlement of any complications or disputed expenses arising from a Contractor's adjustment shall be borne by the Contractor at his own expense.

CHARACTER OF WORKMEN

MAG Specifications, Section 108.6.

SUSPENSION OF WORK

- A. The Public Works Director shall have the authority to suspend the work wholly or in part, for such period as he may deem necessary, due to unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as he may deem necessary due to the failure on the part of the Contractor to carry out orders given, or to perform any provisions of the Contract. The Contractor shall immediately comply with the written order of the Public Works Director to suspend work wholly or in part. The suspended work shall be resumed when conditions are favorable and methods are corrected, as reviewed and accepted in writing by the Public Works Director.
- B. In case of suspension of work for any cause whatsoever, the Contractor shall be responsible for all materials and shall properly store them if necessary and shall provide suitable drainage and erect temporary structures where necessary.
- C. If the performance of all or any portion of the work is suspended or delayed by the Public Works Director in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the contractor shall submit to the Public Works Director, in writing, a request for an adjustment within seven (7) calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.
- D. Upon receipt, the Public Works Director will evaluate the contractor's request. If the Public Works Director agrees that the cost and/or time required for the performance of the contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the Public Works Director will make an adjustment (excluding profit) and modify the contract in writing accordingly. The contractor will be notified of the Public Works Director determination whether or not an adjustment of the contract is warranted. In the event an adjustment of the contract is warranted a contract amendment shall be executed by both parties evidencing mutual agreement to same.
- E. No contract adjustment will be allowed unless the contractor has submitted the request for adjustment within the time limits prescribed.
- F. No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this contract.

DELAYS AND EXTENSION OF TIME

MAG Specifications, Section 108.7, including:

- A. It is the Contractors responsibility to establish construction methods and a construction schedule, which will facilitate the completion of work required by this Contract within the contract period and with full consideration for the season during which the work is scheduled. Judgment as to hazardous conditions shall be made by the Public Works Director.
- B. To receive consideration for an extension of time, a request must be made in writing to the Public Works Director stating the reason for said request, and such request must be received by the Public Works Director as soon as reasonable practicable when the contractor has knowledge or should have known of the delay causing event, condition or circumstances, but in no event later than immediately following the end of the delay-causing condition. The extension of time allowed shall be as determined by the Public Works Director and approved by the City. In setting the Contract time, it has been assumed that up to five (5) working days may be lost as a result of weather conditions which will slow down the normal progress of work; therefore no extensions in contract time will be allowed for the first five (5) working days lost due to bad weather conditions. An extension of time may be granted by the City after the expiration of the time originally fixed in the Contract or as previously extended, and the extension so granted shall be deemed to commence and be effective from the date of such expiration.
- C. Any extension of time shall not release the sureties upon any bond required under the Contract. Extensions of time in and of themselves will not be a basis for a request of additional compensation by the Contractor.
- D. Any delays in this project, or extensions of time which may be granted, shall not entitle the Contractor to any additional compensation or monies whatsoever, including but not limited to compensation for loss of anticipated profits, extended overhead, unabsorbed home office overhead, or any other payments, unless expressly agreed to by the City in a duly executed and approved contract amendment.

PAYMENT FOR DELAY

MAG 109.8 except as modified hereafter:

109.8.2, (B) Any compensation paid to the Contractor shall be in accordance with the General Conditions, Payment to Contractors, section of this Contract.

109.8.3 Extension of Contract Time: For any such delays, the contract time will be adjusted in accordance with the General Conditions, Delays and Extension of Time, section of this Contract.

TERMINATION FOR BREACH OF CONTRACT

MAG Specifications, Sections 108.10 and 108.11, including: The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to the City.

METHODS AND EQUIPMENT

MAG Specifications, Section 108.6, including: The methods and equipment adopted by the Contractor shall be such as will secure a satisfactory quality of work and will enable the Contractor to complete the work in the time agreed upon. The selection and use of these methods and equipment is the responsibility of the Contractor.

DATE OF ACTUAL COMPLETION

The date upon which the project will be considered as complete shall be that date upon which the work is accepted by the City.

FINAL ACCEPTANCE

MAG Specifications, Section 105.15 (B), including:

- A. After all work under the Contract has been completed, as determined by the Public Works Director, the Public Works Director will recommend in writing to the City that final acceptance of the entire work under this Contract be made as of the date of the Public Works Director final inspection. The City will make final acceptance promptly after receiving the Public Works Director recommendation.
- B. No partial acceptance of any portion of the work will be made and no acceptance other than the final acceptance of the overall completed project shall be construed as final acceptance of any part until the overall final acceptance by the City is made, unless specified elsewhere herein.

SAFETY, HEALTH AND SANITATION PROVISIONS

MAG Specifications, Section 107.5, including:

- A. The Contractor shall provide suitable and adequate sanitary conveniences for the use of all persons employed on the project. All sanitary conveniences shall conform to the regulations of the public authority having jurisdiction over such matters. At the completion of the project, all such sanitary conveniences shall be removed and the premises left in a sanitary condition.
- B. On all projects, with respect to sanitation facilities, for which Federal funds are allocated, the Contractor shall cooperate with and follow directions of representatives of the Public Health Service and the State. State and County public health service representatives shall have access to the work wherever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection.

TRAFFIC CONTROL

Traffic control is the responsibility of the Contractor and shall be in accordance with MAG Specifications, Section 401. The Contractor shall submit to the City of Prescott, for approval, a traffic control plan for all activities connected with the proposed work.

WATER

- A. The Contractor shall supply adequate, pure cool-drinking water with individual drinking cups for the use of employees on this construction. The quality of drinking water shall meet the "Standards for Public Water Supplies" specified in the State Health Department Code.
- B. It shall be the responsibility of the Contractor to provide and maintain, at his own expense, an adequate supply of water for his use for construction and to install and maintain necessary supply connections and piping for same. Before final acceptance of the completed project, all temporary connections and piping installed by the Contractor shall be removed.
- C. The Contractor shall apply for a fire hydrant meter for all construction water used if the Contractor desires to obtain water from the City of Prescott distribution system at any point. All contractors requesting construction water from the City must submit a Construction Water Meter Application to the Water Distribution Department. A \$1,000 deposit will be required for hydrant meters. If construction water use occurs during the months of May through September the Contractor shall also include a dust abatement program. Potable water may not be allowed for dust abatement during these months. Potable water can be used to process embankment fill and base materials year round. However, contractors are encouraged to use treated effluent for construction activities. The City of Prescott has two outlets for effluent, the Sundog Wastewater Treatment Plant and the Airport Wastewater Treatment Plant. The City will provide metered standpipes for effluent at both plants. The Contractor will be required to estimate daily and total potable/effluent water usage for the project as identified on the Construction Water Meter application. The Contractor will be responsible for all costs associated with obtaining and delivering construction water.

PROTECTION OF WORK

MAG Specifications, Section 107.10.

CLEANUP AND DUST CONTROL

MAG Specifications, Sections 104.1.3 and 104.1.4, including: Salvage material shall be stored at areas designated by the Public Works Director.

GUARANTEE OF WORK

MAG Specifications, Section 108.8, shall apply, but modify: Guarantee period is two (2) years. During the two year (2 year) guarantee period, should the Contractor fail to remedy defective material and/or workmanship, or to make replacements within five (5) calendar days after written notice by the City, it is agreed that the City may make such repairs and replacements and the actual cost of the required labor and materials shall be chargeable to and payable by the Contractor.

CONTINGENCIES

All loss or damage arising from obstruction or difficulties which may be encountered in the prosecution of the work, from the action of the elements, or from any act or omission on the part of the Contractor or any person or agent employed by him shall be borne by the Contractor.

NOTICE AND SERVICE THEREOF

Any notice to the Contractor from the City relative to any part of this Contract shall be in writing and considered delivered and the service thereof completed when said Notice is posted, by first class mail, to the said Contractor at his last given address, or delivered in person to said Contractor or his authorized representative on the work.

PROJECT MEETINGS

- A. It shall be the responsibility of the Contractor to conduct weekly meetings to be attended by representatives of Subcontractors, utilities, the Public Works Director and other interested parties for the purpose of keeping the project on schedule and to provide for necessary coordination of the work of the various parties. The Contractor shall take minutes at each meeting for distribution to all attendees the following week. The minutes shall be of sufficient detail to accurately recount the meeting discussion, including but not limited to progress, work schedule, submittals and certifications, utilities, construction issues, contract changes, safety and traffic control, action items, resolved and unresolved issues.
- B. Additionally the Contractor shall furnish the Public Works Director with written weekly project status reports at the beginning of each weekly project meeting. The report shall cover the work of the preceding work week and shall include the following for each week.
 - 1. A comprehensive daily list of the Contractor's men and equipment performing the work on the jobsite.
 - 2. A comprehensive daily list of Contractor's subcontractors' men and equipment, if any, performing the work on the jobsite.
 - 3. A brief description of the work performed by the Contractor and Contractor's subcontractors, if any.
 - 4. The estimated percentage of each portion of the work performed for the period together with the total percentage of each portion of the work performed to the date of the report.
 - 5. A detailed summary of each work stoppage, if any, occasioned by the City of Prescott, other contractors, or other designated reasons, which were beyond the contractor's control.
 - 6. Comments or exceptions to prior weekly meeting minutes shall be addressed at each subsequent construction meeting.

CONSTRUCTION SCHEDULE

Per MAG Specifications, Section 108.4 and Section 108.5, including:

- A. The Construction schedule shall indicate the time of starting and completing each major phase of the project and such intermediate phases as will serve for well-defined control points. The schedule shall be of sufficient detail to define the Critical Path for project completion. It shall also indicate the scheduled receipt of major items of equipment and the items of equipment installation dates of which is critical to the scheduled progress of the project. Two week look-ahead schedules will be provided by the contractor at each weekly construction meeting. The comprehensive project schedule shall be updated and submitted monthly. Such updates shall include and accurately reflect additional work, changes in the work, delays to individual items of work and reasons therefore along with the extent of delay and any other items affecting the progress of the project.
- B. Failure by the contractor to provide the weekly/monthly updates will result in the City withholding an amount equal to 5% of the monthly pay estimate relative to the billing period in which the schedule updates are to be provided. Said 5% withholding will be retained by the City until the required schedule updates are submitted by the Contractor, reviewed by the City and found to be current. When the schedule updates are determined to be in conformance with the provisions herein the 5% retainer will be released with the next monthly payment.
- C. The construction schedule shall serve as an index of progress prosecution as contemplated by the Contractor. In the event the actual construction progress varies substantially from the scheduled progress, the Public Works Director will require and the Contractor shall be required, within ten (10) calendar days written notice, to provide a revised construction schedule, giving in detail the particular changes in production as estimated by the Contractor to complete the work within the specified Contract Time. Time is of the essence in this regard.

ACCIDENT PREVENTION

MAG Specifications, Section 107.5 and 107.6 including:

- A. Machinery, equipment and other hazards shall be guarded or eliminated in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, and the requirements of the Occupational Safety and Health Administration.
- B. First aid facilities and information posters conforming at least to the minimum requirements of the Occupational Safety and Health Administration shall be provided in a readily accessible location or locations.
- C. The Contractor shall make all reports as are, or may be, required by the Engineer or any authority having jurisdiction, and permit all safety inspections of the work being performed under this Contract. Before proceeding with any construction work, the Contractor shall take all the necessary action to comply with all provisions for safety and accident prevention. In the event the Contractor fails to comply with said safety provisions or directions of the Public Works Director, the Public Works Director without prejudice to any other rights of the City, may issue an order stopping all or any part of the work.
- D. Thereafter, a start order for resumption of the work may be issued at the discretion of the Public Works Director when in his opinion the deflection from safety requirements has been corrected. The Contractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage.

CONSTRUCTION FACILITIES

All construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities shall be of ample size and capacity to adequately support and/or move the loads to which they will be subjected. All railings, enclosures, safety devices, and controls required by law or for adequate protection of life and property shall be provided.

TEMPORARY FACILITIES

The Contractor shall provide all temporary facilities and utilities required for prosecution of the work; protection of employees and the public; protection of the work from damage by fire, weather or vandalism; and such other facilities as may be specified or required by any legally applicable law, ordinance, rule, or regulation.

WARNING DEVICES AND BARRICADES

Per MAG Specifications, Section 107.7.

HAZARDS IN PUBLIC RIGHT-OF-WAY

Per MAG Specifications, Section 107.7.

HAZARDS IN PROTECTED AREAS

Excavations on project sites from which the public is to be excluded shall be marked or guarded in a manner appropriate for the hazard.

PROTECTION OF EXISTING ITEMS

The Contractor shall protect all existing structures, trees, shrubs, and other items on the project site that are to be preserved, by substantial barricades or other devices commensurate with the hazard, from injury or destruction by vehicles, equipment, workmen, or other agents.

PROJECT SECURITY

The Contractor shall make adequate provision, subject to the approval of the Public Works Director, to protect the project and Contractor's facilities from fire, theft, and vandalism, and the public from unnecessary exposure to injury.

FIRE EXTINGUISHER

At least one (1) fire extinguisher, rated at least 2A, shall be provided on the job site.

OFF-SITE ROADS

Except as otherwise shown or specified, off-site access roads shall be adequately maintained, graded-earth roads. Such roads shall be built only in the public right-of-way or easements obtained by the City. If the Contractor elects

to build along some other alignment, he shall obtain, without additional cost to the City, necessary rights-of-way or easements.

NOISE ABATEMENT

In inhabited areas, particularly residential, operations shall be performed in a manner to minimize unnecessary noise generation. Particular consideration shall be given to noise generated by repair and service activities during the night hours in residential areas. No repair or service activities shall be conducted between the hours of 6:00 p.m. and 7:00 a.m.

DRAINAGE CONTROL

In excavation, fill, and grading operations, care shall be taken to disturb the pre-existing drainage pattern as little as possible. Particular care shall be taken not to direct drainage water onto private property or into streets or drainage ways inadequate for the increased flow.

PROJECT CLOSE-OUT

It is the intent of these Specifications and Contract Documents that the Contractor shall deliver a complete and operable facility capable of performing its intended functions and ready for use.

WASTE DISPOSAL, MATERIAL STORAGE AND GRADING

- A. The Contractor shall provide for the disposal of all surplus materials, waste products, debris, etc., and shall make necessary arrangements for such disposal. The Contractor shall obtain written permission from property owners(s) prior to disposing of any surplus materials, waste products, debris, etc., on private property, and shall also obtain the approval of the Public Works Director prior to such disposal.
- B. The Public Works Director will not approve the filling of ditches, washes, drainage ways, etc., which may in his opinion create water control problems.
- C. The Public Works Director will not approve disposal operations, which will, in his opinion, create unsightly and/or unsanitary nuisances.
- D. The Contractor shall maintain the disposal site(s) in a reasonable condition of appearance and safety during the construction period as required by the Public Works Director. Prior to final acceptance of the project, the Contractor shall have completed the leveling and cleanup of the disposal site(s) to the satisfaction of the Public Works Director.
- E. The Contractor shall obtain a grading permit or any other permit required by the City, Yavapai County or any county, or State or federal rules, regulations, laws, ordinances or any other regulatory authority including but not limited to the following activities:
 - a) Areas disturbed by the Contractor, including staging areas, borrow areas, waste areas, or material storage areas, located within the City limits that are subject to the requirements of the City Land Development code, including but not limited to Section 6.7 – Site Disturbance, Grading and Restoration Standards, of the City of Prescott Land Development Code. These areas may require a City grading permit, as described in Section 9.6 – Site Disturbance and Grading Permit, of the City of Prescott Land Development Code. Areas outside of the City limits are subject to the requirements of Yavapai County and shall be adhered to by the contractor.
- F. A separate grading permit for disposal of waste material on private property may be required dependent upon site specific conditions at the waste area(s) and characteristics of the fill in accordance with Paragraph E. The fees for this permit shall not be waived; said fees are incidental to the appropriate bid item(s).
- G. A separate permit(s) shall be required for staging or material storage area(s) that:
 - a) Are not City owned property on the project, or
 - b) Require clearing or grubbing in excess of 10,000 sf.
 - a) Fees for this permit(s) shall not be waived; said costs are incidental to the appropriate bid item(s).
- H. The Contractor shall obtain a grading permit for site disturbances for infrastructure improvements on City owned property not within the right-of-way for which the disturbance is greater than 50 cubic yards of material or in excess of 10,000 square feet. The associated fees for grading permits for City owned property shall be waived.

PROJECT RECORD DOCUMENTS

- A. The Contractor shall maintain at the site, available to the City and Engineer, one (1) copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change of Orders, and other modifications in good order and marked to record all changes made during construction. These shall be delivered to the City upon completion of the Project or the earlier termination of the parties' contract.
- B. The contractor shall maintain any and all documentation to substantiate all costs on the project, including but not limited to those items included in "Force Account" computations, computations reflecting the actual cost of work on the project and computations substantiating any claimed increases or additional costs incurred in the project by the contractor, and shall make those records available to the City (or provide copies thereof to the City) within 24 hours of request by the City. The failure of the Contractor to maintain and produce the foregoing documentation will preclude the Contractor from being entitled to any additional payments for any additional work in question.

CONTROL OF WORK

ABBREVIATIONS

MAG Specifications, Section 101.1, including abbreviations as shown on the Plans.

AUTHORITY AND DUTIES OF INSPECTOR

Per MAG Specifications, Section 105.9, including:

- A. An inspector is to be assigned to the project by the City to monitor the project and to keep the Public Works Director informed as to the progress of the work and the manner in which it is being done. Additionally, the inspector will call the Contractor's attention to any non-conformance with the Plans and Specifications. He will not be authorized to approve or accept any portion of the work or to act as foreman for the Contractor. Inspection will be done on an as needed or on-call basis.
- B. The inspector will exercise such additional authority only as may from time to time be delegated to him by the Public Works Director.

INSPECTION

MAG Specifications, Section 105.10, including:

Inspection is to be done by the City of Prescott Public Works Department. Should the Contractor work more than forty (40) hours in a workweek, overtime for city inspections will be charged against the contract at the rate of \$29.34 per hour for each hour or portion thereof in excess of forty (40) hours. The charges will be deducted from the Contractor's monthly pay estimate. The need for overtime inspection will be determined solely by the Public Works Director. The Contractor shall furnish the Public Works Director with every reasonable facility for ascertaining whether or not the work as performed is in accordance with the requirements and intent of the Specifications and Contract. If the Public Works Director requests it, the Contractor at any time before acceptance of the work shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standards required by the Specifications. Should the work thus exposed or examined prove acceptable, the uncovering or removing and the replacing of the covering or making good of the part removed will be paid for as provided under CHANGES IN THE WORK, but should the work so exposed or examined prove unacceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed shall be at the Contractor's expense. Inspection or supervision by the Public Works Director shall not be considered as direct control of the individual workman and his work. The direct control shall be solely the responsibility of the Contractor's foreman and superintendent.

AUTHORITY OF THE ENGINEER

MAG Specifications, Section 105.1 with the following exception: References to "the Engineer" shall mean Public Works Director.

FORMAL PROTEST

If the Contractor considers any work demanded of him to be outside the requirements of the Contract, or if he considers any instructions, ruling, or decision of the Public Works Director to be unfair, he shall, within ten (10) calendar days after such demand is made, or instruction, ruling or decision is given, file a written protest with the Public Works Director, stating clearly and in detail his objections and the reasons therefore. Except for such protests as are made of record in the manner and within the time above stated, the Contractor shall be deemed to have waived and does hereby waive all claims for extra work, damages and extensions of time resulting from demands, instructions, rulings and decisions of the Public Works Director. Upon receipt of any such protest from the Contractor, the Public Works Director shall review the demand, instructions, rulings, or decisions objected to and shall promptly advise the Contractor in writing of his final decision, which shall be binding, unless within ten (10) calendar days thereafter the Contractor shall file with the City Manager a formal protest against said final decision of the Public Works Director. The City Manager shall consider and render a final decision of any protest within thirty (30) calendar days of receipt of same.

PLANS

- A. The Contract Plans consist of general drawings. These indicate such details as are necessary to give a comprehensive idea of the construction contemplated. All authorized alterations affecting the requirements and information given on the Contract Plans shall be in writing. The Contract Plans shall be supplemented by such working or shop drawings prepared by the Contractor as are necessary to adequately control the work. No change shall be made by the Contractor in any working or shop drawing after it has been accepted by the Public Works Director.
- B. The Contractor shall keep a copy of the Plans and Specifications at the job site, and shall at all times give the Public Works Director access thereto. Any drawings or plans listed in the Detailed Specifications shall be regarded as a part thereof and the Public Works Director will furnish from time to time such additional drawings, plans, profiles, and information as he may consider necessary for the Contractor's guidance.
- C. All authorized alterations affecting the requirements and information given on the accepted plans shall be in writing. No changes shall be made of any plan or drawing after the same has been accepted by the Public Works Director except by consent of the Public Works Director in writing.

CONFORMITY WITH PLANS AND ALLOWABLE DEVIATIONS

MAG Specifications, Section 105.3.

COORDINATION AND INTERPRETATION OF PLANS AND SPECIFICATIONS

MAG Specifications, Section 105.4, including:

- A. In the event of any doubt or question arising regarding the true meaning of these Specifications, the Special Conditions, or the Plans, reference shall be made to the Public Works Director, whose decision thereon shall be final. In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct.
- B. In the event of there being a conflict between one contract document and any of the other contract documents the document highest in precedence shall control and supersede the document which is contrary to it. The order of precedence of the contract documents is as follows:
 - 1. Supplemental Agreements, the last in time being the first in precedence.
 - 2. The formal Contract.
 - 3. Notice Inviting Bids.
 - 4. Information for Bidders.
 - 5. Special Provisions.
 - 6. Technical Specifications.
 - 7. Plans.
 - 8. General Conditions.
 - 9. Contractor Proposal.

ORDER OF WORK

- A. When required by the Contract Documents, the Contractor shall follow the sequence of operations as set forth therein.
- B. Full compensation for conforming to such requirements will be considered as included in the prices paid for contract items of work and no additional compensation will be allowed therefore.

CONSTRUCTION STAKES, LINES AND GRADES

MAG Specifications, Section 105.8.

REMOVAL OF UNACCEPTABLE AND/OR UNAUTHORIZED WORK

MAG Specification, Section 105.11.

MAINTENANCE DURING CONSTRUCTION

MAG Specifications, Section 105.12.

COOPERATION BETWEEN CONTRACTORS

The City of Prescott reserves the right at any time to contract for and perform other additional work on or near the work covered by the contract.

When separate contracts are let within the limits of any one project, each contractor shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

The Contractor shall arrange his work and shall place and dispose of the materials being used so as not to interfere with the operation so the other Contractors within the limited of the same project. He shall join his work with that of others in an acceptable manner and shall perform it in proper sequence to that of others.

The City of Prescott will not honor any claim for extra compensation due to delays, extra work, or extension of time caused by any other Contractors working within the limits of the same project.

COORDINATION OF WORK

- A. Prior to starting construction, the Contractor shall submit their construction schedule to the Public Works Director for approval.
- B. It shall be the responsibility of the Contractor to maintain overall coordination of the project. Based on the general contract construction schedule prepared in accordance with these Specifications, the Contractor shall obtain from each of his Subcontractors a similar schedule and shall be responsible for all parties maintaining these schedules or for coordinating changes necessitated by unforeseen difficulties.

LINES AND GRADES.

All work under this Contract shall be built in accordance with the detailed scope of work.

MATERIALS AND WORKMANSHIP

GENERAL

MAG Specifications, Section 106.1, including:

- A. Where equipment, materials, or articles are referred to in the Specifications as "or equal", or "equal to" any particular standard, the Public Works Director shall decide the question of equality.
- B. Wherever any standard published specification is referred to, the latest edition or revision, including all contract amendments, shall be used unless otherwise specified. Materials of a general description shall be the best of their several kinds, free from defects, and adapted to the use for which provided. The physical characteristics of all materials not particularly specified shall conform to the latest standards published by the American Society for Testing and Materials, where applicable. All material shall be new and of the specified quality and equal to the accepted samples, if samples have been submitted.

- C. All work shall be done and completed in a thorough, workmanlike manner notwithstanding any omission from these Specifications or from the Plans; and it shall be the duty of the Contractor to call the Public Works Director' attention to apparent errors or omissions and request instructions before proceeding with the work. The Public Works Director may, by appropriate instructions, correct errors and supply omissions, which instructions shall be binding upon the Contractor as though contained in the original Specifications or Plans.

SUBSTITUTION OF MATERIAL OR EQUIPMENT

MAG Specifications, Section 106.4, including: Requests relative to substitutions for materials or equipment specifically designated on the Plans or in the Specifications shall be made in writing, and such requests shall be accompanied by complete data on which the Public Works Director can make determination on the merits of the proposed substitution. The written request shall state how the product proposed for a substitution compares with or differs from the designated product in composition, size, arrangement, performance, etc., and in addition, the request shall be accompanied by documentary evidence of equality in price and delivery or evidence of difference in price and delivery. Data on price shall be in the form of certified quotations from suppliers of both the designated and proposed items. All items accepted for substitution shall be subject to all applicable provisions of the Specifications. Should substitution be allowed under the foregoing provisions, and should the item subsequently prove to be defective or otherwise unsatisfactory for the service for which it was intended, the Contractor, shall without cost to the City, and without obligation on the part of the Public Works Director, replace the item with the material originally specified.

FABRICATED MATERIALS AND SHOP DRAWINGS

Fabricated materials and shop drawings shall be handled as set forth in the Special Conditions.

MATERIALS FURNISHED BY THE CITY

MAG Specifications, Section 106.8.

STORAGE AND HANDLING OF MATERIALS

MAG Specifications, Section 106.5 and 106.6, including: Protection of materials and equipment stored on the site shall be the responsibility of the Contractor. The City reserves the right to direct the Contractor to provide proper means of protection for materials if such is deemed advisable by the Public Works Director; however, the exercise of or failure to exercise this right shall not be deemed to relieve the Contractor of his primary responsibility for protecting the material and equipment. The Contractor shall provide suitable warehouses or other adequate means of protection for such if the materials and equipment require storage and protection. The Contractor shall store and care for the materials and equipment in the most suitable manner to protect them from distortion, rain, dust, or other damage. The cost of replacing any material or equipment damaged in storage shall be borne by the Contractor, and the fact that material or equipment has been damaged after partial payment has been made shall not relieve the Contractor of his primary responsibility. No motor shall be left uncovered or unprotected.

REJECTED MATERIALS

MAG Specifications, Section 106.7.

UTILITIES

MAG Specifications, Section 107.11.

DRIVEWAYS AND WALKS

Inconvenience caused by digging across driveways and sidewalks shall be kept to a minimum by restoring the serviceability of the drive or sidewalk as soon as possible. Before blocking driveways, the Contractor shall notify the property owner. The Contractor shall replace or repair any damage done to driveways and walks to not less than the condition existing prior to the Contractor's work. If it is necessary to leave an excavation open across driveways or sidewalks, the Contractor shall provide temporary relief in the form of steel plates over the excavation. Direct access shall be provided at all times to fire engine houses, fire hydrants, hospitals, police stations, and at all other agencies or services where emergencies may require immediate access to same.

ROADS AND FENCES

Streets and roads subjected to interference by the prosecution of this work shall be kept open and maintained by the Contractor until the work is completed.

TREES AND SHRUBBERY

- A. All trees and shrubbery within the right-of-way or easements shall be protected by the Contractor insofar as practicable.
- B. In the event shrubbery or trees must be trimmed, or removed, the Contractor shall notify the property owner to do so within a reasonable time prior to construction. All shrubbery or trees not removed by the property owner shall be trimmed or removed by the Contractor and hauled from the job at the Contractor's expense.
- C. All trees, shrubs, hedges, brush, etc. designated on the Plans, or by the Public Works Director for removal, shall be completely removed and disposed of as indicated on the Plans or as specified by the Public Works Director.

IRRIGATION DITCHES AND STRUCTURES

The Contractor shall contact the owners of any ditches, irrigation lines, and appurtenances, which interfere with the work and shall make arrangements for dry- up or scheduling of water deliveries. The Contractor shall be liable for any damage due to irrigation facilities damaged by his operations and shall repair such damaged facilities to an "equal or better than" original condition.

SUBMITTALS

Per MAG Specifications, Section 105.2, including:

- A. In ample time for each to serve its proper purpose and function, the Contractor shall submit to the Public Works Director such schedules, reports, drawings, lists, literature samples, instructions, directions, and guarantees as are specified or reasonable required for construction, operation, and maintenance of the facilities to be built and/or furnished under this Contract.
- B. Shop drawings and data shall be submitted to the Public Works Director in such number of copies as will allow him to retain four (4) copies of each submittal. The submittal shall clearly indicate the specific area of the Specifications or Plans for which the submittal is made. The additional copies received by him will be returned to the Contractor's representative at the job site. The Public Works Director notations of the action, which he has taken, will be noted on one (1) of these returned copies.
- C. The above drawings, lists, prints, samples, and other data shall become a part of the Contract and a copy of the same shall be kept with the job site plans and the fabrications furnished shall be in conformance with the same.

MATERIALS AND EQUIPMENT SCHEDULES

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

QUALITY CONTROL

- A. All material shall be of the specified quality and equal to the approved samples, if samples have been submitted. All work shall be done and completed in a thorough, workmanlike manner, notwithstanding any omission from these Specifications or from the Plans; and it shall be the duty of the Contractor to call the Public Works Director attention to apparent errors or omissions and request instructions before proceeding with the work. The Public Works Director may, by appropriate instructions, correct errors and supply omissions, which instructions shall be as binding upon the Contractor as though contained in the original Specifications or Plans.
- B. Materials which will require testing and inspection at the place of origin shall not be shipped prior to such testing and inspection.

SAMPLES AND TESTS

Per MAG Specifications, Sections 106.2 and 106.3, including:

- A. At the option of the Public Works Director, the source of supply of each of the materials shall be approved by him before the delivery is started and before such material is used in the work. Representative preliminary samples of the character and quality prescribed shall be submitted by the Contractor or producer of all materials to be used in the work for testing or examination as desired by the Public Works Director.

- B. Sieves used in determining the grading of samples of aggregates, select material, and other graded materials, shall conform to ASTM Designation E 11-81.

LEGAL RELATIONS AND RESPONSIBILITY

LAWS TO BE OBSERVED

MAG Specifications, Section 107.1.

ALIEN LABOR

The Contractor shall comply with the Immigration Reform and Control Act of 1996.

CONTRACTOR IMMIGRATION WARRANTY

The Contractor understands and acknowledges the applicability to it of the American with Disabilities Act, the Immigration Reform and Control Act of 1986 and the Drug Free Workplace Act of 1989. The following is only applicable to construction contracts: The Contractor must also comply with A.R.S. § 34-301, "Employment of Aliens on Public Works Prohibited", and A.R.S. § 34-302, as amended, "Residence Requirements for Employees".

Under the provisions of A.R.S. § 41-4401, Contractor hereby warrants to the City that the Contractor and each of its subcontractors ("Subcontractors") will comply with, and are contractually obligated to comply with all Federal Immigration laws and regulations that relate to their employees and A.R.S. § 23-214(A) (hereinafter "Contractor Immigration Warranty").

A breach of the Contractor Immigration Warranty shall constitute a material breach of this Contract and shall subject the Contractor to penalties up to and including termination of this Contract at the sole discretion of the City.

The City retains the legal right to inspect the papers of any Contractor or Subcontractors employee who works on this Contract to ensure that the Contractor or Subcontractor is complying with the Contractor Immigration Warranty. Contractor agrees to assist the City in regard to any such inspections.

The City may, at its sole discretion, conduct random verification of the employment records of the Contractor and any of subcontractors to ensure compliance with Contractor's Immigration Warranty. Contractor agrees to assist the City in regard to any random verifications performed.

Neither the Contractor nor any Subcontractor shall be deemed to have materially breached the Contractor Immigration Warranty if the Contractor or Subcontractor establishes that it has complied with employment verification provisions prescribed by sections 274A and 274B of the Federal Immigration and Nationality Act and the E-Verify requirements prescribed by A.R.S. § 23-214, Subsection A.

The provisions of this Article must be included in any contract the Contractor enters into with any and all of its subcontractors who provide services under this Contract or any subcontract. "Services" are defined as furnishing labor, time or effort in the State of Arizona by a contractor or subcontractor. Services include construction or maintenance of any structure, building or transportation facility or improvement to real property.

COMPLIANCE WITH FEDERAL AND STATE LAWS

The Contractor understands and acknowledges the applicability to it of the American with Disabilities Act, the Immigration Reform and Control Act of 1986 and the Drug Free Workplace Act of 1989. The following is only applicable to construction contracts: The Contractor must also comply with A.R.S. §34-301, "Employment of Aliens on Public Works Prohibited", and A.R.S. §34-302, as amended, "Residence Requirements for Employees".

Under the provisions of A.R.S. §41-4401, Contractor hereby warrants to the City that the Contractor and each of its subcontractors ("Subcontractors") will comply with, and are contractually obligated to comply with, all Federal Immigration Laws and regulations that relate to their employees and A.R.S. §23-214(A) (hereinafter "Contractor Immigration Warranty").

A breach of the Contractor Immigration Warranty Shall constitute a material breach of this Contract and shall subject the Contractor to penalties up to and including termination of this Contract at the sole discretion of the City.

The City retains the legal right to inspect the papers of any Contractor or Subcontractors employee who works on this Contract to ensure that the Contractor or Subcontractor is complying with the Contractor Immigration Warranty. Contractor agrees to assist the City in regard to any such inspections.

The City may, at its sole discretion, conduct random verification of the employment records of the Contractor and any of the subcontractors to ensure compliance with Contractor Immigration Warranty. Contractor agrees to assist the City in regard to any random verification performed.

Neither the Contractor nor any of the Subcontractors shall be deemed to have materially breached the Contractor Immigration Warranty if the Contractor or Subcontractor establishes that it has complied with the employment verification provisions prescribed by sections 274A and 274B of the Federal Immigration and Nationality Act and the E-Verify requirements prescribed by A.R.S. §23-214, Subsection A.

The provisions of this Article must be included in any contract the Contractor enters into with any and all of its subcontractors who provide services under this Contract or any subcontract. "Services" are defined as furnishing labor, time or effort in the State of Arizona by building or transportation facility or improvement to real property.

EMPLOYMENT PROVISIONS

Subject to existing law, and regulations, illegal or undocumented aliens will not be employed by the Contractor for any work or services to be performed pursuant to this contract. The Contractor will ensure that this provision is expressly incorporated into any and all Subcontracts or subordinate agreements issued in support of this contract. Contractor agrees to comply with the provisions of section 274A(a)(1)(A) and

274A(a)(2) of the Immigration and Nationality Act (8 U.S.C. 1324a(a)(1)(A), 1324a(a)(2)) (the "INA employment provisions"), and any amendments thereto, prohibiting the unlawful employment of illegal or undocumented aliens. Under the terms of this agreement, the contractor shall not knowingly hire or employ for any work performed pursuant to this contract any workers or employees not lawfully authorized to work under the provisions of the Immigration and Nationality Act or any other applicable federal or state laws. Violation of the provisions of this section shall be deemed a material breach of this contract.

INDEPENDENT CONTRACTOR STATUS.

It is expressly agreed and understood by and between the parties that the Contractor is being retained by the City as an independent contractor, and as such the Contractor shall not become a City employee, and is not entitled to payment or compensation from the City or to any fringe benefits to which other City employees are entitled. As an independent contractor, the Contractor further acknowledges that he is solely responsible for payment of any and all income taxes, FICA, withholding, unemployment insurance, or other taxes due and owing any governmental entity whatsoever as a result of this Agreement. As an independent contractor, the Contractor further agrees that he will conduct himself in a manner consistent with such status, and that he will neither hold himself out nor claim to be an officer or employee of the City by reason thereof, and that he will not make any claim, demand or application to or for any right or privilege applicable to any officer or employee of the City, including but not limited to workmen's compensation coverage, unemployment insurance benefits, social security coverage, or retirement membership or credit.

NONDISCRIMINATION

The Contractor, with regard to the work performed by it after award and during its performance of this contract, will not discriminate on the grounds of race, color, national origin, religion, sex, disability or familial status in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The Contractor will not participate either directly or indirectly in the discrimination prohibited by or pursuant to Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Section 109 of the Housing and Community Development Act of 1974, the Age Discrimination Act of 1975, and Executive Order 2000-4.

AMERICANS WITH DISABILITIES ACT

Contractor shall comply with all federal, state and local nondiscrimination statutes in the operation, implementation and delivery of, including state and federal civil rights and disabilities laws. In particular the contractor shall ensure that the City of Prescott's obligations for program, facility and service accessibility in Title II of the Americans with Disabilities Act are complied with in all activities arising under this contract, and shall hold harmless the City for any and all loss, including but not limited to damages, costs or expenses, incurred or arising from any alleged violations of expenses, incurred or arising from any alleged violation of the Americans with Disabilities Act under the auspices of this contract unless resulting from an intentional or actual negligent act of the City and its employees. Failure to comply with the nondiscrimination or accessibility requirements herein shall be construed as nonperformance and may result in termination of funding, civil action or both.

PERMITS, TAXES AND LICENSES

MAG Specifications, Section 107.2, including: Except as otherwise provided in the Specifications, it is the duty of the Contractor to procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work. All applicable permits, licenses and taxes are the responsibility of the Contractor.

PATENTED DEVICES, MATERIALS AND PROCESSES

MAG Specifications, Section 107.3.

SURVEY LAND MONUMENTS

Survey land monuments and property marks shall not be moved or otherwise disturbed by the Contractor until an authorized agent of the agency having jurisdiction over the land monuments or property marks setting, has witnessed or otherwise referenced their location, and only then in accordance with the requirements of the agency having jurisdiction. Any monuments displaced by the Contractor shall be replaced at the Contractors expense.

PROTECTION OF PERSON AND PROPERTY

MAG Specifications, Sections 107.5 through 107.10, including:

The Contractor shall confine all aspects of his operations within the construction limits as identified in the project plans. Should the Contractor contemplate the use of any private property adjacent to the project, beyond the project limits, for materials and equipment storage or to perform any work, he shall first obtain the written permission of the property owner. The Contractor shall provide a copy of the owner's permission to enter the property and for what purpose to the Public Works Director prior to entering the property. The Contractor will be fully and solely responsible for any and all adverse impacts and / or damages caused by his operations on private property and the settlement of all claims pertaining thereto. Upon completion of his operations the Contractor shall obtain a signed release from the property owner pertaining to his activities on the owner's property and provide a copy of that document to the Public Works Director. The failure of the Contractor to comply with these provisions will result in the retention of some portion of Contractor funds, payable under the contract, until such claims are resolved.

PROTECTION OF ANTIQUITIES

MAG Specifications, Section 107.4.

PERSONAL LIABILITY OF PUBLIC OFFICIALS

MAG Specifications, Section 107.13.

NON-RESPONSIBILITY OF THE CITY

Indebtedness incurred for any cause in connection with this work must be paid by the Contractor, and the City is hereby relieved at all times from any indebtedness or claim other than payments under terms of the Contract.

NO WAIVER OF LEGAL RIGHTS

MAG Specifications, Section 107.14.

PROPERTY RIGHTS IN MATERIAL

Nothing in the Contract shall be construed as vesting in the Contractor any right of property in materials used after they have been attached or affixed to the work or the soil and accepted. All such materials shall become the property of the City upon being so attached or affixed and accepted.

PAYMENT TO CONTRACTORS

GENERAL

- A. The basis of payment for construction of this project shall be unit prices for all work actually performed in accordance with the Specifications and Scope of work, and shall include all labor and materials incorporated in the completed work.

- B. Upon final inspection and acceptance of the work, the City will pay the Contractor the amount earned under the Contract, as provided herein.

PARTIAL PAYMENT

- A. Once each month, the City Project Inspector and the Contractor's Superintendent shall meet or as necessary to jointly measure all work items under the contract to determine pay quantities for each pay period. Quantities of work items shall be documented on the respective plan sheets and separately in tabular fashion with Station to Station measurements noted to assure there is no duplication of payment for work performed. Measurements will be for work actually completed. No projections for expected completion of work will be allowed.
- B. Contractor shall submit partial payment requests in a format approved by Public Works together with the City of Prescott Pay Request Application and Certification for Payment (form provided by Public Works) or equal, subject to approval by the Public Works Director.
- C. The City will retain ten percent (10%) of the amount of each such estimate to insure full and faithful compliance with the terms of these contract documents. After fifty percent (50%) of the work on this project has been completed, one half (½) of the amount retained shall be paid to the Contractor provided the Contractor is making satisfactory progress on the contract and there is no specific clause or claim requiring a greater amount to be retained. After the contract is fifty percent (50%) completed, only five percent (5%) of the amount of any subsequent progress payments made under the contract shall be retained provided the Contractor is making satisfactory progress on the project, except that if at any time the City determines satisfactory progress is not being made, ten percent (10%) retention shall be reinstated for all progress payments made under the contract subsequent to the determination.
- D. The Contractor shall furnish a detailed breakdown showing unit prices and quantities for use in preparing the monthly estimate. No partial payment will be made until this breakdown is presented by the Contractor and has been reviewed and accepted by the Public Works Director. Green-lined plan sheets shall be submitted with each monthly pay request illustrating the line item quantities constructed for the period. The green-lined plan sheets and pay estimate spreadsheets must reconcile with one another.
- E. No partial payment for job site-delivered material will be made.

PAYMENT

For and in consideration of the faithful performance of the work, the City will pay to the Contractor the amount earned less retention as computed from the actual quantities of work performed under the Contract and to make such payment in the manner and at the time(s) specified, as follows:

- A. After final completion under the Contract, the Contractor shall render to the City a final estimate, which shall show the amount of work performed according to the Contract.
- B. Before the final payment will be made, the Contractor shall satisfy the City by affidavit that all bills for labor and materials incorporated in the work have been paid. See CONTRACTOR'S AFFIDAVIT REGARDING SETTLEMENT OF CLAIMS & CERTIFICATION OF COMPLETION & WARRANTIES, page 22. Additionally, the Contractor shall furnish lien waivers for all completed labor and materials consumed during the project.
- C. Final payment constituting the entire unpaid balance of the Contract sum (including all retained moneys) shall be paid by the City to the Contractor within sixty (60) days after completion of the work or filing the Notice of Completion of the Contract unless a specific written finding by the City of the reasons justifying the delay in payment is provided to the Contractor, and further provided that all work has been completed, the Contract fully performed, and any final certificate has been issued by the City's architect, if any. Prior to the final payment to the Contractor, the City shall deduct therefrom any and all unpaid privilege, license and other taxes, fees and any and all other unpaid moneys due the City from the Contractor, and shall apply to those moneys to the appropriate account. Contractor shall provide to the City any information necessary to determine the total amount(s) due. The quantities appearing in the Bidding Schedule are approximate only, and are prepared for the comparison of bids. Payment to the Contractor will be made only by actual quantities of work performed and accepted in accordance with the requirements of the Contract. Only the items listed in the Bidding Schedule are pay items. The scheduled quantities of work to be done and materials to be furnished may each be increased, decreased or omitted.
- D. **Final project As-built plans shall verify line item quantities constructed for the project by individual plan sheet.** Contractor shall submit final payment request in a format approved by Public Works together with the City of Prescott Pay Request Application and Certification for Payment (form provided by Public Works).

PAYMENT OF ITEMS IN PROPOSAL

- A. Only those items listed in the Proposal under Bidding Schedule are pay items.
- B. Compensation for all work necessary for the completion of the project or improvement shall be included by the bidder in the price bid for the items shown in the Proposal.

CHANGES IN THE WORK

- A. The City, without invalidating the Contract, may order extra work, make changes by altering, or delete any portion of the work as specified herein, or as deemed necessary or desirable by the Public Works Director. All such work shall be executed under the conditions of the original Contract except that any claim for extension of time and additional cost caused thereby shall be adjusted at the time of ordering such change or extra work.
- B. Extra work shall be that work not indicated or detailed on the Plans and not specified. Such work shall be governed by all applicable provisions on the Contract Document.
- C. In giving instructions, the Public Works Director shall have authority to make minor changes in the work, not involving extra cost, and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Public Works Director, and no claim for an addition to the total amount of the Contract shall be valid unless so ordered. It is mutually understood that it is inherent in the nature of municipal construction that some changes in the Plans and Specifications may be necessary during the course of construction to adjust them to field conditions, and that it is of the essence of the Contract to recognize a normal and expected margin of change. The Public Works Director shall have the right to make such changes, from time to time, in the Plans, in the character of the work, and in the termination of the completion of the work in the most satisfactory manner without invalidating the Contract.
- D. Any change ordered by the Public Works Director which involves installation of work essential to complete the Contract, but for which no basis of payment is provided for herein, said payment therefore shall be subject to agreement prior to said work being performed.
- E. The prices agreed upon and any agreed upon adjustment in Contract time shall be incorporated in the written order issued by the Public Works Director, which shall be written so as to indicate acceptance on the part of the Contractor as evidenced by his signature. In the event prices cannot be agreed upon, the City reserves the right to terminate the Contract as it applies to the items in questions and make such arrangements as it may deem necessary to complete the work, or it may direct the Contractor to proceed with the items in question to be reimbursed pursuant to the unit prices in the Contractor's bid or on a force account basis as provided hereinafter, at the City's option.

FORCE ACCOUNT

The compensation for force account work performed by the Contractor shall be approved by the Public Works Director in the following manner:

- A. **LABOR:** The Contractor shall provide monthly certified payroll reports for all labor and for foremen in direct charge of the specific operations. The Contractor will be compensated as follows:
 - 1. The actual cost of wages paid by him but at rates not to exceed those for comparable labor currently employed on the project as determined by Public Works Director.
 - 2. The actual cost of social security taxes and unemployment compensation insurance. There will be no payment for Fringe Benefits unless mandated by Federal Law on Federally funded projects.
 - 3. An amount equal to fifteen percent (15%) of the actual cost of wages and other costs listed above to cover the Contractor's profit and overhead.
 - 4. In case work is performed by a subcontractor, the said fifteen percent (15%) will be added only once to the actual cost of the work, however, the Contractor may add five percent (5%) to the Subcontractor's price to cover his own overhead and supervision.
- B. **TOOLS AND EQUIPMENT:** For any special or heavy equipment, the use of which has been authorized by the Public Works Director, except for small tools and manual equipment, the Contractor shall be reimbursed his actual cost of rental, not to exceed the latest Schedule of Equipment Rental Rates published by the Arizona Department of Transportation. In the event that any of the equipment to be used is not shown in said schedule, the rental rate for such equipment shall be as agreed upon in writing before the work is started. No

percentage shall be added to equipment rental rates. In the event said special or heavy equipment is owned by the Contractor, he shall be compensated only for the actual hours said equipment is required for the work under Force Account on the job site, at a rate not to exceed the latest ADOT. Schedule of Equipment Rental Rates.

- C. **MATERIALS:** For all materials accepted by the Public Works Director and used in the work the Contractor shall be paid the actual cost of such material, including transportation charges, to which cost shall be added a sum equal to fifteen percent (15%) thereof.
- D. **SUPERVISION OVERHEAD and HOME OFFICE OVERHEAD:** No allowance shall be made for general superintendence. The cost of supervision and all overhead is presumed to be included in the fifteen percent (15%) added in accordance with the above.
- E. **RECORDS:** The Contractor's representative and the Public Works Director shall compare the records of the work performed as ordered on a force account basis at the end of each day on which such work is performed. Copies of these records shall be made on suitable forms provide for this purpose and signed by both the Public Works Director and the Contractor's representative. All claims for work done on a force account basis shall be certified and submitted to the Public Works Director by the Contractor, and such statements shall be filed with the Public Works Director not later than the fifth (5th) day of the month following that in which the work was actually performed.
- F. **BONDS AND INSURANCE:** The Contractor shall be paid the actual cost for additional bonding and insurance pertaining to Force Account work when the Contractor can provide evidence of additional payment for premiums on required payment and performance bonds. No duplication of payment for Contractors costs associated with labor costs above will be allowed.
- G. The Public Works Director authorized representative is in charge of Force Account Work and has the authority to direct which labor and equipment will be used, to suspend operations, and to refuse to pay for any labor or equipment, which he feels is not doing productive work.

EXTRA WORK

New or additional work will be classed as extra work when determined by the Public Works Director that such work is not covered by the Contract.

CONTRACT AMENDMENT

The value of such work or change shall be determined and paid for with a Contract Amendment in one of the following ways according to the Contract Amendment Procedure set down by the Public Works Department, City of Prescott, and at the option of the City:

- A. As may be mutually agreed upon by the City and the Contractor.
- B. By unit prices in accordance with the Contractor's bid.
- C. By lump sum based upon the Contractor's estimate and the Public Works Director review and acceptance of the estimate.
- D. By Force Account in accordance with the requirements of that Section.
- E. The Contractor shall do such extra work and furnish material and equipment therefore upon receipt of an accepted Contract Amendment or other written order of the Public Works Director. In no case shall work be undertaken without written notice from the Public Works Director to proceed with the work. In absence of such Contract Amendment or other written order of the Public Works Director, the Contractor shall not be entitled to payment for any extra work. All contract amendments must be approved by the Public Works Director. Contract Amendments over \$10,000.00 must be approved by City Council.
- F. In the event that the Contractor and the City cannot agree on the compensation to be paid to the Contractor prior to the issuance of a Contract Amendment, then and in that event the City has the option of terminating the Contract with the Contractor or directing the Contractor to proceed and to receive compensation pursuant to the Force Account provisions herein. In the event that this Contract is terminated by the City pursuant to this subsection, the Contractor shall only be paid for those services performed to date of the City's Notice of Termination, said payment to be based upon the unit prices as set forth in the Contractor's bid. In no event shall the Contractor be entitled to additional compensation for lost profits, mobilization or de-mobilization costs, loss of anticipated profits, extended overhead, unabsorbed home office overhead, or any other payments other than for work actually performed as based upon unit prices. In the event that there are no unit prices pertaining to work in

question, then and in that event the Contractor's compensation for early termination pursuant to this subsection shall be based upon Force Account as here-in-before described.

G. It is expressly agreed that in the event of a Contract Amendment, any compensation due the Contractor shall be set forth in the Contract Amendment, and shall be considered full and complete payment (if any) for any and all work related costs, including but not limited to labor, materials, equipment, supervision, field office overhead, extended home office overhead, unabsorbed home office overhead, taxes, bonds, insurance and profits. Additionally, the Contractor shall not be entitled to any additional compensation based upon a Contract Amendment (or the accumulation of contract amendments) unless specifically set forth in that Contract Amendment.

H. In the event that the contractor submits a proposed Contract Amendment, the Public Works Director shall have ten (10) days after receipt of the Contractor's written proposed Contract Amendment to either accept or agree to the Contract Amendment under the above provisions or deny such proposed Contract Amendment. If necessary to assess the proper purpose and function of a Contractor's proposed Contract Amendment, because of the proposed Contract Amendment's complexity or scope, the Public Works Director may either accept and agree to the Contract Amendment or deny such proposed Contract Amendment under the above provisions beyond such ten (10) day period and for an additional reasonable period commensurate with the nature of the proposed Contract Amendment. The failure of any party to take any action within the time periods or in the manner specified in the subparagraph shall be deemed a waiver of that party's right to recover for such delay in acting.

CLAIMS FOR EXTRA WORK

If the Contractor claims that any instructions involve extra cost under this Contract, he shall give the Public Works Director written notice thereof within forty-eight (48) hours after the receipt of such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property, and the procedure shall then be as provided for under CHANGES IN THE WORK. No such claim shall be valid unless so made.

PARTIAL ACCEPTANCE OF WORK

- A. After completion of certain units of work under this Contract, including all testing and other preparation necessary for operation of the unit by the City as herein specified, but prior to final project completion, provisions may be made for partial acceptance in writing by the City for these certain units only. The units to be included for partial acceptance prior to final project completion will be noted at the time of the pre-construction conference in accordance with Contractor's schedule, or by written notice to the Contractor at the earliest possible time.
- B. The guarantee period for these units shall commence with the date of final acceptance of the entire project by the City. Full payment for these units will not be made until final acceptance of the total work is made.
- C. Acceptance of any portion of the project prior to acceptance of the whole shall not be construed as absolving the Contractor of responsibility for any item of construction or incidental work included in the original Contract.

NOTIFICATION OF CHANGED CONDITIONS AND DISPUTE RESOLUTION

MAG 110 as modified herein:

110.2.2(A) and 110.3.2, add the following: "In providing the information required by this section, the Contractor shall provide specific factual detail as to each item and show the methods of calculating each item."

110.3.1 shall be amended as follows:

Level I shall mean the Public Works Division Manager as appointed by the Public Works Director

Level II shall mean the Public Works Director

Level III shall mean the City Manager

In the event of litigation, the parties hereby agree to submit to a trial before the Court. The Contractor further agrees that this provision shall be contained in all subcontracts related to the project, which is the subject of this Agreement.

The parties hereto expressly covenant and agree that in the event of litigation arising from this Agreement, neither party shall be entitled to an award of attorney fees, either pursuant to the Contract, pursuant to ARS Section 12-341.01 (A) and (B), or pursuant to any other state or federal statute. The Contractor further agrees that this provision shall be contained in all subcontracts related to the project that is the subject of this Agreement.

110.4 The last sentence of the first paragraph shall read: "The arbitration of claims shall be conducted either in Prescott or Phoenix, Arizona as agreed to by the parties, or if the parties cannot agree, to be determined by the arbitrator, taking into consideration the convenience and costs to the parties and their witnesses."

Delete the last two sentences of the section and replace with: "The decision or award of the arbitrator shall be nonbinding."

Any resolution of a dispute in accordance with the applicable sections of MAG110 and this Contract which causes the Contract amount to be exceeded by \$10,000.00 or more shall not be final until approved by the City Council.

PUBLICITY RELEASES

The Contractor and their subcontractors and their suppliers, if any, shall not reveal to others through literature, brochures, or other types of publicity releases any information regarding the work or the Contractors activities or participation on the project without prior written approval from the City of Prescott Public Works Director. Any and all jobsite photographs taken by the Contractor, subcontractor or others must be processed in duplicate form with copies provided to the Public Works Director. No project photographs shall be released to others without prior written approval of the Public Works Director.

SCOPE OF WORK

INTENT OF PLANS AND SPECIFICATIONS

The intent of the Specifications and Scope of Work is to prescribe a complete work for the CITY OF PRESCOTT: SR89 White Spar Waterline Relocation

- A. Project which the Contractor shall perform in a manner acceptable to the City Public Works Director and in full compliance with the terms of the Contract.
- B. Unless otherwise specified in the Special Conditions, the Contractor shall furnish all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and incidentals, including, but not limited to, dust and traffic control measures, and to perform all work involved in executing the contract in a satisfactory and workmanlike manner within the specified time.

PROJECT DESCRIPTION AND LOCATION. The City of Prescott 12-inch Waterline Relocation, SR89 White Spar Road Project shall generally include the installation of new 12-inch Ductile Iron Pipe waterline and appurtenances on SR89-White Spar Road from Copper Basin Road to Apache Drive in advance of the upcoming ADOT road improvement project. Additional improvements shall include installation of new water meters, fire hydrants, tie-ins to existing water mains and services, and removal of an existing 6-inch water main and appurtenances within the same corridor; at various locations as identified on the project plans and specifications.

TIME OF COMPLETION

- A. The Contractor shall commence the work under this contract on or before the tenth (10th) calendar day after receiving written Notice to Proceed from the Owner. The Contractor shall fully complete all work under this contract within seventy five (75) calendar days beginning with the calendar day of receipt of the Notice to Proceed. The Contractor shall at all times during the continuance of the Contract prosecute the work with such work force and equipment as is sufficient to complete the project within the time specified.
- B. Project Milestones are estimated to be as follows:

Award of Contract	September 11, 2012
Pre-Construction Meeting	September 17, 2012
Notice to Proceed	Week of September 24, 2012
Expected Completion Date	Week of December 8, 2012
Bonus Days	N/A
Full Bonus Completion Date	N/A

All milestones are "earliest" dates for planning purposes only, and shall not represent any contractual commitment whatsoever on the part of the City.

TECHNICAL SPECIFICATIONS



12-inch Waterline Relocation White Spar Road (SR 89)

Project No. CIP 12-003
Prescott, Arizona
Yavapai County

TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS



July 2012

Dibble
Engineering

7500 N. Dreamy Draw Drive, Suite 200
Phoenix, AZ 85020
602.957.1155

TECHNICAL SPECIFICATIONS	4
100-1 Scope Of Work	4
100-2 STANDARD SPECIFICATIONS & DRAWINGS	4
100-3 GENERAL NOTES	5
104-1 RESTORATION REQUIREMENTS	6
104-3 MOBILIZATION	6
105-6 LOCATION OF UNDERGROUND UTILITIES	7
105-8 CONSTRUCTION STAKING	7
105-9 AS-BUILT PREPARATION AND COORDINATION	9
105-10 RESET PROPERTY PINS	10
105-11 SURVEY MONUMENT	10
105-12 SURVEY HANDHOLE FRAMES	10
106-1 CONTROL OF MATERIALS	10
106-2 CONTRACTOR QUALITY CONTROL	10
106-9 QUALITY ACCEPTANCE TESTING	13
107-1 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)	13
107-2 SEEDING (HYDRAULIC)	15
107-6 PUBLIC CONVENIENCE AND SAFETY	18
108-4 CONSTRUCTION SCHEDULE	19
109-1 CONTRACT ALLOWANCE	19
200-1 DEWATERING	19
200-2 BY-PASS PUMPING	19
200-4 REMOVE AND REPLACE LANDSCAPE ROCK	22
200-6 RIP RAP CONSTRUCTION	22
200-7 RIP RAP CONSTRUCTION WITH FILTER FABRIC	22
200-8 ROCK LINED V-DITCH, ROCK LINED DITCH OR GROUTED ROCK LINE DITCH	22
200-9 ROCK LINED BASIN, GROUTED ROCK LINED BASIN OR ROCK SPLASH PAD	22
201-1 CLEARING AND GRUBBING	23
205-1 EARTHWORK AND ROADWAY EXCAVATION	23
205-2 REMOVAL OF UNSUITABLE SUB-GRADE MATERIAL	23
230-1 DUST PALLIATIVE	24
300-1 SAW CUT	24
301-1 SUB-GRADE PREPARATION	24
301-2 SCARIFICATION, GRADING & RE-COMPACTION OF EXISTING AGGREGATE BASE COURSE	24
310-1 BASE PREPARATION (FOR UNPAVED STREETS)	25
310-2 AGGREGATE BASE COURSE	25
321 ASPHALT CONCRETE PAVEMENT	25
322-2 ASPHALTIC CONCRETE FRICTION COURSE - (ACFC)	31
322-3 ASPHALTIC CONCRETE FRICTION COURSE - ASPHALT-RUBBER (ACFC)	32
322-4 TACK COAT - FOR ACFC	42
330-1 ASPHALT CHIP SEAL	42
336-1 PAVEMENT MATCHING AND SURFACING REPLACEMENT	44

340-1	CONCRETE CURB, GUTTER, AND CURB TERMINATIONS	44
340-2	CONCRETE SIDEWALK, SIDEWALK LANDING AND RAMP.....	45
340-3	CONCRETE DRIVEWAY ENTRANCE AND 6" CONCRETE SLAB	45
340-4	6" CONCRETE ALLEY ENTRANCE AND ALLEYWAY	45
340-5	CONCRETE VALLEY GUTTER.....	45
340-6	CONCRETE SPILLWAY	46
345-1	ADJUST MANHOLES, VALVES AND CLEANOUTS	46
350-1	REMOVAL OF EXISTING IMPROVEMENTS	46
350-2	MILLING OF ASPHALTIC CONCRETE PAVEMENT	47
400-1	TRAFFIC CONTROL	48
401-1	OBLITERATE EXISTING STRIPING.....	49
401-2	THERMOPLASTIC PAVEMENT MARKINGS	49
401-3	TEMPORARY STRIPING	49
401-4	STRIPING	49
401-6	PERMANENT SIGNING, SIGN POSTS AND DELINEATORS.....	50
401-7	TYPE 2 OBJECT MARKER	50
401-10	CONCRETE FILLED STEEL BOLLARDS.....	50
505-1	CONCRETE DRAINAGE OUTLET/STRUCTURE	50
505-2	CONCRETE HEADWALL	51
505-3	CONCRETE CATCH BASIN.....	51
505-4	SCUPPER	51
505-5	CONCRETE BOX CULVERT	51
505-6	BARRIER WALL.....	51
505-7	CONCRETE RETAINING WALL	51
601-1	TRENCH EXCAVATION, BACKFILLING AND COMPACTION	51
601-2	ROCK EXCAVATION FOR UTILITY AND/OR DRAINAGE CONSTRUCTION	52
602-1	JACKING, BORING OR TUNNELING PIPE.....	53
610	WATER MAIN CONSTRUCTION	56
610-1	WATER MAIN PIPING	56
610-9	FIRE HYDRANT INSTALLATION.....	57
610-11A	NEW WATER SERVICE AND PRIVATE WATER SERVICE LINE RECONNECTION	57
610-11C	PRIVATE WATER SERVICE LINE ABANDONMENT	58
610-11D	PRIVATE WATER SERVICE LINE RECONNECTION (COMMERCIAL).....	59
610-12	Traffic Rated Concrete Meter Boxes	59
610-15	TESTING & DISINFECTION OF WATER MAINS	60
610-20	CONCRETE ENCASEMENT.....	60
610-30	WATER MAIN ABANDONMENT	60
615-1	SANITARY SEWER MAIN.....	60
615-3	ABANDONMENT OF SANITARY SEWER MAIN AND MANHOLES.....	62
615-7	SANITARY SEWER SERVICE	62
615-9	SANITARY SEWER CLEANOUTS	63

615-11 CLOSED CIRCUIT TELEVISION OF SEWER MAIN AND SERVICES..... 63
615-20 SEWER CLEANING..... 65
618-1 STORM SEWER CONSTRUCTION..... 68
618-2 CORRUGATED METAL PIPE 68
618-3 SPIRAL RIB PIPE 68
625-1 SEWER MANHOLE CONSTRUCTION 68
626-1 Manhole Coatings..... 70
630-3 GATE VALVES 77
630-4 TAPPING SLEEVES AND VALVES 77
630-6A AIR/VACUUM RELEASE VALVES..... 78
630-6B BLOW OFF INSTALLATION 78
710 ASPHALT CONCRETE 78
725 PORTLAND CEMENT CONCRETE..... 78

TECHNICAL SPECIFICATIONS

100-1 Scope Of Work

A. INTENT OF PLANS AND SPECIFICATIONS

1. The intent of the Specifications and Scope of Work is to prescribe a complete work for the **City of Prescott 12-inch Waterline Relocation, SR89-White Spar Road Project** which the Contractor shall perform in a manner acceptable to the City of Prescott and in full compliance with the terms of the Contract.
2. Unless otherwise specified in the Special Conditions, the Contractor shall furnish all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and incidentals, including, but not limited to, dust and traffic control measures, and to perform all work involved in executing the contract in a satisfactory and workmanlike manner within the specified time.
3. The “Engineer” shall be that person or his designees employed by or contracted by the City Of Prescott responsible for all aspects of the project and with the authority to make revisions to and approve changes to the plans or specifications.

B. PROJECT DESCRIPTION AND LOCATION

1. The City of Prescott 12-inch Waterline Relocation, SR89-White Spar Road Project shall generally include the installation of new 12-inch Ductile Iron Pipe waterline and appurtenances on SR89-White Spar Road from Copper Basin Road to Apache Drive in advance of the upcoming ADOT road improvement project. Additional improvements shall include installation of new water meters, fire hydrants, tie-ins to existing water mains and services, and removal of an existing 6-inch water main and appurtenances within the same corridor; at various locations as identified on the project plans and specifications.

C. TIME OF COMPLETION

1. The Contractor shall commence the work under this contract on or before the tenth (10th) calendar day after receiving written Notice to Proceed from the Owner. The Contractor shall fully complete all work within **seventy-five (75)** calendar days in accordance with the date set forth in the Notice to Proceed. The Contractor shall at all times during the continuance of the Contract prosecute the work with such work force and equipment as is sufficient to complete the project within the time specified.

100-2 STANDARD SPECIFICATIONS & DRAWINGS

- A. Standard details and specifications for this project shall be the Central Yavapai County Governments Unified Construction Standards (Y.A.G. Standards), latest revision, in conjunction with the latest revisions of the Maricopa Association of Governments Standard Specifications and Details (M.A.G. Standards), except as modified in the plans and by these technical specifications.
- B. Other standard specifications and details will be incorporated within the plans, project documents and technical specifications by reference, as necessary. These may include references to Maricopa Association of Governments Uniform Standard Details for Public Works Construction (MAG Std. Dtl.), Arizona Department of Transportation Standard Specifications and Standard Drawings for Road

and Bridge Construction (ADOT Specs or ADOT Std. Dwg.), City of Prescott revisions to Y.A.G. Standards, and others.

100-3 GENERAL NOTES

- A. All construction shall conform to Central Yavapai County Governments Unified Construction Standards (Y.A.G. Standards), latest revision, unless otherwise indicated on the plans or in these specifications.
- B. All quantities shown on plans are not verified by the Engineer. If any discrepancy in quantities is found, Contractor shall notify the Engineer of such no later than 24 hours prior to bid opening.
- C. Acceptance of the completed water/sewer system will not be given until 3 ml photo Mylar or Xerox graphic "as-built" reproducible plans have been submitted by a Registered Professional Engineer and approved by the Engineer.
- D. The City of Prescott Public Works Department shall be notified 24 hours prior to starting work.
- E. All work and materials, which do not conform to the specifications, are subject to removal and replacement at the Contractor's expense.
- F. Any work performed without the knowledge of the City of Prescott inspector or his representative is subject to removal and replacement of same, to be done at the Contractor's expense.
- G. The Contractor shall provide sufficient men and equipment on the job at all times during construction to comply with specifications and to complete work.
- H. Inspection is to be done by the City of Prescott Public Works Department.
- I. The Contractor is to uncover all existing lines being tied into and verify grades before any other construction.
- J. It is the Contractor's responsibility to locate all underground pipelines, telephone and electric conduits and structures in advance of any construction and will observe all possible precautions to avoid any damage to such. The Engineer and/or City will not guarantee any locations as shown on these plans, or those omitted from it.
- K. Contractor shall notify "Blue Stake" at 778-0050 at least 48 hours prior to construction.
- L. Contractor shall verify all quantities shown and make his bid based upon those verifications. If any discrepancy in quantities is found, the Contractor shall notify the Engineer as such.
- M. Arizona Department of Environmental Quality Requirements shall be complied with.
- N. All lines shall be provided with 14-gauge single strand copper wire. Trace wire shall be subject to traceability test.
- O. All plans, signed by the City Engineer in charge, are null and void one year from date of signature if construction has not started.
- P. Water/sewer separation shall be pursuant to AAC R-18-4-502C and YAG specifications.
- Q. Water mains shall be subject to a pressure and leakage test in accordance with AWWA C-600 Standard.
- R. Water mains shall be disinfected in accordance with ADEQ Engineering Bulletin No. 8 "Disinfection of Water Systems".
- S. Operation of valves to be done by City personnel only.
- T. Ductile Iron Pipe to be installed per manufacturer's requirements.
- U. Arizona Department of Environmental Quality requirements will apply when more stringent than YAG Standard Specifications -- more specifically where they pertain to maximum allowable sewer line/pressure sewer line exfiltration-infiltration rates.
- V. Sewer line low-pressure air tests shall be done on 100% of all lines.
- W. Sewer manholes exfiltration tests shall be done on 100% of all lines. Vacuum testing in accordance with

City of Prescott Standards may be used in lieu of exfiltration test.

- X. Sewer line deflection tests shall be done on 100% of all lines.
- Y. Prior to project acceptance, the Contractor shall be responsible for providing the City of Prescott with DVD video of the entire sewer main installed. The video will be previewed and deemed acceptable by the City prior to project release.
- Z. All materials for water line construction shall meet AAC R-18-4-119.
- AA. Contractor shall be responsible for construction surveying and layout.
- BB. Contractor shall warrant all work for a minimum of two years.

104-1 RESTORATION REQUIREMENTS

- A. Upon completion of construction and before Final Acceptance can be made by the Engineer, the Contractor shall clean up each individual construction area to the satisfaction of the Engineer. Small trees, weeds, and brush, which were removed as part of construction work, shall be removed from the project site and properly disposed of. Existing landscape improvements, drainage ditches, etc., shall be restored in "like kind" so that the improvement is put back in as close to its prior state as possible. Restoration of incidental items impacted by construction activity shall be in accordance with MAG Section 104.1.3 and 104.1.4. All debris, broken pipe, concrete and other construction debris shall be removed from the project site and properly disposed. The Contractor shall restore each individual work site to grades existing before construction work, including wheel ruts and other scarring. No separate payment will be made for restoration of items impacted by the Contractor's construction operation and the cost of these items shall be included in the unit bid prices in the bid schedule.
- B. Mailboxes and traffic signs removed during construction shall be reinstalled in "like kind" and shall be considered incidental to the unit prices for utility work included in the bidding schedule.

104-3 MOBILIZATION

- A. Mobilization 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 office buildings and other facilities necessary for work on the project, and for all other work and operations that must be performed and costs incurred prior to beginning work on the various items on the project site.
- B. **Measurement and Payment**

Mobilization will be measured for payment by the lump sum bid as a single complete unit of work. Payment for mobilization will be made as provided herein which shall be full compensation for supplying and furnishing all materials, facilities, and services and performing all the work involved as specified above. The total amount allowed for mobilization during the life of the contract shall not exceed nine percent (9%) of the original contract amount. If the bid price exceeds this percentage the excess amount will be paid to the contractor upon completion of the contract and nine percent of the contract amount shall be used to determine partial payments. Partial payments under this item will be made in accordance with the following provisions:

- C. The first payment of one third of the lump sum price for mobilization may be made provided that all submissions required under Sub-section 108.3 and elsewhere herein are submitted by the contractor at the pre-construction conference to the satisfaction of the Engineer and when the Engineer has determined that a significant amount of equipment has been mobilized to the project site which will be used to perform portions of the project work.

The second payment of one third of the lump sum price for mobilization shall be made on the first estimate following completion of 13 percent of the contract.

The third payment of one third of the lump sum price for mobilization will be made on the first estimate following completion of 26 percent of the contract.

Pay Item: 104-3 Mobilization

105-6 LOCATION OF UNDERGROUND UTILITIES

- A. Contractor shall contact Blue Stake within the time frame specified under Blue Stake law and request field location of underground utilities. At the time these locations have been marked and prior to the commencement of excavation within the affected area, the Contractor shall at his expense manually determine the exact location of all buried facilities.
- B. Contractor shall notify all affected utilities prior to the start of construction and shall ascertain the location of the various underground utilities either shown on the plans and/or as may be brought to his attention.
- C. Contractor shall perform all operations in accordance with Arizona Blue Stake law.
- D. Utility locations shown on the plans are approximate and based on drawings furnished by the respective utility. It shall be the Contractor's responsibility to protect all existing utilities. Should a utility conflict occur, the Contractor shall cooperate with the said utility to resolve the conflict. No claim for extra costs shall be made against the Owner for delays due to any utility conflict.
- E. If performance of the Contractor's work is delayed because the utility owners fail to relocate or adjust their facilities in a timely manner, the Contractor may file for an extension of time. To receive consideration, this request shall contain specific information as to the nature of the delay and the actual loss of time involved.
- F. Contractor shall assume full responsibility for damage to all marked utilities due to his operations and shall repair the damaged utilities in accordance with regulatory authority requirements at his own expense.
- G. **Measurement And Payment**
 - 1. No separate measurement and payment shall be made for Location of Underground Utilities. This work shall be considered incidental and included in the unit price bid for construction or installation of the appropriate contract pay items.

105-8 CONSTRUCTION STAKING

- A. Construction staking shall be the responsibility of the CONTRACTOR. The control for the project is provided in the CONTRACT DOCUMENTS. The CONTRACTOR shall be held responsible for preservation of control monumentation. If any of the control monumentation have been carelessly or willfully destroyed or disturbed by the CONTRACTOR, the cost of replacing them will be charged against him and will be deducted from the payment of work.
- B. Staking shall be performed and certified by a Registered Land Surveyor in good standing with the Arizona State Board of Technical Registration.
- C. Field notes and record drawings shall be provided to the ENGINEER.
- D. The staking shall be performed in such a manner and frequency that the CONTRACTOR is able to construct the project in accordance with the plans and specifications. At a minimum, staking shall include
 - 1. Slope or limit stakes (TCE)
 - 2. Alignment of Pipeline
 - 3. Valves, bends, blow offs, air release valves, tracer wire stations, water meters and hydrant locations.

4. Horizontal and vertical bend locations.
 5. Tank and appurtenances.
 6. Electrical, instrumentation and control facilities, including, but not limited to, antennae pole.
 7. Site improvements including, but not limited to, retaining walls, curbs, fencing, drainage, chain link fence enclosures, protection posts, gates, etc. The original grade of all retaining walls shall be surveyed and established prior to beginning any earthwork.
 8. Cross-sections will be required, at no additional expense to the City, should quantity disputes arise pertaining to the following: Earthwork, Sub-grade, ABC or Asphaltic Concrete.
 9. Curb stakes at all PC's, PT's, Vertical PI's (grade breaks), Transitions to and from Super Elevated sections and at 50 foot intervals.
 10. Blue top of Sub-grade and ABC at intervals specified for curb. Quarter crown blue tops shall be required when the typical section is four lanes or more without median curb.
 11. Other staking as needed to complete the work in conformance with the plans and specifications.
- E. The ENGINEER and the CONTRACTOR's Superintendent shall meet monthly or as necessary to jointly measure all work items under the contract to determine pay quantities for each pay period. Quantities of work items shall be documented on the respective plan sheets and separately in tabular fashion with Station to Station measurements noted to assure there is no duplication of payment for work performed. Measurements will be for work actually completed. No projections for expected completion of work will be allowed.
- F. All survey data will be international feet for horizontal and vertical, NAVD 88 for vertical and City of Prescott coordinates. Please refer to the City of Prescott Survey Datum Requirements below.

City of Prescott Survey Datum Requirements

Coordinate Units:	International Feet
Distance Units:	International Feet
Height Units:	International Feet
Vertical Datum:	NAVD 88
 <u>State Plane</u>	
Coordinate System:	US State Plane 1983
Datum:	(WGS 84)
Zone:	Arizona Central 0202
Geoid Model:	Geoid99 (Conus)

City of Prescott - Conversion from State Plane

Northing:	(State Plane x 1.000329975) - 701,456.0090
Easting:	(State Plane x 1.000329975) + 69,457.2499

State Plane - Conversion from City of Prescott

Northing: (City of Prescott + 701,456.0090) x 0.999670134

Easting: (City of Prescott - 69,457.2499) x 0.999670134

H. Measurement And Payment

1. The quantity of "Construction Staking" measured for payment shall be the lump sum bid by the CONTRACTOR. The contract unit price per lump sum paid for "Construction Staking" shall be full compensation for all labor, materials, and equipment to perform the construction staking as described in this section.

Pay Item: 105-8 Construction Staking

105-9 AS-BUILT PREPARATION AND COORDINATION

- A. As-built data and preparation will be performed by the ENGINEER. The CONTRACTOR shall notify the ENGINEER as required in this Section, provide access to the work and cooperate with the ENGINEER to accurately depict the as-built conditions. During the construction phase and prior to any backfilling or covering, the ENGINEER will survey the work for the purpose of as-built preparation. Surveying shall be performed and certified by a Registered Land Surveyor in good standing with the Arizona State Board of Technical Registration. The ENGINEER will supply all horizontal and vertical as-built data in ASCII format, including a northing, easting, elevation and description of all work completed under this contract. The CONTRACTOR shall aid the ENGINEER in determining and providing this information. As-built data shall include, but not be limited to all items noted below.
 1. The alignment of the waterline including all horizontal and vertical bends. If the waterline continues in a straight alignment for more than 100 feet, the waterline will be surveyed every 100 feet.
 2. Valves, bends, blow offs, air release valves, tracer wire stations, water meters, and hydrant locations.
 3. Tank and appurtenances
 4. Electrical, instrumentation, and control facilities, including, but not limited to, antennae pole.
 5. Site improvements, including, but not limited to, retaining walls, curbs, fencing, drainage, chain link fence enclosures, protection posts, gates, etc.
- B. Prior to backfilling or covering any work, the CONTRACTOR shall notify the ENGINEER 48-hours in advance and submit a completed "As-Built Request Form" located in Appendix II for the item of work. The minimum 48-hours notice time shall not include weekends or holidays. The notification shall be via e-mail to both the CITY and ENGINEER, and shall include the "As-Built Request Form" as an attachment.
- C. The CONTRACTOR must provide access for the ENGINEER to verify all as-built information prior to backfilling or covering. The CONTRACTOR shall not backfill or cover an item of work until verification has been completed by the ENGINEER. If an item of work is determined by the ENGINEER to be backfilled or covered prior to being recorded by the ENGINEER, the CONTRACTOR at the direction of the ENGINEER shall uncover the item of work at no additional cost to the OWNER.
- D. The CONTRACTOR shall maintain a redlined copy of the project plans including changes made in construction of the project. The redline copy shall be updated on a weekly basis in preparation for the weekly as-built field meeting. The CONTRACTOR shall provide the ENGINEER with a copy of the redline plans upon completion of the project.
- E. Weekly field meetings with the CONTRACTOR, ENGINEER and CITY shall occur to review As-Built

information for conformance with the specifications. The CONTRACTOR shall provide the ENGINEER with a schedule of work items to be constructed in the upcoming 30 day period, including approximate dates of installation prior to backfilling or covering. The CONTRACTOR field redlines will be reviewed for notation of changes in the work. Missing, erroneous or deficient data must be corrected by the CONTRACTOR at no additional cost to the OWNER.

F. Measurement And Payment

1. No separate measurement and payment shall be made for As-Built Preparation And Coordination. This work shall be considered incidental and included in the unit price bid for construction or installation of the appropriate contract pay items.

105-10 RESET PROPERTY PINS

- A. Existing property pins disturbed or covered in the course of the work shall be resurveyed and reset by a certified land surveyor or under direct supervision of a certified land surveyor. Pins shall be YAG Dtl. 120-1, type B.

B. Measurement And Payment

1. No separate payment shall be made for Contractor Quality Control. This work shall be considered incidental and included in the unit price bid for construction or installation of the appropriate contract pay items.

105-11 SURVEY MONUMENT

- A. Survey monument Type "C" with cast iron frame and cover shall be placed as shown on the plans in accordance with YAG Std.Dtl. 120-1 and YAG & MAG Specs Section 405.

B. Measurement and payment

1. Payment shall be based on a per each unit complete in place.

Pay Item: 105-11 Survey Monument

105-12 SURVEY HANDHOLE FRAMES

- A. All efforts shall be made to protect rebar in survey handholes from damage. Rebar shall be resurveyed and reset by a certified land surveyor at the contractors' expense if damaged or where noted on plans.

106-1 CONTROL OF MATERIALS

Contractor shall submit in writing all materials to be used in the project in accordance with ADOT Specification Section 106 and Subsection 730-4.

106-2 CONTRACTOR QUALITY CONTROL

- A. Quality control measures sufficient to produce materials and workmanship of acceptable quality are the responsibility of Contractor. Upon request Contractor shall provide factory certificates of compliance or analysis or both to the City Engineer. The Contractor shall provide full-time asphaltic concrete laydown compaction testing and adequate plant control for each paving day. The Contractor shall provide an independent geotechnical firm to perform all soils and concrete testing, as required, per these specifications.
- B. The weekly reports shall state the type of work performed during the report period and other process control measures taken to assure quality. Type of work must be identified by activity, location, station, and offset, purpose of test, and any other relevant information that the Engineer needs to identify or replicate the quality control testing. Results of all tests, corrective actions, re-tests, and control charts shall be attached to the weekly reports. Although hand written documentation can be included, the quality control report

narrative and test results must be typed to insure that clear reproductions of the documents can be made. The report period shall end at midnight each Friday and the report shall be submitted to the Engineer no later than 5:00 pm of the following Wednesday. Payment in the amount of \$500.00 per report will be withheld for each individual report that is not delivered to the Engineer by the time and day specified above. Only one half of the withheld payments will be returned on the next regular project progress payment when the delinquent reports have been turned in and all of the above requirements have been met. Any report turned in more than 10 business days beyond the Wednesday due date will not be eligible for withheld payments to be returned.

Minimum Quality Control Sampling Guidelines (may not include all required testing)

MATERIAL TYPE	REQUIRED TEST	SAMPLING POINT	SAMPLING FREQUENCY	REQUIRED RESULT
Embankment	Proctor Optimum Moisture	In-Place	One per Soil Type	
	Compaction	In-Place	One per 500 LF of 8" lift	95% per ASTM D-698
Sub-grade	Proctor Optimum Moisture	In-Place	One per Soil Type	
	Compaction		One per 500 LF	95% per ASTM D-698
Agg. Base	Proctor Optimum Moisture	Crusher belt or Stockpile	At start of production, then as mtl. Changes	
	Compaction	In-Place	One per 500 LF of 6" lift	98% Per ASTM D-698
	Abrasion	Source	One per source	
	Plasticity Index		One per shift	Max. 6 per AASHTO T89 & T90
	Gradation		One per shift	
	Crushed Faces		One per shift	
	Asphalt Concrete			

MATERIAL TYPE	Bit. Mtl. Content		Two per day (3/day on 1st day)		
	Marshalls		Two per day		
	Rice		One per day		
	REQUIRED TEST	SAMPLING POINT	SAMPLING FREQUENCY	REQUIRED RESULT	
	Voids, VMA		One per day		
	Compaction			95%	
	Min. Agg.	Core		One per 1,000 SY	within 24 hours
		Gradation		One per 1,200 tons	
		Crushed Faces		One per day	
		Sand Equivalent		One per day	45 or greater
		Abrasion		One	
Asphalt Rubber					
Concrete					
Open Graded					
Asphalt Rubber					
Concrete					
Asphalt Concrete		Stock pile			
Friction Course	Gradation		One per day		
Asphalt Rubber	Sand Equivalent		One per day		
	Crushed Faces		One per day		
	Flakiness Index		One per day		
Portland Cement					
Concrete	Air		each sample	5% +/- 1%	

	Slump		each sample	max. 3.5"
	Compression		3 per 50 CY per	1 @ 7 day
			YAG 725 Table 725	1 @ 28 day
				1 @ 60 day if failure

- C. No separate payment shall be made for Contractor Quality Control. This work shall be considered incidental and included in the unit price bid for construction or installation of the appropriate contract pay items. An independent geotechnical firm shall perform all quality control testing. The Contractor shall furnish copies of all test results to the City on a weekly basis.

106-9 QUALITY ACCEPTANCE TESTING

- A. The Engineer may provide quality acceptance sampling and testing. The number of tests and location of each shall be determined by the Engineer. The expense of the initial sampling and testing shall be paid for by the City. Additional sampling and testing required due to failure of the initial test(s) shall be accomplished as provided by the City and these additional expenses shall be deducted from moneys due Contractor.
- B. Contractor and the Engineer’s representative shall coordinate on a daily basis the following day’s work schedule and any testing that may be necessary. The Engineer’ quality acceptance testing will generally consist of (1) daily sampling and testing for asphalt extraction/gradation and Marshall density for each paving day; and (2) asphaltic concrete core drilling after placement to verify thickness and density. A minimum of one core per each 1,000 square yards of paving shall be randomly sampled by the Contractor’s quality control lab after marking by the City inspector.
- C. Construction quality acceptance testing performed by the City of Prescott does not relieve the Contractor or the manufacturer of materials produced for the Contractor, of the obligation to perform and document quality control testing of materials and workmanship.
- D. No separate payment shall be made for Quality Acceptance Testing or any related work performed by Contractor.

107-1 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

This project is subject to the Arizona Pollutant Discharge Elimination System (AZPDES) stormwater requirements for construction sites under the Environmental Protection Agency (EPA) delegation to the Arizona Department of Environmental Quality (ADEQ) for the Construction General Permit for Arizona. The following specifications shall apply:

- (A) General requirements - The Contractor shall comply with the Arizona Pollutant Discharge Elimination System (AZPDES) Stormwater requirements for construction sites under the Arizona Department of Environmental Quality (ADEQ) Construction General Permit for Arizona. Under provisions of that permit, the Contractor shall be designated as permittee and shall be responsible for providing the necessary labor and materials, and for taking the appropriate measures to assure compliance with the AZPDES Construction General Permit for Arizona as well as other Federal, State and local requirements pertaining to stormwater discharges. As the permittee, the Contractor is responsible for completing, in a manner acceptable to the ADEQ, all documents required by this regulation including the following:
- (1) Stormwater Pollution Prevention Plan shall be sealed by a professional engineer licensed in the State of Arizona.
 - (2) Stormwater Pollution Prevention Plan (SWPPP) for the project including certification form. The

Contractor will be required to update and revise the SWPPP as necessary throughout the construction of the project in order to assure compliance with ADEQ permit requirements. The completed SWPPP shall be kept on the project site at all times during construction of the project.

- (3) Notice of Intent (NOI) to be covered by AZPDES Construction General Permit for Arizona including certification of signature.
- (4) Notice of Termination (NOT) of coverage under AZPDES Construction General Permit for Arizona (upon project completion).

Copies of necessary forms and guidance for preparing the SWPPP are available at ADEQ's website www.adeq.state.az.us/environ/water/permits/azpdes.html

(B) Submittals:

- (1) Preliminary Copies of the NOI and SWPPP shall be submitted to the Engineer at the time of the preconstruction meeting. Any necessary revisions to the SWPPP shall be subject to review by the Engineer, prior to implementation.
- (2) The Contractor shall submit completed, signed NOI forms at least 48 hours prior to the initial start of construction on the project to ADEQ. One copy of the completed, signed NOI form shall be submitted to Arizona Department of Environmental Quality at the following address: Stormwater Program - Water Permits Section/NOI, ADEQ (5415B-3), 1110 West Washington, Phoenix, AZ 850071.
- (3) Failure by the Contractor (or any of its appropriate subcontractors) to submit the NOI forms within the required time frame shall result in delay of the start of construction. The Contractor shall submit a completed copy of the NOI prior to Notice to Proceed. A copy of the completed NOI shall be posted on the construction site and a copy of the SWPPP shall be kept on the construction site.

(C) Contractor's Responsibilities:

- (1) It is the Contractor's responsibility to perform inspection of all stormwater pollution control devices on the project on a monthly basis and following each rainfall of 0.50 inches or more at the project site and as required under the AZPDES Construction General Permit for Arizona. The Contractor shall prepare reports on these inspections and retain these reports for a period of three years following project completion as required under the AZPDES Construction General Permit for Arizona. Inspection reports shall be submitted monthly to the contracting agency along with payment requests. The Contractor shall maintain all stormwater pollution control devices on the project in proper working order, including cleaning and/or repair during the duration of the project.
- (2) No condition of either the AZPDES Construction General Permit for Arizona or the SWPPP shall release the Contractor from any responsibilities or requirements under other environmental statutes and regulations.

- (D) Upon total project completion, acceptance, and de-mobilization, the Contractor shall submit its completed, signed NOT form to the ADEQ with Copies to the same agencies who received Copies of the NOI, thereby terminating all AZPDES permit coverage for the project.

E. Measurement And Payment

1. Payment shall be at the lump sum unit price bid in the Contract Documents for all material, labor, and other incidental costs relating to the provision, installation, and maintenance of items relating to this permit during project construction. Such incidental costs shall include Contractor costs in order to assure proper operation of the pollution-control devices installed including all maintenance, cleaning, and disposal costs associated with clean-up and repair following storm events or other runoff or releases on the project.

Pay Item: 107-1 Stormwater Pollution Prevention Plan

107-2 SEEDING (HYDRAULIC)

A. Seeding consists of furnishing and applying chemical fertilizer; furnishing and planting seed and furnishing, applying and affixing mulch. The areas to be seeded are disturbed or un-vegetated areas. Slopes are required to be seeded immediately upon completion; coordination with grading operations will be required.

Application rates of seed as specified are for Pure Live Seed (PLS). PLS is determined by multiplying the sum of the germination and hard or dormant seed by purity. Weed content of seed shall not exceed 0.5 percent. No substitution of species, strain or origin of seed will be allowed unless evidence is submitted in writing by the contractor to the Engineer showing that the specified materials are not reasonably available during the contract period. The substitution of species, strains or origins shall be made only with the written approval of the Engineer, prior to making said substitution.

The seed shall be delivered to the project site in standard, sealed, undamaged containers. Each container shall be labeled in accordance with Arizona Revised Statutes and the U.S. Department of Agriculture rules and regulations under the Federal Seed Act. Labels shall indicate the variety or strain of seed, the percentage of germination, purity and weed content, and the date of analysis, which shall not be more than 9 months prior to the delivery date.

B. SEED MIX

			Rate/Acre-PLS
Botanical Name	Common Name	Seed/ Lb.	{Pure Live Seed}
Agropyron dasystachym	Thickspike Wheatgrass	154,000	3.0
Bouteloua gracilis	Blue Gramma	825,000	2.0
Koeleria crisata	Prairie Junegrass		1.0
Mulenbergia wrightii	Spike Muhly	1,000,000	1.5
Festuca arizonica	Arizona Fescue	500,000	2.0
Sitnian hystrix	Squirrel Tail	192,000	4.0
Sporobolus cryptandrus	Sand Dropseed	5,298,000	.75

C. Seed Supply Agreement:

The required species may be in short supply during this project. Therefore, the contractor shall enter a contractual agreement with a seed collector/supplier that verifies that sufficient supply of specified plant materials will be available on or immediately prior to the seeding dates. This requirement shall be fulfilled within 45 days following the preconstruction conference in order to allow sufficient time for seed collection. The contractor shall provide written notification to the Engineer verifying that the required species are available and secured for the project. The collection contractor shall test the seed for purity and viability and hold the seed in a manner which maintains its' viability. The contractor shall submit purity and viability test results to the Engineer for approval prior to the initiation of seeding operations. If it is required to be held for more than a year from initial testing the seed shall be tested again for viability. The contractor shall compensate the seed supplier a percentage of the seed cost to hold seed material and for the seed tests as identified in Basis for Payment.

D. General:

The slurry for the hydroseed process shall be as follows:

SLURRY MIX	RATE
Hydrofiber: Silva, Conwed, or Spray mulch	800 lbs./acre

x-100 wood fiber, or equivalent.

Tackifier:	80 lbs. active ingred./acre
Starter fertilizer: Ammonium Phosphate	16-20-0 200 lbs./acre
Seed mix:	As Specified
Soil conditioner	1000 lbs./acre

The seed shall be applied within 30 minutes after being combined with the slurry mix.

INGREDIENTS FOR SLURRY APPLICATION	PERCENTAGES (MINIMUM)
------------------------------------	--------------------------

Nitrogen	5
Phosphoric Acid	3
Water soluble Potash	1
Humas	50
Humic Acids	15
Soluble Metallic Iron	1

E. Wood Cellulose Fibers:

Wood fiber mulch shall consist of a specially prepared wood fiber processed to contain no growth germination inhibiting factors. The mulch shall be virgin wood and be manufactured and processed so the fibers will remain in uniform suspension in water under agitation to form a homogenous slurry. The mulch shall have a pH range between 4.5 to 6.5.

When hydraulically sprayed on the ground, the material will form a blotter-like cover impregnated uniformly with seed. The cover will allow the absorption of moisture and allow rainfall to percolate to the underlying area.

F. Tacking Agent:

Binder shall be free flowing, non-corrosive powder produced from natural plant gum marketed under M-Binder, M145 Binder, AZ-TAC or approved equal. It shall have gelling properties to inhibit the tendency of water and fiber to move downhill as they are sprayed on steep slopes.

G. Construction Requirements:

1. General:

The Engineer will regularly observe the weighing of seed, mixing of slurry mix, and application of seed.

2. Seeding:

Seeding shall be done immediately following the final grading or disking of each cut slope and each fill slope. The soil surface shall be loose. The contractor will be required to mobilize frequently to accomplish this goal. No seeding shall be carried out under wind conditions exceeding 5 m.p.h. Scheduling of seedings mobilization will be coordinated with the Engineer at the weekly construction meetings. In no case shall a decision by the Engineer relieve the contractor from the requirement of seeding prior to measurable rainfall. If measurable rain falls prior to seeding, or if the surface of the graded area has formed a crust or slightly hardened surface, the contractor shall be responsible for ripping, blading or loosening the ground surface, or otherwise repairing and/or preparing the affected areas for seed, after they adequately dry out and prior to seeding, at no cost to the Owner. The use of specialized equipment or manual methods may be required to prepare the surface for seeding, if seeding is not accomplished

immediately after grading or disking.

Seed is to be accomplished during the window of June 1 to July 15 and November 1 to January 30. These windows are to allow expected seasonal rains to start germination process.

All areas disturbed by construction are to be seeded. This may be more area than shown on the plans. All areas to be approved by Engineer. The contractor shall coordinate seeding operations with slope construction so that the tops of cuts and toes of fills can be reached with hydroseed equipment.

Hoses may be used where heavy equipment cannot access.

3. Tillage:

All slopes steeper than 3:1 shall either have a loose, friable soil depth of 2" or more or be tilled a minimum of 4" in depth as they are constructed.

Tillage shall be accomplished with a ripper bar, chisel plow or harrow tool or with other equipment which will provide thorough soil cultivation.

Tillage shall be performed long the contour. The slopes behind guardrail, and in the ditch line in cut shall be left with roughened surface to aid in water absorption. Seeded areas which are not behind guardrail or between the ditch line and the roadway on a cut shall be left in a Firm surface free of foreign material that would interfere in the seeding operation.

No work shall be done when the moisture content of the soil is unfavorable or the ground is otherwise in a condition not conducive to tillage.

Planting:

The contractor shall submit a batch (tank) mix for the Engineer's approval prior to mixing any seed/mulch slurry. Batch mixing and coverage will be monitored throughout seeding operations. The contractor is to coordinate monitoring with the Engineer in advance of mixing.

After the tillage is complete and accepted by the Engineer, seed shall be planted by slurry mix (cut slopes steeper than 3:1).

All areas to be seeded shall have a starter fertilizer of ammonium phosphate 16-20-0 applied at a rate of 200 pounds per acre and soil condition at the rate of 1,000 pounds per acre.

Any material sprayed on non-designated areas shall be immediately removed by the contractor at his expense. Non-designated areas include pavement, guardrails, signs, plants and existing vegetation.

Anchorage by Tacking:

Mulch shall be anchored by tacking using a slurry consisting of a minimum of 150 pounds of binder, 400 pounds of wood fiber mulch and 700 gallons of water per acre.

Preservation of Seeded Areas:

Any material sprayed on non-designated areas shall be immediately removed by the contractor at his expense. Non-designated areas include pavement, guard rails, signs, plants, and existing vegetation.

Warranty:

The contractor shall guarantee that 75% of the applied tackifier remain in place for a period of 30 days after acceptance of the seeding application, Any areas that have less than 75% of the tackifier remaining shall be reseeded, re-mulched and retacked at the contractor's expense.

Measurement And Payment:

Seeding will be measured by the acre, to the nearest tenth acre, measured along the ground surface for the areas which have been plated and mulched, as determined by the Engineer. The contractor may be reimbursed a partial payment based on the invoice amount for the cost to hold and test the seed in conformance with the Seed Supply Agreement.

The accepted quantities of seeding, measured as provided above, will be paid for at the contract price per acre for the full performance of the work herein described, which price shall be full compensation for the work completed including all equipment, labor and materials required.

Areas that require reseeding and re-mulching under the warranty shall be done at no additional cost to the City of Prescott. The 30 day period(s) shall be within the allotted contract time.

PAY ITEM: 107-2 Seeding (Hydraulic)

107-6 PUBLIC CONVENIENCE AND SAFETY

A. Maintenance of Traffic

1. Contractor shall at all times conduct his/her work as to ensure the least possible obstruction to traffic.
2. Unless otherwise provided, the road, while being improved shall be kept open to all traffic by Contractor. When so requested by Contractor and approved by the City Engineer, Contractor may by-pass traffic over an approved detour route. Regardless of whether it is through or local traffic, Contractor shall keep the portion of the project being used by traffic in such condition that traffic will be adequately accommodated.
3. Contractor shall also provide and maintain in a safe condition temporary approaches or crossings and intersections with trails, roads, streets, businesses, parking lots, driveways residences, garages and farms; however, Contractor will not be required to remove snow.
4. Before any detour is opened to traffic, the City Engineer shall have been satisfied that traffic is able to proceed in a safe manner.
5. Contractor shall bear all expense of maintaining traffic over the road being improved as well as constructing, maintaining and subsequently removing Contractor requested detours, approaches, crossings, intersections and other features as may be necessary without any direct compensation.

B. Access to Businesses/Residences

Contractor shall provide to all residents and businesses affected by the project, access to one of their driveways at all times except as modified by the following: If Contractor finds it unavoidable to temporarily close off access for any time, the residents/businesses affected shall be contacted a minimum of 48 hours in advance and an alternate procedure for access mutually agreed to. Contractor shall provide the City Engineer with signed evidence of a mutually accepted agreement between the property owner/business manager/residential manager and Contractor prior to said closure.

C. Safety

1. The safety and convenience of the general public and the residents along the project and the protection of persons and property shall be provided for by the Contractor in accordance with the requirements of this contract.
2. Contractor shall submit a Safety Plan to the City Engineer at the preconstruction conference. The plan shall detail the procedures The Contractor will implement to satisfy OSHA and the State Occupational Safety Guidelines related to the worker as well as public safety in construction of excavations, structures and confined air spaces as identified by the City Engineer. Contractor's Safety Plan shall include the requirement that all workers and visitors must wear hard hats while within the project limits.
3. The Safety Plan submitted by Contractor shall include proposed methods to prevent unauthorized persons

from gaining access to the work areas.

4. In conjunction with the Safety Plan, Contractor shall furnish and install 72" temporary chain link fencing, or approved equal satisfactory to the City Engineer, around any unattended excavation deeper than four feet with slopes steeper than 2:1. Temporary fencing shall completely enclose the referenced construction activity and shall be secured after normal working hours to prevent unauthorized access.
5. Unless otherwise approved in writing by the City Engineer, open utility trenches shall be limited to 50 ft. In length except for cast-in-place pipe installations and during non-working hours shall be covered with steel plate in a manner satisfactory to the City Engineer.

108-4 CONSTRUCTION SCHEDULE

- A. Prior to beginning construction, the Contractor shall submit for review by the City Engineer a complete construction schedule as stated in the General Conditions of these contract documents.
- B. Once this schedule has been accepted by the City Engineer, Contractor shall not deviate from it until a revised schedule has been submitted and accepted by the City Engineer.
- C. The City Engineer reserves the right to reject construction schedule submittals when in his opinion the schedule lacks the proper detail.

109-1 CONTRACT ALLOWANCE

- A. Contract allowance items are provided for the purpose of encumbering funds to cover the costs of possible contract amendment work. The amount of the allowance item is determined by the Engineer and is not subject to individual bid pricing. All bidders shall incorporate the amount pre-entered in the bid proposal and shall reflect the same in the total amount bid for this project.
- B. This allowance item provides an estimated funding to cover unforeseen changes that may be encountered and corresponding extra work needed to complete the contract per plan. Unforeseen extra work, if any, shall be in accordance with the Contract Amendment section of the General Conditions.
- C. It shall be understood that this allowance item is an estimate only and is based on contract amendment history of similar projects. It shall not be utilized without an approved contract amendment. It is further understood that authorized extra work, if any, may be less than the allowance item.

Pay Item: 109-1 Contract Allowance

200-1 DEWATERING

- A. All water encountered during the work shall be disposed of by the Contractor in a manner such that it will not damage public or private property or create a public nuisance or health problem. This work shall consist of furnishing equipment, materials, and labor necessary for the control and removal of water, the construction or installation of all facilities necessary to accomplish the work, and the subsequent removal of such facilities except when designated on the project plans or in the special provisions to remain in place.
- B. **Measurement And Payment**
 1. No separate measurement or payment shall be made for dewatering. This work shall be considered incidental and included in the unit price bid for construction or installation of the appropriate contract pay items.

200-2 BY-PASS PUMPING

- A. DESCRIPTION

1. Scope: This section specifies the requirements for temporary bypass pumping of sewers
2. Requirements:
 - a. Contractor shall provide labor, materials, and supervision to temporarily bypass flow around the Contractor's work.
 - b. The Contractor shall have the entire bypassing system in place and tested before bypassing any sewage.
3. At the Pre-construction Conference, the Contractor shall submit drawings and complete design data showing methods and equipment he proposes to utilize in sewer bypassing and dewatering for approval by the Engineer. The submittal shall include the following information:
 - a. Drawings indicating the location of temporary sewer plugs and bypass discharge lines.
 - b. Capacities of pumps, prime movers, and standby equipment.
 - c. Design calculations providing adequacy of the system and selected equipment.
 - d. Standby power source.
 - e. Staffing plan.
 - f. Traffic Control Plan.
4. FLOW DATA: It is the responsibility of the Contractor for design, construction, and operation of an adequate and properly functioning bypass and dewatering system. It is also the responsibility of the Contractor for any additional testing or gathering of flow data.
5. PROTECTION: In areas where flows are bypassed, all bypass flow shall be discharged as approved by the Engineer. No bypassing to the ground surface, receiving waters, storm drains or bypassing which results in groundwater contamination or potential health hazards shall be permitted.
6. SCHEDULING: The bypass system shall not be shut down between shifts, on holidays or weekends, or during work stoppages without written permission from the Engineer. Public advisory services will be required to notify all parties whose service laterals will be out of service and to advise against water usage until the main line is back in service.

B. MATERIALS

1. The Contractor shall provide temporary pumps, conduits and other equipment to bypass the sewer flow. Contractor shall furnish the necessary labor and supervision to set up and operate the pumping and bypass system. Engines shall be equipped with mufflers and/or enclosed to keep the noise level less than 50dB or 10dB above ambient noise levels when measured at the property line closest to the noise source. Pumps and bypass lines shall be of adequate capacity and size to handle the flows.
2. The Contractor shall maintain on site sufficient equipment and materials to ensure continuous and successful operation of the bypass and dewatering systems. Standby pumps shall be fueled and operational at all times. The Contractor shall maintain on site a sufficient number of valves, tees, elbows, connections, tools, sewer plugs, piping and other parts or system hardware to ensure immediate repair or modification to any part of the system as necessary.
3. All piping, joints and accessories shall be designed to withstand at least twice the maximum system pressure, or 50psi, whichever is greater. All hoses/pipes used for bypass pumping shall be ramped during the inversion and curing process to allow for the ease of vehicular and pedestrian traffic. All hoses/pipes shall be color-coded for identification to prevent cross contamination of water and wastewater lines. Hose/pipes used for water conveyance are not used for wastewater conveyance.

C. GENERAL

1. The Contractor shall keep, where appropriate, the rehabilitated pipe section free from water during rehabilitation. If groundwater is present in any excavation, the static groundwater level shall be drawn down a minimum of 1 foot below the bottom of excavations to maintain the undisturbed state of natural soils and allow the placement of any fill to the specified density. Disposal of water shall not damage property or create a public nuisance. The Contractor shall have on hand pumping equipment and machinery in good working condition for emergencies and shall have workmen available for its operation. Dewatering systems shall operate continuously until backfill has been completed to 1 foot above the normal static groundwater level.
2. Groundwater shall be controlled to prevent softening of the bottom of excavations, or formation of "quick" conditions. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water in excavations.
3. Release of groundwater to its static level shall be controlled to prevent disturbance of the natural foundation soils or compacted fill and to prevent flotation or movement of structures or pipelines.
4. During bypass pumping, sewage shall not be leaked, dumped or spilled outside the sewer system. When bypass pumping operations are complete, all piping shall be drained into the sanitary sewer prior to disassembly. In the event that sewage accidentally drains into the storm drainage system or the street, the Contractor shall immediately stop the overflow, notify the Owner and take the necessary action to clean up and disinfect the spillage to the satisfaction of the Owner. The Contractor shall submit their emergency spillage and cleanup action plan for all sewage spills to the Engineer for approval prior to beginning construction. It shall include but not be limited to a remediation plan that indicates what labor, equipment and resources will be used to restore the site to the condition prior to the spillage.
5. The Contractor shall repair without cost to the Owner any damage that may result from this negligence, inadequate or improper installation, maintenance and operation of bypassing and a dewatering system including mechanical or electrical failures, and from sewer spillage.

D. FLOW CONTROL

1. Flow control is required for TV inspection and for sewer line rehabilitation. Limited sewage flow, as defined below, is acceptable for TV inspection. Complete stoppage or bypassing of flow is required during sewer line and manhole rehabilitation work.
2. When the depth of flow at the upstream manhole of the sewer line section being worked is above the maximum allowable for television inspection, the flow shall be reduced to the level shown below by plugging or blocking of the flow, or by pumping and bypassing of the flow as specified.
3. Depth of flow shall not exceed 20% of pipe diameter as measured in the manhole when performing television inspection
4. **PLUGGING OR BLOCKING:** A sewer line plug shall be inserted into the line upstream of the section being worked. The plug shall be so designed that all or any portion of the sewage can be released. During TV inspection, flow shall be reduced to within the limits specified above. After the work has been completed, flow shall be restored to normal. Precautions shall be taken to prevent flooding damage. See flow precautions below.
5. **PUMPING AND BYPASSING:** When pumping and bypassing is required the Contractor shall supply the pumps, conduits and other equipment to divert the flow of sewage around the manhole section in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during peak flow periods or from precipitation and shall be constructed of

such material that will prevent leakage during the pumping operation. The Contractor will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing systems. All pump drivers shall have noise suppressor exhaust systems to reduce noise levels to less than 50dB, or 10dB above ambient noise levels, when measured at the closest property line.

6. **FLOW CONTROL PRECAUTIONS:** When flow in a sewer line is plugged, blocked or bypassed; sufficient precautions must be taken to protect the sewer lines from damage that might result from sewer surcharging. Further, precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewer involved. All piping(s), joints and accessories shall be designed to withstand at least twice the maximum system pressure, or a minimum of 50psi whichever is greater. During by-pass pumping sewage shall not be leaked, dumped or spilled onto any area outside the sewer system. When by-pass pumping operations are complete all piping shall be drained into the sanitary sewer prior to disassembly. In the event sewage accidentally drains into the drainage system or street, the Contractor shall immediately stop the overflow, notify the Engineer and take the necessary action to clean up and disinfect the spillage to the satisfaction of the Engineer. If sewage is spilled onto public or private property, the Contractor shall wash down, clean up and disinfect the spillage to the satisfaction of the City. The Contractor shall report any and all overflows to the City and the Yavapai County Department of Health Services within 24 hours.

E. Measurement and Payment

Payment for By-pass Pumping shall be made at the lump sum bid by the Contractor

Pay Item: 200-1 By-pass Pumping

200-4 REMOVE AND REPLACE LANDSCAPE ROCK

Landscaping shall be protected and restored as per MAG Section 107.9. Existing landscaping rock shall be removed, stockpiled, and replaced in its original position as closely as possible. **Payment shall be per lump sum amount.**

200-6 RIP RAP CONSTRUCTION

Work under this section shall consist of furnishing all materials and constructing riprap bank protection in accordance with the details shown on the plans and per the requirements of MAG Std. Section 220. **Measurement and payment shall be per square yard complete and in place.**

200-7 RIP RAP CONSTRUCTION WITH FILTER FABRIC

Work under this section shall consist of furnishing all materials and constructing riprap bank protection in accordance with the details shown on the plans and per the requirements of MAG Std. Section 220. Filter fabric shall be Polyspun 350 or approved equal and installed according to ADOT 913-3 and the manufacturer's specifications. **Measurement and payment shall be per square yard complete and in place.**

200-8 ROCK LINED V-DITCH, ROCK LINED DITCH OR GROUTED ROCK LINE DITCH

Work under this item shall be in accordance with YAG & MAG Section 215, 220 and 703, as stated on project drawings and as modified herein. Waste concrete shall not be used. **Measurement and payment under this item shall be to the nearest linear foot complete in place in accordance with the respective detail.**

200-9 ROCK LINED BASIN, GROUTED ROCK LINED BASIN OR ROCK SPLASH PAD

Work under this item shall be in accordance with YAG & MAG Sections 215, 220 and 703, as stated on the project drawings and as modified herein. Waste concrete shall not be used. **Measurement and payment under this item shall be to the nearest linear foot for ditch or the nearest square yard for basin complete in place in accordance with the respective detail.**

201-1 CLEARING AND GRUBBING

Work under this item shall be as per Y.A.G. Section 201. **No separate payment shall be made for clearing and grubbing as per Y.A.G. Section 201.5.**

205-1 EARTHWORK AND ROADWAY EXCAVATION

- A. Work under this item shall be done in accordance with YAG & MAG Specs Section 205, 211 and 301.
- B. If material is encountered during excavation that the Engineer determines to be unsuitable, the following shall apply:
- Material which is located in a cut section at an elevation above finished sub-grade shall not be utilized in fill construction but shall be removed and disposed of at a site secured by Contractor.
- Material which is located below the natural ground surface in embankment areas and below the finished sub-grade elevation in excavation areas shall be removed to the limits as determined by the Engineer and the resultant cavity backfilled with suitable material as directed.
- C. The price bid for roadway excavation shall include all costs for excavating, hauling, placing and constructing fills as per YAG & MAG 211, sub-grade preparation, removal and disposal of unsuitable and excess material. There will be no separate payment made for overhaul.
- D. The bidding schedule quantities for this item of work will be considered to be the final quantities for payment. Adjustments in the bidding schedule quantities for Earthwork as contained in these specifications may be initiated by Contractor or the Engineer if evidence indicates that the required quantity varies by an amount greater than 5% of the bidding schedule quantity. Contractor shall advise the Engineer, in writing, submitting evidence in the form of a construction survey or photogrammetric survey with measurement for the proposed adjustment and requesting an adjustment in quantities. The Engineer will determine the amount of adjustment, if any. The quantity upon which payment will be based will be the bidding schedule quantity plus or minus only that portion of the adjustment that exceeds 5% of the bidding schedule quantity.
- E. Variations caused by shrink of materials shall not be considered for quantity adjustments.
- F. Adjustments in earthwork quantities due to revisions ordered by the Engineer will be isolated by measurement or calculations. The bidding schedule quantities will be adjusted by the amount either measured or calculated, regardless of the 5% variation requirement above.
- G. Embankment quality control testing frequency shall be one per soil type for proctor density testing and one per 500' per 8" lift for compaction testing. Sub-grade quality control testing shall be one per 500' for compaction testing.

H. Measurement And Payment

1. Measurement And Payment shall be in accordance with YAG Section 205.7 and 205.8

Pay Item: 205-1 Earthwork and Roadway Excavation

205-2 REMOVAL OF UNSUITABLE SUB-GRADE MATERIAL

- A. Work under this item shall be in accordance with YAG & MAG Specs Section 205 and as directed by the Engineer. The resultant cavity shall be backfilled with ABC in accordance with the aggregate base course section of these specifications and paid as such.
- B. Measurement and payment shall be to the nearest cubic yard as calculated in the field and shall include all excavation, hauling and disposal at a site secured by Contractor.

Pay Item: 205-2 Removal Of Unsuitable Sub-grade Material

230-1 DUST PALLIATIVE

- A. The work under this item shall consist of applying water required for dust control per ADOT Specs Section 207 and as modified herein.
- B. If in the opinion of the City Engineer the Contractor fails to keep dust for his operation under control, the City Engineer may order by written order suspension of operations until the situation is remedied. No time extension or additional costs will be allowed for this suspension.
- C. All contractors requesting construction water from the City must submit a Construction Water Meter Application to the Public Works Department. A \$1,000 deposit will be required for hydrant meters. If construction water use occurs during the months of May through September the Contractor shall also include a dust abatement program. Potable water may not be allowed for dust abatement during these months. Potable water can be used to process embankment fill and base materials year round. However, contractors are encouraged to use treated effluent for construction activities. The City of Prescott has two outlets for effluent, the Sundog Wastewater Treatment Plant and the Airport Wastewater Treatment Plant. The City will provide metered standpipes for effluent at both plants. The Contractor will be required to estimate daily and total potable/effluent water usage for the project as identified on the Construction Water Meter application. The Contractor will be responsible for all costs associated with obtaining and delivering construction water.
- D. ADOT Sections 207-4 and 207-5 shall be revised to read: **No separate measurement or payment shall be made for dust palliative. This work shall be considered incidental and included in the unit price bid for construction of the appropriate contract pay items.**

300-1 SAW CUT

- A. The work under this item shall consist of saw cutting the existing pavement where new asphalt concrete is to match existing bituminous surfaces with no provisions for overlaying the entire section. This item shall also include saw cutting of existing Portland cement concrete pavement, sidewalks, driveways and parking lots where new construction shall match the grade of existing surfaces that are to remain where called for on the project plans or where designated by the Engineer.
- B. Saw cuts shall be made to a full depth of the material to insure a neat vertical joint. Portland cement concrete designated to remain that is damaged by the saw cutting shall be replaced in kind at The Contractor's expense.
- C. Measurement of this work will be made horizontally at each location to the nearest foot. Payment for this work will be made at the contract price bid per linear foot for SAWCUTTING, which price shall be full compensation for the work as described and specified herein and on the project plans. Payment will be on the total length of saw cut to the nearest foot.

Pay Item: 300-1 Saw Cutting

301-1 SUB-GRADE PREPARATION

Work under this item shall be as per Y.A.G. Standards Section 301. Payment shall be made at the unit priced per square yard as Y.A.G. Standards Section 301.

301-2 SCARIFICATION, GRADING & RE-COMPACTION OF EXISTING AGGREGATE BASE COURSE

This item includes all work required to scarify, re-grade and re-compact the existing aggregate base course (ABC) to meet the original design specifications and grades. If the quality of the existing ABC is found to be compromised, it will be removed as stipulated under the item entitled "Removal of Unsuitable Base Material" and replaced as stipulated under the item entitled "Aggregate Base Course". The City will be consulted to review and approve the limits of removal and replacement, prior to the work being done. The condition of the existing ABC has not been accurately determined. There is some indication that as a result of the flushing action of the

broken water main, shading and/or bedding sand may have been flushed up and deposited between the AC and ABC. If such is the case, it will be required that this sandy material be removed and disposed of as stipulated under the item entitled "Removal of Unsuitable Base Material". If some removal of the existing ABC is required in order to accommodate the removal of the sandy material, it will be necessary to augment the existing ABC with new ABC material. The additional quantity of ABC required under this scenario will be paid for under "Aggregate Base Course". Payment for this item shall be made at the unit price bid per square yard of treated surface.

310-1 BASE PREPARATION (FOR UNPAVED STREETS)

Work under this item shall according to YAG and MAG Standards Section 310. Payment shall be made at the unit price per square yard as per YAG and MAG Standards Section 310.

310-2 AGGREGATE BASE COURSE

A. This work consists of furnishing, placing and compacting (the thickness specified on the plans or as required by the Engineer) aggregate base course in accordance with the plans and YAG & MAG Sections 310 and 702 and as modified herein.

B. The percent composition by weight shall be within the following limits:

Sieve Size	Percent Passing
1 1/8"	100
No. 4	38- 65
No. 8	25 - 60
No. 30	10 -40
No. 200	3 - 12

C. The maximum plasticity index shall be six when tested in accordance with AASHTO T89 and T-90.

D. The aggregate base course shall be compacted to 98% of the maximum dry density as determined by ASTM D-698. Aggregate base course quality control testing frequency shall be one per source for Abrasion testing, one at start of production and again if source changes. Proctor Density testing shall require one per 500' per 6" lift for compaction and one per shift for crushed faces, PI, and gradation.

E. Aggregate base course shall not be placed on excessively wet or frozen sub-grade materials as determined by the Engineer.

F. Measurement for payment of aggregate base will be calculated by the cubic yard complete in place as follows:

1. Where the plans call out specific base depths, calculations shall be based on plan dimensions.
2. Where the plans are not specific as to depth, calculations shall be based on cross sections of the accepted sub-grade and base elevations as surveyed in the field.

Pay Item: 310-2 Aggregate Base Course

321 ASPHALT CONCRETE PAVEMENT

Asphalt mix design materials, manufacture, and placement shall be in accordance with MAG Specifications, Section 321 and Section 710 with the additions, clarifications and changes herein:

SECTION 321-3 WEATHER AND MOISTURE CONDITIONS: shall be changed as follows:

Asphalt concrete shall be placed only when the surface on which the material is to be placed is dry, unfrozen, the atmospheric temperature in the shade is at 40 degrees F and rising, and the temperature of the road surface or subsurface is at 50 degrees F and rising as measured in the shade. No asphalt concrete shall be placed when the weather is foggy or rainy, when precipitation is eminent, or when the base or sub base on which the material is to be placed is unstable. Asphalt concrete shall be placed only when the Public Works Director or his authorized representative determines that weather conditions are suitable and sub base conditions on which the material is to be placed are acceptable.

SECTION 321-4 APPLICATION OF TACK COAT: is supplemented as follows:

- a. The application rate shall be between 0.04 to 0.06 gallons per square yard of diluted material, 50% water and 50% emulsion, using SS-1H.
- b. The tack coat shall be applied only as far in advance of placing the asphalt concrete as ordered by the Engineer; however, in no event should the tack coat be applied and not covered by the asphalt concrete in the same day.

SECTION 321-6 MIX PRODUCTION: is supplemented as follows:

1. STOCKPILING

- a. Sufficient virgin mineral aggregate material shall be stockpiled at the site of the hot plant to produce the quantity of asphalt concrete required for a minimum of two successive eight hour shifts; however, this requirement will be modified during the last two days production, or under special conditions with the Public Works Director's approval.
- b. Mineral aggregate shall be stockpiled so that segregation is minimized. An approved divider of sufficient size to prevent intermingling of stockpiles shall be provided.

2. PROPORTIONING

- a. No fine material which has been collected in the dust collection system shall be returned to the mixture unless the Engineer, on the basis of tests, determines that all or a portion of the collected fines can be utilized. If the Engineer so determines, he will authorize in writing the utilization of a specific proportion of the fines; however, authorization will not be granted unless the collected fines are accurately and uniformly metered into the mixture.
- b. Mineral aggregate and bituminous material shall be proportioned by volume, by weight, or by a combination of volume and weight.
- c. When mineral aggregate and bituminous material are proportioned by weight, all boxes, hopper buckets or similar receptacles used for weighing materials, together with scales of any kind used in batching materials, shall be insulated against the vibration or movement of the rest of the plant due to the operation of any equipment so that the error in weighting with the entire plant operating shall not exceed 2% for any setting nor 1½% for any batch. Bituminous material shall be weighed in a heated, insulated bucket suspended from a springless dial scale system.
- d. When mineral aggregate and bituminous material are proportioned by volume, the correct portion of each mineral aggregate size introduced into the mixture shall be drawn from the storage bins by an approved type of continuous feeder which will supply bituminous material and so arranged that the proportion of each mineral aggregate size can be separately adjusted. The continuous feeder for the mineral aggregate shall be mechanically or electrically actuated.

3. DRYING AND HEATING

- a. A recording pyrometer or other approved recording thermometric instrument sensitive to a rate of temperature change of not less than 10° F per minute shall be so placed at the discharge chute of the drier

in order to record mineral aggregate and to facilitate reading the recorded temperature. A copy of the recording shall be given to the Engineer. The moisture content of the asphalt concrete immediately behind the paver shall not exceed 1%.

4. *MIXING*

- a. The production of the plant shall be governed by the rate required to obtain a thorough and uniform mixture of the materials. Mixing shall continue until the uniformity of coating, when tested in accordance with the requirements of AASHTO T-195, is at least 95%.
- b. A positive signal system shall be provided to indicate the low level of mineral aggregate in the bins. The plant will not be permitted to operate unless this signal is in good working condition. Each bin shall have an overflow chute or a divider to prevent material from spilling into adjacent bins.
- c. The temperature of asphalt concrete upon discharge from the mixer shall not exceed 325° F. If the asphalt concrete is discharged from the mixer into a hopper, the hopper shall be constructed so that segregation of asphalt concrete will be minimized.

SECTION 321-8 PLACEMENT: is supplemented as follows:

- a. Contractor shall stringline finish ABC grade in the presence of the Public Works Director or his representative to verify compliance to specified tolerances prior to the placement of asphalt concrete. Placement of asphalt concrete shall not begin prior to completion and adequate curing of all adjoining Portland cement concrete items.
- b. The handling of asphalt concrete shall at all times be such as to minimize segregation. Any asphalt concrete which displays segregation shall be removed and replaced.
- c. All wheels and tires of compactors and other equipment shall be wiped when necessary with an approved product in order to prevent the picking up of the asphalt concrete.
- d. Before asphalt concrete is placed, the surface to be paved shall be cleaned of objectionable material.
- e. The base or sub-grade upon which the asphalt concrete is to be placed shall be prepared in accordance with the applicable requirements for the material involved and maintained in a smooth and firm condition until placement.
- f. At any time, the Public Works Director or his designee may require that the work cease or that the work day be reduced in the event of weather conditions either existing or expected which would have an adverse effect upon the asphalt concrete.
- g. The temperature of asphalt concrete just prior to compaction shall be at least 250° F but shall not exceed 300° F, unless permitted by the Engineer.
- h. The asphalt concrete shall be placed as a surfacing course. Surfacing courses are defined as courses placed to serve either as a traffic surface or as a surface upon which a finishing course or seal coat is to be placed. The thickness of surfacing courses will be shown on the project plans.
- i. In order to achieve, as far as practicable, a continuous operation, the speed of the paving machine shall be coordinated with the production of the plant.
- j. Tapered sections exceeding eight feet in width or widened sections not exceeding four feet in width may be placed and finished by other means approved by the Public Works Director.

SECTION 321-8.4 Compaction Base and Surface: is supplemented as follows:

- a. Compacting and smoothing shall be accomplished by the use of self-propelled equipment. Compactors shall be pneumatic tired and tandem powered (steel wheel) and shall be approved by the Public Works

Director.

- b. Compactors shall be operated in accordance with the manufacturer's recommendations. Compactors shall be designed and properly maintained so that they are capable of accomplishing the required compaction.
- c. Steel wheel compactors shall weigh not less than eight tons and have the vibratory mode option.
- d. Pneumatic tired compactors shall be the oscillating type having a width of not less than four feet with pneumatic tires of equal size, diameter and having treads satisfactory to the Public Works Director. Wobble-wheel compactors will not be permitted. The tires shall be spaced so that the gaps between adjacent tires will be covered by the following tires. The tires shall be inflated to 90 lb. per square inch, or such lower pressure will not vary more than five lb. per square inch from the designated pressure.
- e. Pneumatic tired compactors shall be constructed so that the total weight of the compactor can be varied to produce an operating weight per tire of not less than 2,000 lb.
- f. Steel wheel compactors shall not be used in the vibratory mode when the surface temperature of the asphalt concrete falls below 180 ° F.
- g. Asphalt concrete shall be compacted to not less than 95.0% of laboratory density.
- h. Compaction control shall be defined as the responsibility of Contractor on the basis of his anticipated rate of production to determine the number and types of compactors and the sequence and manner in which they shall be used in order to achieve the specified percent density.
- i. The responsibility for developing and controlling the compaction lies with Contractor.
- j. The City reserves the right to test Contractor's percent of density at any time.
- k. Core samples shall be taken by Contractor on a random location basis with locations determined by the Public Works Director and consist of one core per every 1,000 square yards of roadway, for each day's production. The asphalt cores shall be taken on the following workday or within 24 hours whichever applies and shall be submitted to the City's Quality Assurance firm for testing.
- l. For complete acceptance, all core densities must show a minimum relative density of 95.0% based on a 75 blow Marshall Density, AASHTO T-245. The Marshall Density shall consist of two sets of three specimens averaged for each day's production.
- m. If the core densities show inadequate compaction the unit price will be adjusted per the table below:

Percent Compaction	Reduction in Payment
94.0 - 94.9	5%
93.0 - 93.9	10%
92.0 - 92.9	25%

- n. When the percent compaction is less than 92.0%, Contractor may be required to remove and replace any portions at the discretion of the Public Works Director at no extra cost to the City.

SECTION 321-8.5 Smoothness: the second sentence is changed as follows:

- a. Surfacing course surfaces shall not vary more than 1/8 inch from the lower edge of ten-ft. straightedge when the straightedge is placed parallel to the center of the roadway.

SECTION 321-9 QUALITY CONTROL: shall be changed as follows:

A. Contractor Quality Control

1. GENERAL REQUIREMENTS

- a. It shall be the responsibility of Contractor to administer a Quality Control Plan, hereinafter referred to as "Plan", sufficient to assure a product meeting the requirements of these specifications. The Plan may be operated wholly or in part by a subcontractor or an independent organization; however, the Plan's administration, including compliance with the Plan and its modification, shall remain the responsibility of Contractor.
- b. Contractor is required to provide and maintain a Quality Control Plan, along with all the personnel, equipment, supplies and facilities necessary to obtain samples, perform tests, and otherwise assure the quality of the project.
- c. Contractor shall submit the Quality Control Plan to the Public Works Director or his designee at the preconstruction conference.
- e. Contractor shall perform process control sampling, testing and inspection during all phases of the work and shall perform the process control sampling, testing, and inspection at a rate sufficient to assure that the work conforms to the contract requirements. Contractor shall provide the Public Works Director a certification stating that all of the testing equipment to be used is properly calibrated and will meet the specifications applicable for the specified test procedures.

2. ELEMENTS OF THE PLAN

- a. The Plan shall address all elements which affect the quality of the asphalt concrete including, but not limited to the following: Mix Design, Aggregate Production, Quality of Components, Stockpile Management, Proportioning, Mixing (including addition of Mineral Admixture, if required), Placing and Finishing, Joints, Compaction.

3. PLAN IMPLEMENTATION

- a. The Contractor shall provide testing at the frequencies listed in Table 321.9.1 during production of the asphalt concrete. A laboratory accredited in each of the listed tests by the AASHTO Materials Laboratory (AMRL) shall perform the testing.

TABLE 321.9.1		
CONTRACTOR QUALITY CONTROL TESTING REQUIREMENTS		
Test	Sample Point	Frequency
Ignition Binder Calibration, ASTM D 6307	Stockpiles or storage tanks	1 per mix design per project
Ignition Binder Test, ASTM D 6307, C 117 & C116	Plant, truck, or on-grade	1 per 1000 tons, but not less than 1 per day

Gyratory or Marshall Density, ASTM D 4013 or AASHTO T 166	Plant, truck, or on-grade	1 per 1000 tons, but not less than 1 per day
Maximum Theoretical Density, ASTM D 2041	Plant, truck, or on-grade	1 per 1000 tons, but not less than 1 per day
Temperature	On-grade	Continuous Reading
Aggregate Gradation, ASTM C 117 & C 136	Cold Feed	1 per 1000 tons, but not less than 1 per day

- b. Results of each test shall be provided to the Public Works Director or his designee immediately upon completion, and in no case later than the end of the day asphalt was produced. Test results shall be used to control the asphalt concrete production. Production of the asphalt concrete on consecutive paving days shall not commence until the prior day's test results have been submitted to the Public Works Director or his designee and appropriate actions have been taken in accordance with the criteria listed in Table 321.9.1 and Table 321.9.2.

TABLE 321.9.2		
CRITERIA FOR REQUIRED PLANT ADJUSTMENT		
Property	Criteria A (Adjustment)	Criteria S (Stoppage)
Binder Content	±0.4% of Mix Design	±0.5% of Mix Design
Air Voids	4±1.5%	4±2.0%
Gradation	Table 321-3	Table 321-3
Temperature	±10BC of Mix Design	±15BC of Mix Design

- c. The guidelines in Table 321.9.2 and Table 321.9.3 shall be used to determine if the plant will require adjustment or stoppage. If the Contractor's test results indicate the mixture does not comply with Criteria A in Table 321.9.2, an adjustment to the plant will be required to bring the production closer to the middle of the specification bands. The Contractor is responsible for determining the extent and the method of adjustment, and shall notify the Public Works Director or his designee in writing of what adjustments were made.

TABLE 321.9.3	
ALLOWABLE GRADATION VARIATION FROM MIX DESIGN TARGET	
Maximum Aggregate Size	100%
Nominal Maximum Aggregate Size (NMAS)	±5%
#8 (2.36 mm) Sieve to NMAS	±4%
#40 (0.425mm) Sieve	±3%
#200 (0.75 mm) Sieve	±1.5%

- d. If the Contractor's test results indicate the mixture is at or beyond the range established by Criteria S in Table 321.9.2, production shall cease immediately, and shall not resume (except as required to produce material for additional samples) until additional test results verify the adjustments will produce test results meeting Criteria A in Table 321.9.2. The Public Works Director or his designee may enforce the adjustment or stoppage criteria if the acceptance tests and the quality control tests are not in agreement.
- e. A representative of the City shall secure two representative samples of the mixture for each day's production.
- f. Samples will be tested for conformance with the mineral aggregate gradation in accordance with the requirements of AASHTO T27. The gradation of the mineral aggregate will be considered to be acceptable unless the average of any three consecutive tests or the results of a single test varies from the mix design gradation percentages as follows:

Passing Sieve	Number of Tests	
	Three Consecutive	One
Nominal Maximum Aggregate Size	± 6%	± 8%
No. 8	± 4%	± 6%
No. 40	± 4%	± 6%
No. 200	± 1.5%	± 2.0%

- g. Samples will be tested for conformance with the sand equivalent in accordance with AASHTO T176 and will be considered acceptable if the result is 45 or greater and does not vary from the design by more than -10 points. At any time that test results indicate that the gradation of the mineral aggregate or sand equivalent does not fall within all of the limits indicated, the production of asphalt concrete shall cease immediately and shall not begin again until calibration tests indicate that the gradation and sand equivalent is within the limits indicated.

SECTION 321-12 MEASUREMENT: shall be supplemented as follows:

- a. Measurement under this item shall be to the nearest square yard.
- b. No separate measurement shall be given for the thickened edge, COP Standard Detail 201P and as detailed on project drawings. This work shall be considered incidental and included in the unit price bid in the contract documents. Payment shall be made at the unit price bid in the contract documents for the items complete in place, adjusted for compaction and thickness deficiencies as herein provided.

Pay Item: 321-1 AC Pavement

322-2 ASPHALTIC CONCRETE FRICTION COURSE - (ACFC)

Asphaltic Concrete Friction Course hereinafter asphaltic concrete or ACFC, shall consist of furnishing all materials, mixing at a plant, hauling, and placing a mixture of aggregate materials, mineral admixture if required,

and bituminous material to form a pavement course or to be used for other specified purposes, in accordance with the details shown on the project plans and the requirements of these specifications, as directed by the Engineer, and as specified under ADOT Standard Spec. Section 407. Payment shall be per square yard complete and in place, including all materials, labor, binder, and aggregate.

Pay Item: 322-2 ACFC

322-3 ASPHALTIC CONCRETE FRICTION COURSE - ASPHALT-RUBBER (ACFC)

A. Description

1. Asphaltic Concrete Friction Course (Asphalt-Rubber), hereinafter asphaltic concrete or ACFC, shall consist of preparing the mix design, furnishing all materials, mixing at a plant, hauling, and placing a mixture of aggregate materials, mineral admixture if required, and bituminous material (asphalt-rubber) to form a pavement course or to be used for other specified purposes, in accordance with the details shown on the project plans and the requirements of these specifications, and as directed by the Engineer.
2. The contractor shall be responsible for all adjustments to his equipment necessary to properly accommodate the use of asphalt-rubber as a bituminous material.

B. ACFC Mix Design Criteria

1. Mix designs will be performed in accordance with Arizona Test Method 814, modified as necessary for Asphaltic Concrete Friction Course (Asphalt-Rubber). The allowable range of percent absorbed asphalt-rubber shall be 0-1.0, when tested in accordance with the applicable section of Arizona Test Method 815.

C. Materials

For comparative purposes, quantities shown in the bidding schedule have been calculated based on the following data:

Asphaltic Concrete	
5/8" Thick Spread Rate, Pounds per Square Yard	59
1" Thick Spread Rate, Pounds per Square Yard	108
Percent, Bituminous Material	9.0

D. Mineral Aggregate Source

1. The spread rate specified includes 25% for leveling to provide a minimum 5/8 inch **and 1" thickness, however, the exact spread rate will be determined by the Engineer.
2. There is no Engineer-furnished source of mineral aggregate. The contractor shall provide a source in accordance with the requirements of ADOT Standard Section 1001.
3. When the contractor selects a source or sources, he shall notify the Engineer. The contractor shall be solely responsible for assuring that the mineral aggregate meets all requirements, and when processed, is fully capable of providing asphaltic concrete which meets all the requirements of these specifications.

E. Mineral Aggregate

1. Coarse mineral aggregate shall consist of crushed gravel, crushed rock, or other approved inert materials with similar characteristics, or a combination thereof, conforming to the requirements of these

specifications.

2. Fine mineral aggregate or blend material shall consist of natural sand or of sand prepared from rock, or other approved inert materials, or a combination thereof, conforming to the requirements of these specifications.
3. Mineral aggregate shall be separated into two stockpiles. The Engineer may approve changes to the specified stockpile gradations, provided he determines that a suitable composite gradation is obtainable. The gradation of each stockpile shall conform to the requirements in Table 1 following:

Table 1

Mix Design Grading Limits for Mineral Aggregate (without admixture)

Sieve Size	Percent Passing
$\frac{3}{8}$ inch	100
$\frac{1}{4}$ inch	45-80
No. 4	30-45
No. 8	4-8
No. 200	0-2.5

* In order to meet this gradation, washing of the fine material may be required

4. The proportions of mineral aggregate material from each stockpile necessary to provide a mixture which is expected to provide a suitable composite gradation are as follows:

Mineral Aggregate	Percent
Coarse	95
Fine	5

The exact percentage of material from each stockpile will depend upon the actual gradation of the mineral aggregate in each stockpile and may vary from the amount indicated. No additional payment will be made for changes in proportional use of mineral aggregate stockpiles from the targets specified.

5. Mineral aggregate shall conform to the requirements in Table 2 when tested in accordance with the applicable test methods.

Table 2

Mineral Aggregate Characteristics

Characteristic	Test Method	Requirement
Combined Bulk Specific Gravity	Arizona Test Method 814	2.35 - 2.85
Combined Water Absorption	Arizona Test Method 814	0 - 2.5
Sand Equivalent	Arizona Test Method 242	Minimum 45
Crushed Faces	Arizona Test Method 212	Minimum 70%

Flakiness Index	Arizona Test Method 233	Maximum 25
Percent Carbonates in Aggregate	Arizona Test Method 238	Maximum 30%
Abrasion	AASHTO T-96	100 Rev., Max 9% 500 Rev., Max. 40%

Tests on aggregates outlined in Table 2, other than abrasion, shall be performed on materials furnished for mix design purposes and composited to the mix design gradation. Abrasion shall be performed separately on samples from each source of mineral aggregate. All sources shall meet the requirements for abrasion.

F. Mineral Admixture

Where the average elevation of the project is over 3500 feet, an approved mineral admixture will be required. The amount shall be one percent, by weight of the mineral aggregate and shall be either Portland cement type II or hydrated lime, conforming to the requirements of Table 3.

TABLE 3
Mineral Admixture

Material	Requirement
Portland Cement, Type II	ASTM C-150
Hydrated Lime	ASTM C-1097

G. Bituminous Material

1. Bituminous material shall be asphalt-rubber (vulcanized) conforming to the requirements of ADOT Standard Specifications Section 1009. Asphalt binder shall be Type II, performance grade PG 58-22.
2. Rubber shall be Type B, in conformance with ADOT Specification Section 1009-2.01.
3. The asphalt-rubber shall conform to ADOT Specification Section 1009-2.03 Asphalt Rubber Properties.
4. The asphalt cement shall be modified by the addition of a minimum of 20% of granulated rubber, by weight of the asphalt, unless otherwise approved by the Engineer.
5. During the production of asphalt-rubber, the contractor shall maintain at the plant site equipment necessary to measure the viscosity. The asphalt-rubber shall be maintained between 1500 and 4000 centipoise at 350° F. The viscosity shall be checked at the direction of the Engineer.
6. In no case shall the asphalt-rubber be diluted with extender oil, kerosene, or other solvents. Any asphalt-rubber so contaminated shall be rejected. Any kerosene or other solvents used in the cleaning of equipment shall be purged from the system prior to any subsequent use of that equipment.
7. The asphalt cement and rubber shall be blended for a period of at least one hour prior to mixing with the mineral aggregate and mineral admixture; however, the mixture of asphalt cement and rubber shall not be held at temperatures over 350° F for a period of over 10 hours. The temperature of the asphalt cement shall be between 350° F and 400° F at the addition of the granulated rubber. Temperature of the asphalt-rubber shall be maintained between 325° F and 375° F during the one hour reaction period.
8. At the end of each shift, the contractor shall provide the Engineer with documentation on the production

of asphalt-rubber, which includes the following:

- a. The amount and temperature of the asphalt cement prior to the addition of rubber.
- b. The amount (bags) of rubber added.
- c. The viscosity of the asphalt-rubber just prior to the mixing with the aggregate and mineral admixture.
- d. The time of the rubber additions and viscosity tests.

H. Mix Design

1. Approximately 200 pounds of produced mineral aggregate, in proportion to the anticipated percent usage, shall be obtained by the contractor and witnessed by the Engineer so that both parties are satisfied that samples are representative of the mineral aggregate to be utilized in the asphaltic concrete production.
2. The contractor shall also furnish one full bag (as packaged by the supplier) of the granulated rubber proposed for use, one gallon of asphalt cement from the intended supplier; two gallons of the proposed mixture of asphalt and rubber, and, if mineral admixture is required, a one gallon can of the mineral admixture to be used in the asphaltic concrete.
3. Along with the samples furnished for mix design testing, the contractor shall submit a letter explaining in detail his methods of producing mineral aggregate including wasting, washing, blending, proportioning, etc., and any special or limiting conditions he may propose. His letter shall also state the source(s) of mineral aggregate, the source of asphalt cement and granulated rubber, the asphalt-rubber supplier, and if required, the source and type of mineral admixture.
4. The contractor shall prepare the mix design, at their own expense, to conform to the requirements of these specifications. The contractor's mix design shall be submitted for review and approval by the Engineer a minimum of 14 calendar days prior to paving.

I. Mix Design Revisions

1. The contractor shall not significantly change his method of crushing, screening, or stockpiling from that used during production of material used for mix, design purposes without approval of the Engineer, or requesting a new mix design. Significant changes may include changes in the amount or type of materials rejected or wasted, changes in the amount of materials crushed, or reduction in the amount of crushed fines.
2. During production of asphaltic concrete, the contractor, on the basis of field test results, may request a change to the approved mix design. The Engineer will evaluate the proposed changes and notify the contractor of his decision within two working days of the receipt of the request.
3. If, at any time, unapproved changes are made in the source of bituminous material, source(s) of mineral aggregate or proportional changes in violation of approved mix design stipulations, production shall cease until a new mix design is developed, or the contractor complies with the approved mix design.
4. At any time after the mix design has been approved, the contractor may request a new mix design.
5. The costs associated with the testing of materials in the developing of mix designs after a mix design acceptable to the Engineer has been developed shall be borne by the contractor.
6. If, during production, the Engineer, on the basis of testing, determines that a change in the mix design is necessary, he will require a revised mix design from the contractor. Should these changes require revisions to the contractor's operations, which result in additional cost to the contractor, he will be reimbursed for these costs. However, the Engineer reserves the right to modify the asphalt-rubber content with compensation being made to the contractor involving additional operation costs.

J. Acceptance of Materials

1. General

- a. The contractor's attention is directed to the requirements of the ADOT Standard Specifications under Section 105.12 - Removal of Unacceptable and Unauthorized Work.
- b. If the production of asphaltic concrete is stopped either for failure to meet the requirements specified hereinafter under Asphaltic Concrete, or because changes are made in the mix design, samples will be taken for calculating new consecutive averages either after production resumes or after the changes in the mix design have been made. The acceptance of the mineral aggregate gradation and the bituminous material content will be determined on the basis of the tests as hereinafter specified under Asphaltic Concrete. The Engineer reserves the right to increase the frequency of sampling and testing upon the resumption of asphaltic concrete production.

2. Mineral Aggregate

- a. Aggregate shall be free of deleterious materials, clay balls, and adhering films or other material that prevent the thorough coating with the bituminous material.
- b. At the direction of, and witnessed by an authorized representative of the Engineer, the contractor shall secure one representative sample of each days production from each stockpile. These samples will be tested for conformance with the mineral aggregate gradation in accordance with the requirements of Arizona Test Method 201. These samples will also be composited to the specified stockpile percentages by the Engineer and tested for sand equivalent in accordance with Arizona Test Method 242, the percent of crushed faces in accordance with the requirements of Arizona Test Method 212, and flakiness index in accordance with the requirements of Arizona Test Method 233.
- c. Should testing indicate results not meeting the requirements of Table 1 for gradation, and Table 2 for sand equivalent, crushed faces, and flakiness index, material represented by failing test results will be rejected.

3. Asphaltic Concrete

a. Mineral Aggregate Gradation

- i. For each approximate 500 tons of asphaltic concrete, at least one sample of mineral aggregate will be taken. Samples will be taken in accordance with the requirements of Arizona Test Method 105 on a random basis, by means of a sampling device which is capable of producing samples which are representative of the mineral aggregate. The device, which shall be approved by the Engineer, shall be furnished by the contractor. In any shift that the production of asphaltic concrete is less than 500 tons, at least one sample will be taken.
 - ii. Samples will be tested for conformance with the mix design gradation in accordance with the requirements of Arizona Test Method 201. If mineral admixture is required, and the sample does not include mineral admixture, the gradation results will be adjusted to reflect the addition of mineral admixture.
- b. The gradation of the mineral aggregate, including mineral admixture if required, will be considered to be acceptable, unless the average of any three consecutive tests or the result of any single test varies from the mix design gradation percentages as follows:

Passing Sieve	Number of Tests	
	3 Consecutive	One
No. 4	± 4	±6

No. 8	±3	±4
No. 200	±1.0	±1.5

c. One hundred percent of the material shall pass the largest sieve size shown in Table 1.

i. At any time that test results indicate that the gradation of the mineral aggregate, including mineral admixture if required, does not fall within all of the limits indicated, the production of asphaltic concrete shall cease immediately and shall not begin again until a calibration test indicates that the gradation is within the 3 consecutive test limits indicated.

4. Asphalt-Rubber Content. During production of asphaltic concrete, the contractor shall maintain at the plant site a nuclear asphalt content gauge calibrated in accordance with the gauge manufacturer's recommendations, on the material being tested. Asphalt-Rubber content shall be measured by the contractor by means of the nuclear asphalt content gauge a minimum of four times per full shift. Production of asphaltic concrete shall cease immediately and the plant re-calibrated if the Engineer determines the percent of asphalt-rubber has varied by an amount greater than ±0.5 percent from the amount specified in the approved mix design.

K. Construction Requirements

1. Quality Control. Quality control shall be the responsibility of the contractor. The Engineer reserves the right to obtain samples of any portion of any material at any point of the operations for his own use.

2. Stockpiling

a. The contractor will not be allowed to feed the hot plant from stockpiles containing less than two full days of production unless only two days production remain to be done or special conditions exist where the Engineer deems this requirement waived.

b. Mineral aggregate shall be separated and stockpiled so that segregation is minimized. An approved divider of sufficient size to prevent intermingling of stockpiles shall be provided.

3. Proportioning

a. The contractor shall provide documentation by calibration charts or other approved means that the mineral aggregate, asphalt-rubber, and mineral admixture if required, are being proportioned in accordance with the approved mix design.

b. Changes in stockpile use in excess of five percent from the approved mix design will not be permitted without the approval of the Engineer.

c. Mineral admixture, if required, shall be mechanically mixed with the mineral aggregate prior to combining the mineral aggregate and asphalt-rubber. The Engineer may direct a spray of water be applied either to control the loss of the mineral admixture or to comply with any mix design requirements for wet mixing of the aggregate and admixture.

d. If a drum mix plant is used, the mineral admixture shall be added and thoroughly mixed by means of a mechanical mixing device prior to the mixture entering the drum drier. The mineral admixture shall be weighed across a weigh belt or an approved alternative weighing system, with a weight totalizer prior to entry into the mechanical mixing device. The mechanical mixing device shall be a pugmill type mixer consisting of at least two motorized shafts with mixing paddles. The mixing device shall be designed such that the mixture of aggregate and admixture is moved in a near horizontal direction by the mixing paddles without the aid of conveyor belts for a distance of at least 3 feet. Mixing devices which permit the mixture of aggregate and admixture to fall through mixing blades onto a belt or chute are not acceptable. The mixing devices rated capacity in tons per hour shall not be exceeded by the rate of material feed to the mixer. The mixer shall be constructed to

prevent the leakage of the contents. The mixer shall be located in the system at a location where the mixed material can be readily inspected on a belt prior to entry into the drum. The mixing device shall be capable of effective mixing in the full range of asphaltic concrete production rates.

- e. A positive signal system and a limit switch device shall be installed in the plant at the point of introduction of the admixture. The positive signal system shall be placed between the metering device and the drum drier, and utilized during production whereby the plant shall automatically be stopped if the admixture is not being introduced into the mixture.
- f. If a batch plant is used, the mineral admixture shall be added and thoroughly mixed in the pugmill prior to adding asphalt-rubber.
- g. The contractor shall furnish daily documentation to the Engineer that the required amount of mineral admixture has been incorporated into the asphaltic concrete.
- h. No fine material which has been collected in the dust collection system shall be returned to the mixture unless the Engineer, on the basis of tests, determines that all or a portion of the collected fines can be utilized. If the Engineer so determines, he will authorize in writing the utilization of a specific proportion of the fines; however, authorization will not be granted unless the collected fines are uniformly metered into the mixture.
- i. Mineral aggregate, mineral admixture, and asphalt rubber shall be proportioned by volume, by weight, or by a combination of volume and weight.
- j. When mineral aggregate, mineral admixture, and asphalt-rubber are proportioned by weight, all boxes, hoppers, buckets, or similar receptacles used for weighing materials together with scales of any kind used in batching materials, shall be insulated against the vibration or movement of the rest of the plant due to the operation of any equipment so that the error in weighing with the entire plant operating shall not exceed two percent for any setting nor one and one half percent for any batch. Bituminous material shall be weighed in a heated, insulated bucket suspended from a springless dial scale system.
- k. When mineral aggregate, mineral admixture, and asphalt-rubber are proportioned by volume, the correct portion of each mineral aggregate size introduced into the mixture shall be drawn from the storage bins by an approved type of continuous feeder which will supply the correct amount of mineral aggregate in proportion to the bituminous material and so arranged that the proportion of each mineral aggregate size can be separately adjusted. The continuous feeder for the mineral aggregate shall be mechanically or electrically actuated.
- l. The introduction of asphalt-rubber shall be controlled by an automated system fully integrated with the controls for mineral aggregate and mineral admixture.

4. Drying and Heating

- a. A recording pyrometer or other approved recording thermometric instrument sensitive to a rate of temperature change not less than ten degrees F per minute shall be so placed at the discharge chute of the drier in order to record automatically the temperature of the asphaltic concrete or mineral aggregate. A copy of the recording shall be given to the Engineer at the end of each shift.
- b. The moisture content of the asphaltic concrete immediately behind the paver shall not exceed one percent. The moisture content will be determined in accordance with Arizona Test Method 406. Drying and heating shall be accomplished in such a manner as to preclude the mineral aggregate from becoming coated with fuel oil or carbon.

5. Mixing

- a. The production of the plant shall be governed by the rate required to obtain a thorough and uniform

mixture of the materials. Mixing shall continue until the uniformity of coating, when tested in accordance with the requirements of AASHTO T-195 is at least 95%.

- b. A positive signal system shall be provided to indicate the low level of mineral aggregate in the bins. The plant will not be permitted to operate unless this signal system is in good working condition. Each bin shall have an overflow chute or a divider to prevent material from spilling into adjacent bins.
- c. The temperature of asphaltic concrete upon discharge from the mixer shall not exceed 350° F. If the asphaltic concrete is discharged from the mixer into a hopper, the hopper shall be constructed so the segregation of the asphaltic concrete will be minimized.

L. Placing and Finishing:

1. General Requirements:

- a. The handling of asphaltic concrete shall at all times be such as to minimize segregation. Any asphaltic concrete which displays segregation shall be removed and replaced.
- b. Before asphaltic concrete is placed, the surface to be paved shall be cleaned of all objectionable material and tacked in accordance with the requirements of ADOT Standard Specifications Section 404. The cleaning of the surface, the racking of the surface, and the amount and grade of asphalt cement used shall be as directed by and acceptable to the Engineer.
- c. Unless otherwise specified on the project plans, asphaltic concrete shall not be placed on the two foot widened section where guardrail is to be installed.
- d. Dates and Surface Temperature. Asphaltic concrete shall be placed between the dates shown as applicable to the average elevation of the project and within these dates only when the temperature of the surface on which the asphaltic concrete is to be placed is at least 85° F. Despite a surface temperature of 85° F, the Engineer, at any time, may require that the work cease or that the work day be reduced in the event of weather conditions either existing or expected which would have an adverse effect upon the asphaltic concrete.

Average Elevation of Project, Feet	Beginning and Ending Dates
3500 – 4999	April 1 – October 31
5000 and Over	June 1 – September 15

- e. Delivery to Screed Unit. Asphaltic concrete delivered to the screed unit shall be a free flowing, homogeneous mass in which there is no segregation, crusts, lumps, or migration of the asphalt-rubber. Should any one or more of such conditions be evident in the material delivered to the screed unit, and which cannot be eliminated by one or more of the following methods, the Engineer will order the work to be stopped until conditions are conducive to the delivery of the material in the condition as herein before required:
 - a) Covering hauling units with tarpaulins.
 - b) Dumping material directly into the paver.
 - c) Moving the hot plant nearer to the point of delivery.

Other measures proposed by the contractor, which will deliver asphaltic concrete meeting the above requirements will be considered by the Engineer.

2. Loading Asphaltic Concrete into the Paving Machine

- a. If the asphaltic concrete is dumped from the hauling vehicles directly into the paving machine from trucks, care shall be taken to avoid jarring the machine or moving it out of alignment. No vertical load shall be exerted on the paving machine by the trucks. Trucks, while dumping, shall be securely attached to the paving machine.
 - b. If the asphaltic concrete is dumped upon the surface being paved and subsequently loaded into the paving machine, it shall not be dumped at a distance greater than 150 feet in front of the paving machine. The loading equipment shall be self-supporting and shall not exert any vertical load on the paving machine. Substantially all of the asphaltic concrete shall be picked up and loaded into the paving machine.
3. Placing and Finishing Asphaltic Concrete by Means of Self-Propelled Paving Machines:
- a. All courses of asphaltic concrete shall be placed and finished by means of self-propelled paving machines except under certain conditions or at certain locations where the Engineer deems the use of self-propelled paving machines impractical.
 - b. In order to achieve, as far as practical, a continuous operation, the speed of the paving machine shall be coordinated with the production of the plant. If the paving machine is stopped for more than three minutes, or there is a three minute or longer interval between the completion of delivery by one truck and the beginning of delivery by the next truck, the paving machine shall be pulled away from the mat in order for the rollers to compact this area in accordance with the temperature limitations given hereinafter under Compaction, (C) Rolling Procedure. A transverse construction joint shall be made by a method approved by the Engineer.
 - c. Self-propelled paving machines shall spread the mixture without segregation or tearing within the specified tolerances, true to the line, grade, and crown indicated on the project plans. Pavers shall be equipped with hoppers and augers, which will distribute the mixture uniformly in front of adjustable screeds.
 - d. Screeds shall include any strike-off device operated by tamping or vibrating action, which is effective without tearing, shoving or gouging the mixture and which produces a course with a uniform texture and density for the full width being paved. Screeds shall be adjustable as to height and crown and shall be equipped with a controlled heating device for use when required.
 - e. Tapered sections not exceeding eight feet in width, or widened sections not exceeding four feet in width may be placed and furnished by other means approved by the Engineer.
4. Automatically Actuated Control System:
- a. Except under certain conditions or at certain locations where the Engineer deems the use of automatic controls impractical, all courses of asphaltic concrete shall be placed and finished by means of self-propelled paving machines equipped with an automatically actuated control system.
 - b. The control system shall control the elevation of the screed at each end by controlling the elevation of one end directly and the other end indirectly either through controlling the transverse slope or alternately when directed, by controlling the elevation of each end independently.
 - c. The control system shall be capable of working with the following devices which shall be furnished with the machine:
 - Ski-type device at least 30 feet in length, supported throughout its entire length.
 - Short ski.
 - d. Failure of the control system to function properly shall be cause for the suspension of the asphaltic concrete operations.

M. Joints

1. The contractor shall schedule his paving operations to minimize exposed longitudinal edges. Unless otherwise approved by the Engineer, the contractor shall limit the placement of asphaltic concrete courses, in advance of adjacent courses, to one shift of asphaltic concrete production. The contractor shall schedule his paving operations in such a manner to eliminate exposed longitudinal edges over weekends or holidays.
2. Longitudinal joints shall be located within one foot of the centerline between two adjacent lanes.
3. Before a surface course is placed in contact with a cold transverse construction joint, the cold existing asphaltic concrete shall be trimmed to a vertical face by cutting the existing asphaltic concrete back for its full depth and exposing a fresh face. After placement and finishing of the new asphaltic concrete, both sides of the joint shall be dense and the joint shall be well sealed. The surface in the area of the joint shall conform to the requirements hereinafter specified for surface tolerances when tested with the straightedge placed across the joint.

N. Compaction

1. General Requirements

- a. The temperature of asphaltic concrete just prior to compaction shall be at least 275° F.
- b. The wheels of compactors shall be wetted with water or, if necessary, soapy water to prevent mix pick-up during rolling. The Engineer may change the rolling procedure if in his judgment the change is necessary to prevent picking up of the asphaltic concrete.

2. Equipment

- a. A minimum of three static steel wheel compactors shall be provided. The drums shall be of sufficient width that when staggered, two compactors can cover the entire width of the ribbon with one pass.
- b. The compactors shall weigh not less than eight tons.
- c. The compactors shall be self-propelled and shall be operated with the drive wheel in the forward position. Vibratory rollers may be used in the static mode only. All rollers shall be equipped with pads and a watering system to prevent sticking of the asphaltic concrete mix to the steel wheels.

3. Rolling Procedure. Two compactors shall be used for initial breakdown and be maintained no more than 300 feet behind the paving machine. The remaining compactor shall follow as closely behind the initial breakdown as possible. As many passes as is possible shall be made with the compactors before the temperature of the asphaltic concrete falls below 220° F.

4. Surface Requirements and Tolerances:

- a. Asphaltic concrete shall be compacted as required, smooth and reasonably true to the required lines, grades, and dimensions.
- b. Asphaltic concrete shall not vary more than 1/8 inch from the lower edge of a ten-foot straightedge when the straightedge is placed parallel to the centerline of the roadway.

O. Acceptance

Asphaltic concrete will be accepted completed in place, if, in the judgment of the Engineer, the asphaltic concrete reasonably conforms to the requirements specified herein. Asphaltic concrete that is not acceptable and is rejected shall be replaced to the satisfaction of the Engineer and at no expense to the City of Prescott.

P. Method of Measurement

1. Asphaltic concrete will be measured by the square yard complete and in place, which will include the mineral aggregate, mineral admixture if required, and asphalt-rubber. Measurement will include the completed work areas as shown on the plans.

Q. Basis of Payment

1. The accepted quantities of ACFC-AR measured as provided above, will be paid for at the contract unit price per square yard, which price shall be full compensation for the work complete in place, as specified herein.

Pay Item: 322-3 ACFC-AR

322-4 TACK COAT - FOR ACFC

MAG Specifications Section 329 is hereby included and made a part of this specification with the following additional and/or clarifying provisions:

- A. Performance grade asphalt cement, either PG 64-16 or PG 58-22 shall be utilized for tack coat for ACFC-AR applied at the rate of .06 gallons per square yard. Payment shall be by the ton accepted complete and in place for PG tack coat. Weight tickets are required and shall be provided to the City of Prescott.
- B. The diluted material shall be well mixed and applied by a distributor truck equipped with fog nozzles at the approximate rate of 0.04 to 0.06 gallons per square yard.

C. Measurement And Payment

1. Payment for emulsified bituminous tack coat will be by the ton accepted complete in-place of diluted material at the contract unit price bid in the proposal. Weigh tickets are required.

Pay Item: 322-4 Tack Coat- For ACFC

330-1 ASPHALT CHIP SEAL

Work under this item shall be performed in accordance with YAG Spec Section 330 with the following modifications:

A. General Description

1. Chip seal coat on bituminous paved surfaces shall consist of the application of CRS-2 emulsified asphalt applied at a rate of 0.40 - 0.50 gallons per square yard or as directed by the Engineer and covered with chips. Chips shall be spread with a self-propelled, mechanical spreader. Adjacent concrete surfaces shall be protected prior to chip seal or cleaned afterwards if required by the Engineer. Chips to be MAG High-Volume 3/8 inch nominal diameter.
2. All materials and work shall conform to YAG Spec 330 or this specification, the most stringent taking precedence.

B. Aggregate Cover Material

1. Aggregate shall be composed of a clean and durable crushed rock or crushed gravel conforming to the following requirements:

If the aggregate material is to be crushed stone, it shall be manufactured from sound, hard, durable rock of accepted quality and crushed to specification size. All strata, streaks, and pockets of clay, dirt, sandstone, soft rock or other unsuitable material accompanying the sound rock shall be discarded and not allowed to enter the crusher.

If the aggregate material is to be crushed gravel, it shall consist of hard, durable fragments of stone or gravel of accepted quality and crushed to specification size. All strata, streaks and pockets

of sand, excessively fine gravel, clay or other unsuitable material including all stones, rocks, and boulders of inferior quality shall be discarded and not allowed to enter the crusher. The crushing of the gravel shall result in a product in which the material retained on the separate No. 4 and 3/8 inch sieves shall have at least 75% of particles with at least one fractured face.

The crushed aggregate shall not contain more than 8% by weight of elongated or flat pieces and shall be free from wood, roots, vegetable, organic or other extraneous matter.

2. Rolling Equipment - A minimum of three operational self-propelled pneumatic-tired rollers shall be used for the required rolling of the cover material. The pneumatic-tired rollers shall carry a minimum loading of 5,000 pounds on each wheel and a minimum air pressure of 90 pounds per square inch in each tire.
3. Hauling Equipment - Trucks for hauling cover material shall be tailgate discharge and shall be equipped with a device to lock onto the hitch at the rear of the cover material spreader. Haul trucks shall also be compatible with the cover aggregate spreader so that the dump bed will not push down on the spreader when fully raised or have too short a bed that results in aggregate spillage while dumping into the receiving hopper.

C. Construction Methods

1. General - Immediately prior to the application of the asphalt membrane, the surface shall be thoroughly cleaned by means of power brooms, supplemented by hand brooms if necessary, in order to ensure adequate adhesion of the emulsified asphalt to the pavement. Chip seal coat shall not be applied for at least seven calendar days after completion of new bituminous paving.
2. Weather Limitations - Bituminous material shall be applied only when the existing surface is dry, there is no threat of rain, and the atmospheric temperature is above 60° F. No material shall be applied when rain is imminent or when the wind is excessive.
3. Chip Seal Over Existing Markings - Contractor shall place tab markings for identification of layout and remarking areas to receive chip seal application over existing pavement markings. In applications of chip seal over existing thermoplastic striping identified to be deleted and not remarked, all such thermoplastic markings shall be obliterated. Obliteration method(s) shall be approved by the Engineer. Painting over striping does not constitute stripe obliteration. This requirement precludes requirements stipulated under ADOT Standard Specification Section 708, which specify that markings are to be surveyed and recorded.
4. Application of Cover Material - Cover material shall be immediately and uniformly spread at a rate sufficient to completely embed and cover the emulsified asphalt. The actual amount selected shall be determined in the field and based on the appearance of Chip Seal after initial rolling. The application rate shall be kept to a minimum.
5. Rolling - At least three operational pneumatic-tired rollers shall be provided to accomplish the required embedment of the cover material. At some project locations or where production rates dictate, fewer rollers may be utilized as directed by the Engineer. At no time shall there be less than two operational pneumatic tired rollers on a project.

Sufficient rollers shall be used for the initial rolling to cover the width of the aggregate spread with one pass. The first pass shall be made immediately behind the cover material spreader, and if the spreading is stopped for an extended period, the cover material spreader shall be moved ahead or off the side so that all cover material may be immediately rolled. Four complete passes with rollers shall be made with all rolling completed within one hour after the application of the cover material.

6. Traffic Control - Except when it is necessary that hauling equipment must travel on the newly applied membrane, traffic of all types shall be kept off the membrane until it has had time to set properly. The speed of all hauling equipment shall not exceed 15 miles per hour when traveling over a membrane which is not adequately set. The minimum traffic free period shall not be less than one hour.

7. Clean Up - The Contractor shall restore all adjacent property affected by his operations to a condition equal to or better than what existed prior to beginning this contract. This shall include but not be limited to the removal of emulsified asphalt and aggregate from all utility appurtenances (manhole frames and covers, water valves, etc.) and survey monuments. Contractor shall remove excess cover material from the project site and disposal of this material shall be considered incidental to the price bid for chip seal. Use of Pick-up Brooms is required. No sidekick brooms will be allowed.

Excess chips shall *not* be placed on unpaved City streets.

D. Measurement and Payment

1. Work under this item shall be to the nearest square yard complete and in place.

Pay Item: 330-1 Asphalt Chip Seal

336-1 PAVEMENT MATCHING AND SURFACING REPLACEMENT

- A. AC trench pavement replacement required for utility installation shall be a minimum three inch (3") thickness compacted to 95% of laboratory density in accordance with COP Dtl. 2-01P, MAG Sections 601.6 and 336, except as modified herein or on the plans or special provisions:
 1. Permanent hot mix AC pavement replacement shall be required for all trench cuts. Installation of UPM or other high performance cold mix will not be permitted for permanent installation. The Contractor shall be required to maintain pavement trench cuts to the satisfaction of the Engineer. Temporary pavement replacement with UPM in accordance per COP dtl. 2-01P will be required in right-of-way until permanent hot mix trench pavement replacement can be performed.
 2. The Contractor shall coordinate with Engineer a minimum of two (2) working days in advance to provide information to asphalt supplier so Engineer may reserve the services of a licensed independent testing laboratory to provide laboratory density in accordance with requirements of ASTM D-1559, 75 blow Marshall density.

B. Measurement And Payment

1. Asphaltic concrete pavement restoration will be based on trench widths defined in MAG Section 601.2 and YAG Table 601-1. Measurement will be based on linear feet of trench times the neatline width based on COP Dtl. 2-01P. Additional areas such as for manhole or valve cutouts will be measured separately. Payment will be by square yard of trench pavement replacement at the unit bid price for AC trench pavement replacement in the bidding schedule and shall include all saw cutting, removal and disposal of existing pavement, plus all labor and material for complete installation of permanent hot mix AC or PCC trench pavement replacement. No extra payment will be made for temporary pavement required for maintenance of utility trench cuts or for trench widths wider than called out by YAG Specifications. No extra payment will be made for width in excess of COP Dtl. 2-01P unless such measurement has been agreed upon in writing prior to sawcutting.
2. Permanent Portland Cement Concrete trench pavement replacement shall conform with MAG Sections 601 and 336, and Section 725 of these specifications

Pay Item: 336-1a Sawcut, Remove and Replace AC Pavement

336-1c Sawcut, Remove and Replace PCC Pavement

340-1 CONCRETE CURB, GUTTER, AND CURB TERMINATIONS

- A. This work consists of constructing concrete curb and gutter as designated on the project drawings in accordance with YAG Std. Dtl. 220P & 222, MAG Std. Dtl. 221, YAG & MAG Spec. Section 340 and as modified herein and on the plans. The sub-grade and base materials under the curb shall be compacted to

not less than 95% of the maximum dry density as determined by AASHTO T-99.

- B. **Measurement for payment** of concrete curb and gutter shall be in accordance with MAG Specs Section 340.5. Measurement of curb and gutter shall exclude driveways unless specified on plans. Curb and gutter adjacent to driveways shall be paid for at the unit price for driveway entrances. No additional payment will be made for aggregate base material required under concrete curb and gutter. The base material shall be considered incidental to the construction of this item and provided for in the unit price bid for the work. The pavement section shall extend to the back of curb. In no case shall ABC thickness below curb be less than four inches.

Pay Item: 340-1 Concrete Curb, Gutter, and Curb Terminations

340-2 CONCRETE SIDEWALK, SIDEWALK LANDING AND RAMP

- A. Work under this item shall be done in accordance to YAG & MAG Specs Section 340 and 725, the Project drawings, YAG Std. Dtls. 230, 231 or 2-15 as specified on plans and as modified herein.
- B. **Measurement and payment** shall be calculated to the nearest square foot complete in place, for sidewalk. No additional payment will be made for four inches of aggregate base material required under concrete sidewalk, sidewalk landing and ramp. The base material shall be considered incidental to the construction of this item and provided for in the unit price bid for the work.
- C. **Measurement and payment** for sidewalk ramps shall be per square foot excluding the two-foot curb and gutter section around the radius.

Pay Item: 340-2 Concrete Sidewalk, Landing, and Ramp

340-3 CONCRETE DRIVEWAY ENTRANCE AND 6" CONCRETE SLAB

- A. Work under this item shall be done in accordance to MAG Specs Sections 340 and 725, the Project drawings; YAG Std. Dtl. 2-18P and 2-18A-P and as modified herein. Existing sub-grade under concrete section shall be compacted to minimum density of 95%.
- B. Portland cement concrete pavement shall be 4-6% air-entrained and with a minimum 28-day design strength of 3,500psi. Slump shall be a maximum of 3.5 inches.
- C. Construction Joints shall be a maximum of 15 feet apart. Contractor shall submit a jointing pattern for review and approval prior to construction.
- D. Excessive misting or spraying of water during finishing operations resulting in a thick surface layer of water/cement paste will not be allowed and may be cause for rejection.
- E. **Measurement and payment** shall be calculated to the nearest square foot complete in place. Aggregate Base Course is measured separately and paid for under the item Aggregate Base Course.

Pay Item: 340-3 6" Concrete Slab

340-4 6" CONCRETE ALLEY ENTRANCE AND ALLEYWAY

- A. Work under this item shall be done in accordance to YAG & MAG Specs Sections 340 and 725, the Project drawings, and MAG Std.Dtls. 260-263. Sub-grade under entrance shall be compacted to minimum density of 95%.
- B. **Measurement and payment** shall be calculated to the nearest square foot complete in place.

Pay Item: 340-4 6" Concrete Alley Entrance and Alleyway

340-5 CONCRETE VALLEY GUTTER

- A. Work under this item shall be in accordance with MAG Specs Section 340 and 725, MAG Std. Dtl. 240, the Project drawings and as modified herein.
- B. **Measurement for payment** shall be to the nearest square foot complete in place. No additional payment will be made for aggregate base material required under concrete valley gutter. The base material shall be considered incidental to the construction of this item and provided for in the unit price bid for the work.

Pay Item: 340-5 Concrete Valley Gutter

340-6 CONCRETE SPILLWAY

- A. Work under this item shall be in accordance with MAG Std. Dtl. 550, MAG specification sections 340 and 725 and as per detail on plans.
- B. **Measurement for payment** shall be to the nearest square foot complete and in place. The base or fill material shall be considered incidental to the construction of this item and provided for in the unit price bid for the work.

Pay Item: 340-6 Concrete Spillway

345-1 ADJUST MANHOLES, VALVES AND CLEANOUTS

- A. All frames, covers, valve boxes, manholes, etc., shall be adjusted to finished grade after placement of asphalt concrete surface course by the Contractor as per COP Std. Dtls. 270P, 3-15P, and 4-05P. New water valve top risers and caps shall be furnished by the Contractor at existing water valve locations and placed as directed by the Engineer. New valve top risers and caps shall be considered incidental to the cost of adjustment. Existing water valve risers and caps shall be salvaged to the City Water Department. Existing sanitary sewer manhole and cleanout rings and covers shall be salvaged and utilized for grade adjustment.
- B. **No separate measurement or payment** shall be made for adjusting manholes and valves and cleanouts. This work shall be considered incidental and included in the unit price bid for construction of the appropriate contract pay items.

350-1 REMOVAL OF EXISTING IMPROVEMENTS

- A. Work under this item shall be performed in accordance with ADOT Specs Section 202, as designated on the project drawings and as modified herein.
- B. ADOT Specs subsection 202-1 shall be revised by adding the following: All existing utilities not designated for removal shall remain in place and be protected against damage.
- C. No item shall be removed if designated by the City Engineer to remain in place. Such items shall be protected from damage.
- D. ADOT Specs subsection 202-3.03, paragraph B shall be revised to read: All bituminous pavements to be removed shall be removed from the job site and disposed of at a site secured by Contractor.
- E. Street signs, traffic control signs, traffic signal material and control devices shall be removed as designated on project drawings, salvaged and delivered to the Engineer of Prescott at the site designated by the Engineer.
- F. ADOT Specs subsection 202-3.08, paragraph 3 shall be revised to read: In areas where new fence or relocated fence is to be installed, Contractor shall perform the removals in such a manner as to prevent the escape of any livestock and/or domestic pets, including the placement and removal of temporary fence when necessary. This work shall be considered incidental and included in the unit price bid for removals.
- E. **No separate measurement or payment** shall be made for removal of existing improvements. This work shall be considered incidental and included in the unit price bid for construction of the appropriate contract

pay items.

350-2 MILLING OF ASPHALTIC CONCRETE PAVEMENT

A. General

1. The existing asphaltic concrete sections shall be removed in accordance with the details shown on the project plans and shall be accomplished with equipment specifically designed to remove such material by means of grinding or chipping to a controlled line and grade within 0.02 feet. Equipment not specifically designed to remove material in this manner shall not be used. The removal shall be accomplished in a manner which does not destroy the integrity of any asphaltic concrete pavement that remains and which does not result in a contamination of the milled asphaltic concrete with the underlying base material. The removal of asphaltic concrete at the approaches to the structures shall be accomplished in a manner approved by the City.
2. Under no circumstances shall the removal of the existing asphaltic concrete begin until the mix design for asphaltic concrete production has been approved by the City.

B. Control

1. The Contractor shall submit to the City of Prescott, for approval, a traffic control plan for all activities connected with the proposed work. In the interest of the safety of the traveling public, it is necessary that the extent (length) of the removal of the existing asphaltic concrete be appropriate with the Contractor's ability to produce, haul, place and compact asphaltic concrete so that at all times the length of open "trench" is at a minimum. If the Contractor's production of asphaltic concrete is stopped for any reason, the removal of asphaltic concrete shall either cease or shall be reduced. The City will be the sole judge as to whether the removal shall cease or be reduced and its decision will be based on the reason for the stoppage in asphaltic concrete production, the expected length of the stoppage, and the type and depth of the material being removed, and the time of day.
2. Asphaltic concrete (AC) shall be placed as soon as possible after the "trench" has been opened up. The surface on which the material is to be placed shall be uniform and free of loose material. Any exposed base material shall be compacted to the extent required by the Engineer.
3. The speed of the milling operation shall be geared to the AC placement such that the "trench" in which AC is being placed shall be filled before the end of each day's work and the lane opened to traffic.

C. Procedures

1. Pavement adjacent to manholes, valve boxes, etc., shall be removed with equipment specifically designed to operate in restricted areas and capable of removing AC of the specified thickness without damage or displacement of the adjacent object.
2. Bituminous material that exists on and above the gutters along the project shall be carefully removed with equipment that will not damage the concrete curb and gutter section.
3. The Contractor's attention is directed to the possibility of encountering Portland Cement Concrete Pavement (PCCP) under the AC pavement to be milled. The quantity of AC to be removed may vary considerably from the quantity being replaced due to the AC build-up over existing gutter elevations and due to change in finish cross-sections. The centerline existing grade will be maintained and the milling depth will be such to match existing or new concrete gutter lip elevation with the replaced asphalt.
4. Upon removal, the excess existing AC material shall become the property of the Contractor. Removal and disposal of millings shall be the responsibility of the Contractor.
5. In the event of circumstances beyond the control of the Contractor, such as equipment breakdown, or if his production of the new AC has been stopped by the City and he is unable to comply with the

requirements of this section, the Contractor shall provide and maintain such traffic control devices that the City deems necessary under the circumstances in order to provide safe and efficient passage through the work zone.

6. The Contractor will be required to provide for surface drainage of milled areas.
7. Pavement striping that has been removed by the milling operation shall be replaced with temporary pavement markings before sunset, as required, in order to provide proper delineation of traffic lanes.

D. Measurement And Payment

1. Milling of AC pavement will be measured by the surface square yard of pavement removed as provided in the bid schedule.
2. The accepted quantities for milling of AC pavement will be paid for at the contract unit price per square yard, complete, including breaking up, loading, hauling, and stockpiling the removed material.

Pay Item: 350-2 Mill Asphalt Pavement

400-1 TRAFFIC CONTROL

- A. Traffic control during construction shall be performed in accordance with MAG Section 401 and the Manual on Uniform Traffic Control Devices for Streets and Highways, US Department of Transportation Federal Highway Administration, latest edition with the latest revisions, Arizona Department of Transportation Traffic Control Manual, the project plans, and as stated herein.
- B. Prior to beginning the project, Contractor shall submit for approval a Traffic Control Plan for the entire project. He must obtain approval from the Director of Public Works for the Traffic Control Plan and Schedule prior to any construction. Contractor shall submit the Traffic Control Plan to the Director of Public Works at or before the project preconstruction conference.
- C. Written notice shall be given to the Director of Public Works or his representative on the job 48 hours prior to any changes in detours or routes of access. The notice shall give specific details with maps showing the access to all residences and businesses affected by the project.
- D. The Police and Fire Departments shall be continually updated on access routes along and through the site during construction.
- E. All traffic control devices required for the project shall be the responsibility of Contractor.
- F. When required to cross, obstruct, or close a street, traffic way, or sidewalk for a short duration that is approved by the Director of Public Works, the Contractor shall provide and maintain suitable bridges, detours or other approved temporary means for the accommodation of vehicular and pedestrian traffic.
- G. When traffic conditions at the construction site warrant the use of certified police personnel to direct traffic, arrangements shall be made with the City Of Prescott Police Department, Yavapai County, or Department of Public Safety for off-duty officers.
- H. Payment for traffic control shall be at the applicable unit price bid in the Contract Documents.
 1. Preparation of traffic control plan shall be inclusive of all submittals, reviews and if needed, resubmittals.
 2. Flaggers and off-duty officers shall be per hour for actual time directing traffic. It does not include time spent setting up or taking down devices.
 3. Barricades and storage shall be at the lump sum bid and shall be inclusive of all temporary signs and devices in the traffic control plan and as required by the MUTCD and the Engineer.
 4. Message boards shall be measured by each per day as determined necessary by the approved traffic

control plan and the Engineer.

5. Pilot car and driver shall be per hour for actual time used as required by the approved traffic control plan and the Engineer.
6. Incidental traffic related items shall include all other pertinent tools, equipment, devices and or work required to provide safe and effective traffic control in accordance with the approved traffic control plan, the MUTCD and the Engineer.

Pay Item: 400-1a Traffic Control Plan (LS)

Pay Item: 400-1b Flaggers (HR)

Pay Item: 400-1c Off-duty Police Officers (HR)

Pay Item: 400-1d Barricades and Storage (LS)

Pay Item: 400-1e Message Boards (each per day)

Pay Item: 400-1f Pilot Car and Driver (HR)

Pay Item: 400-1g Incidental Traffic Related Items (LS)

401-1 OBLITERATE EXISTING STRIPING

Work under this item shall be in accordance with ADOT section 701-3, the project drawings and as modified herein.

Pay Item: 401-1 Obliterate Existing Striping

401-2 THERMOPLASTIC PAVEMENT MARKINGS

A. Stop Bars

Work under this item shall consist of the application of thermoplastic striping material at the locations noted on the project plans. All stop bars shall be 18 inches in width unless otherwise specified. Measurement shall be in accordance with ADOT Section 704-5.

B. Pavement Markings

Pavement markings shall be in accordance with ADOT Section 704-4, ADOT 4-M 1.12 through 4-M 1.17 and as modified herein. Work under this item shall consist of the application of thermoplastic striping material at the locations noted on the project plans.

C. Basis for Payment

Basis for payment shall be in accordance with ADOT Section 704-5.

Pay Item: 401-2 Thermoplastic Pavement Markings

401-3 TEMPORARY STRIPING

Temporary striping (paint) where required will be in accordance with ADOT Section 701-3.05. Measurement and payment to be per ADOT Section 708-4 and 708-5.

Pay Item: 401-3 Temporary Striping

401-4 STRIPING

A. Mainline Striping

Work under this item shall consist of the application of striping material at the location noted on project plans. All paint shall conform to A.D.O.T. Section 708. All mainline striping shall be four inches in

width. Measurement shall be in accordance with ADOT Section 708-4.

B. Basis for payment shall be in accordance with ADOT Section 708-5.

Pay Item: 401-4 Striping

401-6 PERMANENT SIGNING, SIGN POSTS AND DELINEATORS

Work under this item shall be done in accordance with the project drawings and requirement of the Manual on Uniform Traffic Control Devices (MUTCD), MAG Detail 131, and ADOT Signing and Marking Standards.

Post foundations shall be installed per ADOT Standard Detail & Specification 4-S-4.16 utilizing u-channel posts.

All face of bolts used for mounting signs shall be painted the same color as the sign panel.

Mounting of signs shall be done per ADOT Standard Detail & Specification 4-S-4.15.

All station locations are approximate. The contractor shall verify actual sign locations with the engineer prior to the installation of all signs.

The bottom of each sign shall be at least 7 feet above the nearest edge of pavement per ADOT Standard Detail & Specification 4-S-4.14.

Normal offset for all signs is 12 feet from the near edge of pavement in rural sections, and 2-foot minimum from face of curb in urban sections, unless otherwise noted in the sign summary table or on the plans.

The contractor shall verify post lengths and elevations prior to installation.

Measurement and payment shall be per the unit price per lineal foot bid for posts and per square foot for sign panels, complete and in place.

Pay Item: 401-6 Permanent Signing, Sign Posts and Delineators

401-7 TYPE 2 OBJECT MARKER

Object markers shall be as per MUTCD Section 3-C, OM2-1V. Payment shall be per each complete and in place.

Pay Item: 401-7 Type 2 Object Marker

401-10 CONCRETE FILLED STEEL BOLLARDS

Work under this section shall be in accordance with YAG Std.Dtl. 3-09 Payment shall be per each complete and in place.

Work under this item shall be done in accordance with MAG detail 505, Section 620. Payment shall be per each complete and in place.

Pay Item: 401-10 Concrete Filled Steel Bollards

505-1 CONCRETE DRAINAGE OUTLET/STRUCTURE

The work consists of constructing a concrete drainage outlet and structure as designated on the project drawings in accordance with YAG 220 and YAG and MAG Sections 340 and 725 and as modified herein. All concrete shall be class "A" 3,000 psi. Sub-grade and base materials under the structure shall be compacted to not less than 95% of the maximum dry density as determined by AASHTO T-99. No additional payment will be made for aggregate base materials required under concrete structures. The base material shall be considered incidental to the construction of this item and provided for in the unit price for the work.

Pay Item: 505-1 Concrete Drainage Outlet Structure

505-2 CONCRETE HEADWALL

Work under this item shall be in accordance with MAG Spec Sections 505, 725, 726 and 727; MAG Standard Details 501-1 and 501-2; and the project drawings. Payment shall be made per each headwall installed complete.

Pay Item: 505-2 Concrete Headwall

505-3 CONCRETE CATCH BASIN

Work under this item shall be in accordance with MAG Std. Dtls. 534-1 through 540-2, YAG & MAG Sections 505 and 725 and above mentioned specifications for Portland Cement Concrete. All grates shall be bicycle safe type.

Pay Item: 505-3 Concrete Catch Basin

505-4 SCUPPER

Work under this item shall be in accordance with MAG Std.Dtl. 203. Payment shall be made per each scupper installed complete in place.

Pay Item: 505-4 Scupper

505-5 CONCRETE BOX CULVERT

Work under this item shall be in accordance with ADOT Standard Detail B-01.10 and B-02.10, ADOT Specs Section 601, 602 and 605 inclusive. Measurement and payment shall be in accordance with ADOT Specs Section 601-6, 602-5 and 605-4.

Pay Item: 505-5 Concrete Box Culvert

505-6 BARRIER WALL

Work under this item shall be accordance with ADOT Specs Section 922 and ADOT Standard Drawings Structures Section B-30.20. Payment shall be made per linear foot installed complete.

Pay Item: 505-6 Barrier Wall

505-7 CONCRETE RETAINING WALL

Work under this item shall be in accordance with the project drawings and the Engineer of Prescott Building Department detail "Concrete Retaining Walls 4' to 8'". Payment shall be made per lineal foot installed complete.

Pay Item: 505-7 Concrete Retaining Wall

601-1 TRENCH EXCAVATION, BACKFILLING AND COMPACTION

- A. Unless specifically identified, no investigation of subsurface soil conditions for water or sewer main installation has been made for project limits.
- B. Excavation, backfilling and compaction shall be in accordance with YAG & MAG Spec 601 and Standard Details as listed below:
 - 1. In sections where paved roadway surfaces are involved the following shall apply:
 - a. Bedding shall be a minimum of six inches and shall be in accordance with COP Std. Dtl. 2-02P compacted to 95% of maximum standard proctor density and as modified herein. Bedding/shade material shall be of granular consistency such as sand or crushed aggregates conforming to the following gradation and plasticity requirements:

Sieve Size	Percentage Passing By Weight
------------	------------------------------

1"	100
No. 200	< 25
PI	10 Max.

Volcanic cinders or glass materials are not acceptable.

Use of open graded rock i.e., 3/8" pea gravel or 3/4" rock must be approved by the engineer prior to placement and will be considered only in special circumstances.

- b. Backfill material shall be in accordance with COP Std. Dtl. 2-02P compacted to 95% of maximum standard proctor density to twelve inches above top of pipe. From 12" above top of new pipe to existing grade, backfill shall be in accordance with COP Std. Dtl. 2-01P.
2. In sections where unpaved roadway surfaces and non-roadway surfaces are involved the following shall apply:
 - a. Bedding shall be a minimum of six inches and shall be in accordance with COP Std. Dtl. 2-02P compacted to 95% of maximum standard proctor density.
 - b. Backfill material shall be in accordance with COP Std. Dtl. 2-02P compacted to 95% of maximum standard proctor density to 12" above top of pipe. From 12" above top of new pipe to 6" below existing grade shall be minus 3" native material compacted to 95% of maximum proctor density. From 6" below existing grade to existing grade shall be material in like kind to material existing before excavation compacted to 95% of maximum standard proctor density.
 - C. All water encountered during the work shall be disposed of by the Contractor in a manner such that it will not damage public or private property or create a public nuisance or health problem. The costs of furnishing pumps, pipes, special bedding, and over excavation as required to provide a stable foundation, and other equipment and materials shall be incidental to the work in accordance with Section 200-1 of these specifications.
 - D. Trench backfill quality control testing frequency shall be one per soil type for Proctor Density testing and one per 1' vertical lift per 200 linear feet of trench.
 - E. **No separate measurement or payment** shall be made for trench excavation, backfilling and compaction. This work shall be included in the unit bid price for water and/or sewer main construction.

601-2 ROCK EXCAVATION FOR UTILITY AND/OR DRAINAGE CONSTRUCTION

A. Definition of Rock.

When rock is encountered, it shall be stripped of earth and shale, and the City Engineer notified in order that he may measure or cross-section the same. In lieu of stripping the earth overburden prior to excavation/blasting, the City Engineer and the Contractor may mutually agree on a method to define the vertical limits of rock. Any rock excavated before such measurement or agreement is made, will not be estimated, allowed, or paid for. Rock excavation shall be defined to include: all hard, solid rock in ledges; bedded deposits and unstratified masses; all natural conglomerate deposits so firmly cemented as to present all the characteristics of solid rock; and masonry or concrete structures not shown on the plans. Shales, hard pan, masonry and concrete rubble boulders less than one cubic yard which are not a part of or attached to substrata of rock, shall not be considered rock excavation. Additionally, material to be considered "rock" shall be of such hardness that it cannot be excavated using hydraulic backhoe with combined breakout force, for bucket and stick cylinders, of at least 100,000 pounds.

B. Blasting

1. It is the Contractor's responsibility to determine the type of material he will encounter and whether

blasting will be necessary.

2. Blasting shall be done only by experienced, qualified blasters. Blasting shall be done in accordance with the recommendations for best practice in Section 9 of the AGC Manual of Accident Prevention in Construction and in accordance with the recommendations for best practices of the Institute of Makers of Explosives. Also, all blasting must comply with the requirements of the Division of Industrial Safety and OSHA and all other federal, state and local ordinances.
3. When work requires blasting or explosive conditions, precautions shall be taken to protect life and property, and give proper warning to persons who may be in vicinity of work before blast is set off.
4. Blasting shall be performed in such a manner that no damage will result to any building, structure, pipeline, or facility on or off the site of work, above or below ground. Any damage suffered as a result of blasting shall be immediately settled, including repair or replacement.
5. Blasting shall be done in such a manner that the earth is not loosened or disturbed below the footing or foundation of any proposed structure. Loosened material below footings or foundations shall be replaced with Class C concrete.
6. The stemming of each hole or cover over explosive shall be sufficient to prevent surface blast wave, but in no case less than three (3) feet six (6) inches. Multiple holes shall be shot using millisecond delays.
7. The Contractor shall enlist the services of an experienced explosives engineer for advice on blasting methods and for the protection of existing structures or facilities.
8. Blasting procedures shall comply with all rules and regulations as specified and determined by the Fire Marshall or the City Engineer of Prescott.

C. Measurement

1. Rock excavation within the roadway excavation limits shall not be measured separately. It will be included in Roadway Excavation. No separate payment will be made for roadway rock excavation. It shall be combined as one item under roadway excavation.
2. Rock Excavation within structural excavation limits shall not be measured separately. It will be considered incidental and shall be included in the appropriate bid item.
3. Rock excavation within trenches shall be measured in accordance with the following:
 - a. Width of trench for rock excavation shall be based on pipe outside diameter plus 24 inches.
 - b. Depth for rock excavation shall be actual depth from top of rock to bottom of rock, or to bottom of normal bedding section, whichever depth occurs first.
 - c. Payment for rock trenching shall be at the unit price bid per cubic yard which shall include the cost of blasting, excavation, removal, hauling and disposal.

Pay Item: 601-2 Rock Removal (trench)

602-1 JACKING, BORING OR TUNNELING PIPE

A. Scope

This section provides for furnishing and installing pipe by means of jacking, boring or tunneling as shown on the construction plans, as described in this specification, and as described in MAG Section 602.

B. General

- 1) Contractor shall be responsible for determining the required thickness of the steel liner or steel casing in accordance with the manufacturer's recommendation. Contractor shall submit this information at the pre-

construction conference.

- 2) Suitable pits or trenches shall be excavated for jacking, boring or tunneling operations.
- 3) Excavations deeper than 4 feet shall be protected per applicable rules and regulations.
- 4) Dewater all excavations as required to provide a safe and stable work area and suitable foundations for all pipe.
- 5) Pipe installed by jacking, boring or tunneling under railroads, highways, streets or other facilities shall not interfere in any way with the normal operation of the railroad, highway, street or facility.
- 6) Pipe installed by jacking, boring or tunneling under railroads, highways, streets or other facilities shall not weaken or damage any part of the railroad, highway, street or facility.
 - a. Furnish and maintain traffic control devices as required during jacking, boring and tunneling operations.
 - b. Remove traffic control devices upon completion of jacking, boring and tunneling operations.
- 7) Remove and replace without additional cost, any pipe damaged during jacking, boring or tunneling operations.
- 8) The final position of the pipe may vary only 1 inch in 40 feet, laterally or vertically and such variation must be regular and in only one direction.
- 9) The final grade of the flow line must be in the direction indicated by the construction plans.
- 10) Over-excavation in excess of 1 inch shall be pressure grouted the entire length of the installation.
- 11) The pits or trenches excavated to install pipe by jacking, boring or tunneling shall be backfilled immediately after the installation of the pipe has been completed.

C. Jacking

1. Provide heavy-duty jacks suitable for forcing the pipe through the embankment.
2. Apply even operating pressure to all jacks used.
3. Provide a suitable jacking head and suitable bracing between jacks and jacking head to assure that pressure will be applied to the pipe uniformly around the ring of the pipe.
4. Provide a suitable jacking frame or back stop.
5. Set the pipe to be jacked on guides properly braced together to support the pipe section and direct it in the proper line and grade.
6. Line up the jacking assembly with the direction and grade of the pipe.
7. Excavate embankment material just ahead of the pipe, remove excavated material through the pipe and force the pipe through the embankment with jacks into the space provided.
8. Excavate beneath the pipe to conform to contour and grade for at least one-third of its circumference.
9. A 2-inch maximum clearance above the pipe shall taper to zero at the point where the excavation conforms to the contour of the pipe.
10. The distance the excavation extends beyond the end of the pipe depends upon the character of the material, but shall not exceed 2 feet.

11. Jack the pipe from the low or downstream end.
12. A cutting edge of steel plate may be installed around the head end of the pipe.
 - a. The cutting edge may extend a short distance beyond the end of the pipe.
 - b. Angles or lugs are permitted inside the cutting edge to prevent its slipping back onto the pipe.
13. Once jacking is begun, the operation must continue without interruption, insofar as practicable, to prevent the pipe from becoming firmly set in the embankment.

D. Boring

1. Pilot Hole Method
 - a. Bore a 2 inch pilot hole the entire length of the crossing.
 - b. From the opposite end, check it for line and grade.
 - c. Use pilot hole as centerline for the larger diameter hole to be bored.
2. Auger Method
 - a. Provide proper diameter steel encasement pipe equipped with a cutter head to mechanically perform the excavation.
 - b. Augers shall be of sufficient diameter to convey the excavated material to the work pit.
3. Use water or other fluids in boring only to lubricate cuttings; jetting will not be permitted.
4. In unconsolidated formations, use a gel-forming colloidal drilling fluid containing at least 10 percent of high-grade, carefully processed bentonite to consolidate the cuttings of the bit, seal the hole walls, and furnish lubrication for subsequent removal of cuttings and immediate installation of the pipe.

E. Tunneling

1. Use tunneling when the characteristics of the soil, the size of the pipe, jacking and boring are not satisfactory or when shown on the construction plans.
2. The tunnel liner shall be of sufficient strength to support the overburden.
3. The Contractor shall submit the proposed tunneling method to the Engineer for approval.
 - a. Under roadways tunnel liner plate shall be designed in accordance with the AASHTO "Design Specifications for Tunnel Liner Plates," Section 16, HS20 loading.
 - b. Under railroads tunnel liner plate shall be designed in accordance with the AREA Manual, Chapter 1, Part 4.16, Copper E80 loading.
 - c. Appropriate safety factors for seam strength, buckling and stiffness shall be used.
 - d. Tunnel liner plate shall be assembled in accordance with the manufacturer's instructions and recommendations.
4. The space between the liner plate and the limits of the excavation shall be pressure grouted or mud-jacketed in accordance with the Contractor's approved tunneling method.
5. Provide sufficient 2-inch diameter grout holes to properly grout voids between tunnel liner and adjacent soil.
6. Grout

- a. Grout shall develop unconfined compressive strength of 2000 psi after 28 days.
 - b. Contractor shall submit mix design for grout.
- F. Measurement and payment shall be made per linear foot of jacking, boring or tunneling pipe at the diameter pipe as indicated on the plans inclusive of all labor, equipment, and materials necessary for full performance of the work.

Pay Item: 602-1 JACKING, BORING OR TUNNELING PIPE

610 WATER MAIN CONSTRUCTION

Water main construction shall be in accordance with all applicable YAG Standard Details and MAG Section 610. All ductile iron water pipe used in fire hydrant installation shall be Class 350. No separate payment will be made for bends and fittings unless otherwise noted and the cost will be included in the water main unit price.

610-1 WATER MAIN PIPING

- A. Water Main piping shall be slip joint Class 350 ductile iron unless otherwise noted on the project plans, in accordance with MAG Section 610 and 750. Trace wire per COP Std. Dtl. 3-19P shall be required for all water main installations. Water main piping shall be furnished new in full lengths with manufacturer, class rating, and all other applicable information clearly marked on the barrel. Water main piping for 2-inch shall be copper in accordance with MAG Section 754 and encased in polyethylene protective wrapping in accordance with YAG Section 610.5.
- B. All ductile iron, copper and brass water main and fittings shall be encased in polyethylene protective wrapping in accordance with YAG Section 610.5.
- C. All water mains shall have NSF-PW seal clearly marked on each barrel and installed with 14-gauge direct bury trace wire in accordance with COP Std. Dtl. 3-19P.
- D. Thrust restraint shall generally be accomplished through the use of restrained joints in lieu of thrust blocking. The preferred joint restraint system shall be "Field-Lok" gasket or approved equal except that vertical deflections, tees, valves and bends shall be restrained utilizing Mega-Lug, as manufactured by Ebba Iron, or equal.
- E. Required minimum lengths of joint restraint shall be per MAG Standard Detail 303. In locations where lines perpendicular to main lines are shown as restrained, the main line piping shall be restrained for a minimum of 10 feet or one joint (which ever is greater) each side of the main line "Tee". Concrete thrust blocking will be required at connections to existing lines at the locations noted on the plans. Thrust blocks placed at these connections shall be in conformance with MAG/YAG Details and shall be adequately braced to allow system operation during curing of the concrete thrust blocks. Heavy plastic sheeting shall be used to wrap fittings to be restrained with thrust blocks to prevent covering with concrete on nuts and threading on fittings.
- F. All lateral water main connecting piping, valves and fittings shall be constructed using restrained joints from the main line "Tee" to the connection to the existing water line at the locations shown on the plans.
- G. All new fire hydrants and connecting piping shall be constructed per Detail 3-07P using restrained joints from the main line "Tee" to the hydrant.
- H. Concrete encased water main crossings of storm drains and/or other utilities which clear the crossed line by less than 12 inches, shall incorporate a 6" sand pad to break the frictional contact.
- I. Prior to ordering of materials and scheduling connections to existing water mains and services, the contractor shall complete investigations to verify the size, type and location of the existing water mains and services.
- J. All existing water service connections shall be replaced in accordance with the provisions of the COP Technical Specifications for "Water Service Replacement".

- K. COP Technical Specifications for “Air Release Valves” is expanded to include Combination Air Release-Vacuum Breaker valves at the locations shown on the plans constructed as shown in Detail 3-17P.
- L. The existing water main shall not be taken out of service prior to completion and ADEQ Approval to Operate the replacement water main and connection of all water services and fire hydrants to the replacement system.
- M. The existing water system shall not be taken out of service at any time without the approval of the Engineering. With the approval of the Engineer, the existing water main may be taken out of service for limited periods to facilitate project construction.
- N. The contractor shall prepare and submit to the engineer a plan for each connection to the existing system which demonstrates the ability to complete all work within the allowed period.
- O. All temporary connections and/or elements which must be placed in service prior to full system disinfection, testing and approval shall be disinfected in accordance with Paragraph 4.7 of AWWA C651-99 after approval of the engineer.
- P. Payment for water main shall be at the unit price in the bidding schedule and shall include all connections, joints, flanges, thrust restraint and incidentals unless specifically itemized in the bidding schedule.

Pay Item: 610-1 Ductile Iron Waterline

Pay Item: 610-5 Vertical Realignment

610-9 FIRE HYDRANT INSTALLATION

- A. Hydrant installation shall be in accordance with COP Std. Dtl. 3-07P, YAG Std. Dtl.3-08, and as specified on the project plans. Hydrants shall be Waterous or East Jordan, as approved by the Engineer.
- B. Payment for hydrant installation shall be at the unit price in the bidding schedule and shall include the hydrant, piping, valve, box and cover, and all appurtenant fittings, as noted for a complete assembly.

Pay Item 610-9 Furnish and Install Fire Hydrant Assembly

610-11A NEW WATER SERVICE AND PRIVATE WATER SERVICE LINE RECONNECTION

- A. New Water Service shall be in accordance with C.O.P. Std. Dtl. 3-16P as modified on plans, except as noted herein. All service piping and fittings from main tap to meter box shall be encased in polyethylene protective wrapping in accordance with YAG Section 610.5. Existing water service shall be abandoned in place and existing meter loop, box and cover shall be salvaged and delivered to the C.O.P. Maintenance Yard and placed as directed by the Engineer. The Contractor shall supply all necessary materials for new water service including service saddle, corporation stops, piping, meter loops, boxes and covers, plus all appurtenant fittings to connect to customers existing service line. The Contractor shall maintain a minimum three (3) feet of cover material over water service and match grades and cover material at existing meter box location.
- B. The Contractor shall take all necessary steps to maintain water service. Residents affected by water service disruption due to water main abandonment shall be notified by written flyer delivered by the Contractor a minimum of 24 hours in advance of scheduled water service disruption. The Contractor shall not disconnect or disrupt water service until new water main and services pass hydrostatic and disinfection tests and is accepted by the Engineer. The Contractor shall notify tenants of schedule water service disruption a minimum of 24 hours in advance of construction. Residents shall not be without water service for a total time period greater than 4 hours inclusive of contract time period from issuance of Notice to Proceed to Final Acceptance by the Engineer. The Contractor shall utilize construction method of water service shut-off at water main corp for water meter reconnection work to the new water main if his construction operation progression cannot meet the 4-hour restriction for water service disruption of residents. The Contractor shall supply bottled potable water and temporary water service meeting all state health requirements for periods of water service disruption exceeding 4 hours. No separate payment will be made for water service maintenance or The Contractor written notification of water service disruption.

- C. No separate measurement or payment will be made for adjustment of new water valve boxes to finished grade. This work is considered as incidental to the construction of the water main replacement.
- D. The Contractor will be required to install private water service line from the new water meter location to a point at the existing water meter location or to a point of connection to the existing service line for the residence. This point of connection shall be a maximum of a 10-foot radius from the meter location. Contractor shall remove existing valves and pressure regulators and replace per specifications. Contractor to furnish and install gate valve and pressure regulator after meter box and PRV to service connection. All private service lines shall be Type "K" copper in accordance with MAG Section 754 and encased in polyethylene protective wrapping in accordance with YAG 610.5. The Contractor shall maintain a minimum of two (2) feet of cover material, including ditch inverts, over new private water service line and utilize existing in-situ material for backfill. The Contractor shall supply all necessary material for new private water service installation including a gate valve, plus an approved type pressure regulator, in an accessible box per COP Std. Dtl. 3-16P at the new meter box location and all appurtenant fittings to connect to resident existing service line.
- E. The Contractor shall remove the existing water meter and reinstall in the new yoke at the new meter box location with all appurtenant fittings and adapters. The City shall supply the Contractor with new meters for use in new locations that were not previously served or there is no existing meter to remove.
- F. The Access Box called out in Standard Detail 3-16P for the shut-off valve and pressure regulator on the customer side of the meter box shall be minimum #1 box or equivalent as approved by the Engineer, and the valve, regulator, box and lid shall be provided and installed by the Contractor.
- G. The Contractor will be required to distribute written notices to the approval of the Engineer to all residents 24 hours in advance of proposed private service line reconnection work.
- H. Existing improvements disturbed by the Contractor shall be restored in "like kind" to the satisfaction of the Engineer. No extra payment will be made for restoring existing improvements in "like kind" to include concrete walkways, retaining walls, landscape improvements, etc.
- I. It shall be the Contractor's responsibility to review existing water meter location and points of private service line reconnection locations and ascertain all work including existing improvement restoration costs to perform the private service line reconnection work as specified. Costs associated for private service line reconnection work shall be at the appropriate unit bid price in the bidding schedule and shall include private service line piping, gate valve and pressure regulator, plus all appurtenant fittings and existing improvement restoration work as specified.
- J. The pressure regulators shall be set at 65psi. The Contractor shall bench-test or otherwise provide written verification from the supplier prior to installation that the pressure regulators have been set at the required psi.
- K. Payment for new water service and reconnection shall be at the appropriate unit bid price shown in the bidding schedule and shall include service saddle, corporation stops, piping, meter yoke, boxes, pressure regulator, plus all appurtenant fittings for complete assembly for connection to existing water customers service line. Contractor to supply and install all fittings necessary to install meter into new yoke.

Pay Item: 610-11a New 1" Copper Water Service And Reconnect to Private Side of Meter

610-11C PRIVATE WATER SERVICE LINE ABANDONMENT

- A. Where Water Service Lines are identified for abandonment, the Contractor shall pothole, cut out and remove the corporation stop and saddle, and install full circle, 316 stainless steel, double band repair clamp with stainless steel bolts. The gasket shall be nitrile rubber and have a finely grided surface to conform to irregularities on rough pipe surfaces or in pitted areas.

- B. The minimum width of the repair clamp shall be equal to the outside diameter (O.D.) of the water main plus the diameter of the tap.
- C. The service line to be abandoned shall be cut and capped a minimum of 1 foot from the water main and from the meter box, if the meter box is to remain in place.
- D. Payment for private water service line abandonment shall be at the appropriate unit bid price in the Bid Schedule and shall include all work and appurtenant fittings necessary for complete abandonment.

Pay Item: 610-11c Private Water Service Line Abandonment

610-11D PRIVATE WATER SERVICE LINE RECONNECTION (COMMERCIAL)

1. The Contractor will be required to install private water service line from the new water meter location to a point at the existing water meter location or to a point of connection to the existing service line for the commercial property. This point of connection shall be a maximum of a ten-foot radius from the meter location. Contractor shall remove existing valves and reduce pressure zone assembly and replace per specifications. Contractor to furnish and install gate valve and pressure Reducing Valve (PRV) after meter box. PRV shall be installed per the international Building Code 2003. This PRV shall be installed above ground and enclosed in an approved ASSE 1060 Type II enclosure (Hot Box or approved equal). All private service lines shall be Type "K" copper in accordance with MAG Section 754 and encased in polyethylene protective wrapping in accordance with MAG 610.5. Sweat fittings will not be allowed. The Contractor shall maintain a minimum of two (2) feet of cover material over new private water service line and utilize existing in-situ material for backfill. The Contractor shall supply all necessary material for new private water service installation including a gate valve, in an accessible box per Y.A.G. Std. Dtl. 3-16 and an approved type PRV in an approved ASSE 1060 enclosure at the new meter box location and include all appurtenant fittings to connect to existing service line.
2. The Contractor will be required to distribute written notices to the approval of the Engineer to all residents 24 hours in advance of proposed private service line reconnection work.
3. Existing improvements disturbed by the Contractor shall be restored in "like-kind" to the satisfaction of the Engineer. However, replacement of existing improvements shall not include any vegetation. No extra payment will be made for restoring existing improvements in "like-kind" to include concrete walkways, retaining walls, landscape improvements, etc.
4. It shall be the Contractor's responsibility to review existing water meter location and points of private service line reconnection locations and ascertain all work including existing improvement restoration costs to perform the private service line reconnection work as specified. Costs associated for private service line reconnection work shall be at the appropriate unit bid price in the bidding schedule and shall include private service line piping, gate valve, PRV and enclosure, plus all appurtenant fittings and existing improvement restoration work as specified.

Pay Item: 610-11D Private Water Service Line Reconnection (Commercial)

610-12 Traffic Rated Concrete Meter Boxes

- A. Meter boxes located within traffic areas shall be Christy model B1324 by Christy Concrete Products or approved equal. Contractor shall submit alternative traffic rated meter boxes for approval by the Engineer prior to bid.
- B. Pre-cast concrete meter boxes shall have H/20 loading and be constructed of high density reinforced concrete with a minimum compressive strength of 4,000psi. Covers to be furnished with the boxes shall be a steel checker plate, H/20 loading, bolt down lid.

Pay Item: 610-12 Traffic Rated Concrete Meter Box

610-15 TESTING & DISINFECTION OF WATER MAINS

- A. Pressure tests and leakage test of water mains and services shall be performed in accordance with AWWA C-600-82 and City Of Prescott Water Line Testing And Acceptance Procedures. Testing shall be performed by the Contractor and shall be witnessed by the Engineer for approval.
- B. Water main and services shall be disinfected in accordance with MAG Section 611. The Owner or his representative shall perform the sampling for bacteriological and residual chlorine testing. The Contractor shall notify the Owner 24 hours in advance to coordinate disinfection testing.
- C. Payment for Testing and Disinfection of Water Mains shall be included in the unit bid price for water main construction

610-20 CONCRETE ENCASEMENT

- D. Concrete encasement for sewer and water crossings shall be in accordance with YAG Std. Details 4-01 and COP Std. Dtl. 4-02P.
- E. Payment for concrete encasement shall be at the appropriate unit bid price in the bidding schedule.

Pay Item: 610-20 Concrete Encasement

610-30 WATER MAIN ABANDONMENT

- A. Abandonment of existing water main at connection to new water main shall involve the existing water main to be abandoned upon acceptance by the Engineer of hydrostatic and disinfection test results for the new main. The Contractor shall contact the Engineer a minimum of 48 hours in advance to schedule City water crew to coordinate valve operation of existing mains. Abandonment of existing main shall include removal of valve, saddle, and all appurtenances and installation of full circle stainless steel clamp(s) or the installation of a Mega-Lug cap with thrust blocking per MAG Std. Dtl. 380.
- B. Existing valves to be abandoned shall include removing valve, valve box and cover in its entirety. Removed materials not identified to be salvaged shall become the property of the Contractor to dispose of. Removed materials identified to be salvaged shall be delivered to the City of Prescott Maintenance Yard, and placed as directed by the Engineer. Salvaged materials shall not be used in new main installation.
- C. Restoration of water main and valve abandonment shall include excavation, backfilling and compaction in accordance with the Trench Excavation, Backfilling & Compaction section of these Technical Specifications.
- D. Payment for water main and valve abandonment shall be at the appropriate unit bid price in the Bid Schedule and shall include all work and appurtenant fittings necessary for complete abandonment.

Pay Item: 610-30 Water Main Abandonment

615-1 SANITARY SEWER MAIN

- A. Sanitary sewer main construction shall be in accordance with all applicable Y.A.G. Std. Dtls. and MAG Section 750. All sanitary sewer piping and fittings shall be ASTM 3034 SDR-35 PVC or AWWA C-151 ductile iron Class 350 with an epoxy coating (Protecto Coat 401). Sewer pipe shall be furnished new in full lengths with manufacturer, class, rating and other pertinent information clearly marked on the barrel. All ductile iron sewer main shall be encased in polyethylene protective wrapping in accordance with MAG Section 610.5.
- B. Field cuts and taps of Ductile Iron Pipe shall be re-coated with Protecto Coat 401 field kit in accordance with

the manufacturer's recommendations.

- C. Where noted on project plans, mechanical joint or restrained joint, Class 350, ductile iron sewer main shall be installed ten feet (minimum) each direction from water/sewer interface where vertical separation is less than two feet or until six feet of horizontal separation is attained. No separate payment will be made for this work and shall be included in unit items for sewer main included in the bidding schedule.
- D. The method of construction of existing manhole and sewer main replacements is of prime importance to the City of Prescott. Maintenance of sewage flows is critical and shall be the responsibility of the Contractor. The Contractor's construction schedule shall be phased as to allow for minimal pumping of sewage flows for manholes and sewer main under construction.
- E. The Contractor is to provide to the Engineer a detailed written description of the method of construction for manhole and sewer replacement for each individual area of work. This should include, but is not limited to the following:
 - 1. Maintenance of sewage flows during construction and curing of concrete.
 - 2. Type of concrete for manhole bases, i.e. pre-cast, "high early", etc.
 - 3. Method of curing concrete, i.e. protection against freezing, development strength before rings are set, etc.
 - 4. What steps will be taken to ensure the manholes will not sink when complete, i.e. compaction testing, special base preparation, etc.
- F. Poured in place concrete bases and inverts shall cure for a minimum of 72 hours, depending on concrete development strength before barrels and cones can be placed and before sewage flows across the inverts.
- G. Testing of Sanitary Sewers
 - 1. Sanitary sewers shall be low pressure air tested in accordance with ADEQ Engineering Bulletin 11, Chapter IV and in accordance with the Arizona Administrative Code Title 18 Chapter 9 Part E301(D)(2)(j)(i), one-hundred percent (100%) of the total length of pipe shall be tested.
 - 2. 100% of new sewer main construction, regardless of pipe material shall be deflection tested in accordance with the following:
 - a. The pipe section to be tested shall be cleaned free of dirt, sand, water, or other foreign materials.
 - b. Backfill and compaction will have been completed prior to testing. Initial tests will be done immediately upon completion of the first reach of pipe for each diameter to ascertain if the Contractor's means, materials and methods are producing the desired quality within permissible tolerances.
 - c. Test mandrels shall be solid sleeve or cage type with outside diameter and type of pipe permanently and clearly identified on the mandrel body. Worn, damaged or deformed mandrels will not be allowed. The mandrel shall have a cable attached at each end to enable removal if it becomes stuck.
 - d. For acceptance, the mandrel must pass through the entire section between manholes or other structures in one pass when pulled by hand, without the use of excessive force. All testing shall be witnessed by the Engineer or his representative and the Engineer reserves the right to order additional tests in excess of twenty percent of new main installed.
 - e. Any section of the installation which fails to pass the deflection test will be repaired and retested.
 - 3. Testing is considered incidental to the price bid for sewer main installation and no additional payment shall be made for this item.
- H. Payment for sanitary sewer main will be at the appropriate unit bid prices for sewer main, as shown in the

bidding schedule and shall include by-pass pumping; removing and disposing of existing sewer main; all excavation, backfill and compaction in accordance with trench details and all materials necessary for installation of the new sewer main.

Pay Item: 615-1 DIP Sewer Line

615-3 ABANDONMENT OF SANITARY SEWER MAIN AND MANHOLES

Description: This item shall govern the abandonment of sanitary sewer mains and manholes required on the plans to be abandoned. Generally, sanitary sewers over twelve inches (12") in diameter and all abandoned sanitary sewer manholes are to be filled with a cementitious low strength material. The sanitary sewer facility shall be abandoned in accordance with the specifications herein outlined and in conformity with the limits shown on the plans.

Abandoning of sanitary sewer lines and manholes shall not occur until all existing sanitary sewer services have been transferred to another line and directed by the Engineer.

Materials: Materials for abandonment of sanitary sewer pipe and manholes.

1. Sanitary Sewer Pipe: A cement based grout shall be used to fill the void of the existing sanitary sewer main. The grouting material must have a strength of at least 100 PSI and shall have flow characteristics appropriate for filling a sanitary sewer. The grout mix designed and method of installation shall be approved by the Engineer prior to beginning operation.
2. Material for Abandoning Manholes: The sanitary sewer manhole shall be filled to the top of the remaining concrete structure with the same material used to abandon the sanitary sewer line.

Construction: Abandonment of sanitary sewer lines shall be accomplished by installing the grout material with sufficient pressure and in numerous locations. The method of installation shall be able to meet the requirement of completely filling the existing sanitary sewer line and any voids adjacent to the sanitary sewer line. The method shall adequately provide for the removal and legal disposal of existing sewer materials in the system. The method shall provide for the release of air. When intermediate points are required to be constructed for the abandonment of the system, they shall be a part of the abandonment project process.

Pipes smaller the twelve inches (12") in diameter are generally not required to be grouted unless required by the plans. Pipes to be abandoned shall be grouted only if required by the plans and payment as per these specifications is provided.

The concrete structure of the manhole shall be removed to a depth of three feet (3') under proposed sub-grade or finished ground elevation. Manhole rings and covers shall be removed and delivered to the City of Prescott maintenance yard or as designated by the Engineer.

Payment: Payment for abandoning sewer lines and manholes shall be made at the contract unit price. Said priced shall be full compensation for furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work.

Pay Item: 615-3a Abandonment of Sanitary Sewer Main

Pay Item: 615-3b Abandonment of Manhole

615-7 SANITARY SEWER SERVICE

- A. All existing sewer services disturbed during water main/water service replacement shall be removed and replaced to back of curb and gutter with a new minimum four-inch (4") ASTM 3034 SDR-35 PVC or AWWA C-151 ductile iron, Class 350, with an epoxy coating (protecto coat 401) sewer pipe, mechanical joint ductile iron (Class 350), backwater valve, manufactured wye, and coupling concrete reinforcement in accordance with COP. Std. Dtl. 4-02P and MAG Std. Dtl. 440, except as modified herein.
- B. If individual sewer service disruption is anticipated, the Contractor shall notify the property owner 24 hours

in advance. Sewer service must be restored within four hours or some alternate means of sewage disposal provided to allow for the resumption of individual sewer service.

- C. Payment for sanitary sewer service replacement shall be at the unit price indicated on the bidding schedule for the water main installation, and shall include connecting each existing sewer service including all labor, material, equipment, removal of existing pipe, new pipe, coupling concrete reinforcement, new concrete encasement, fittings, by-pass pumping and other work required to connect the existing yard line service to the new sewer main.

Pay Item: 615-7a New Private Sanitary Service

Pay Item: 615-7b Replace Private Sanitary Service

615-9 SANITARY SEWER CLEANOUTS

- A. Sanitary sewer cleanout shall be installed in accordance with C.O.P. Std. Dtl. 4-13.
- B. Payment for sanitary sewer cleanout shall be at the unit price in the bidding schedule, and shall include furnishing and installing all materials necessary for complete installation.

Pay Item: 615-9 Sanitary Sewer Cleanout

615-11 CLOSED CIRCUIT TELEVISION OF SEWER MAIN AND SERVICES

A. DESCRIPTION

This section defines the requirements for internal television inspection of the sewer main and service laterals after they have been installed. The Contractor shall inspect the sewer interior using a color closed circuit television (CCTV) camera and document the inspection on video with audio location and date information, video title information and hard copy inspection logs. A television inspection shall be performed after cleaning the sewer as specified in these Specifications and prior to lining the section. The section of sewer will then be CCTV inspected again in the same direction as the previous inspection after the lining of the sewer has been completed. Additional CCTV inspections may be required at other stages of the operation as called for by other sections of these Specifications.

B. SUBMITTALS

1. The Contractor shall submit the following information for review at the Preconstruction Conference following notification of award of the Contract:
 - a. An example of his work consisting of one video recording of previous sewer inspection work complete with audio commentary and inspection log(s). The submitted video recording shall show operational and structural defects in sewers. The video recording and inspection logs will be reviewed to determine if the quality of the CCTV image is acceptable and if defects were properly identified and documented according to City requirements.
 - b. The Contractor shall be responsible for modifications to his equipment and/or inspection procedures to achieve report material of acceptable quality. No work shall commence prior to approval of the material by the Engineer. Once accepted, the report material shall serve as a standard for the remaining work.
 - c. The tab on the videotape case, which permits re-recording, shall be removed prior to submittal. Contractor shall maintain a copy of all inspection documentation (recording, CD-ROM, databases and logs) for the duration of the work and warranty period.
 - d. Unless otherwise provided in the Specifications, inspection logs shall be provided by the Contractor and shall show, at a minimum: project title, name of Owner, time of day, manhole-to-manhole pipe section, pipe segment length, pipe material, line size, compass direction of viewing, direction of

camera's travel, pipe depth, name of operator and counter reading at the beginning and end of each manhole-to-manhole pipe segment.

- e. Video of service laterals shall show, at a minimum: project title, name of Owner, time of day, stationing right or left and/or parcel number and/or street address, pipe segment length, pipe material, line size, compass direction of viewing, direction of camera's travel, pipe depth, name of operator and counter reading at the beginning and end of each manhole-to-manhole pipe segment.
2. The Contractor shall supply finished video recordings after cleaning and after rehabilitation. One set of videos shall be submitted to the Engineer and two sets of videos (DVD) shall be submitted to the City.

C. MATERIALS

1. Cameras: For inspection of sewer, the camera shall be equipped with a rotating head, capable of 90-degree rotation from the horizontal and 360-degree rotation about its centerline. Minimum camera resolution shall be 400 vertical lines and 460 horizontal lines. The camera lens shall not have less than 140-degree viewing angle and shall have automatic or remote focus and iris controls. The focal distance shall be adjustable through a range of from 6 inches to infinity. Camera(s) shall be intrinsically safe and shall be operative in 100-percent humidity conditions. Lighting intensity shall be remote controlled and shall be adjusted to minimize reflective glare. Lighting and camera quality shall provide a clear, in-focus picture of the entire inside periphery of the sewer.
2. Recording Media: Video recordings of all sewer line inspections shall be made on CD/DVD-ROM. The audio portion of the composite video shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of the oral report. Each video shall be identified with labels showing the Owner's name, Contractor's name, Engineer's name and each manhole-to-manhole pipe segment of sewer line represented on the video. Each video shall be submitted at the completion of the project for records. One copy shall be submitted to the City and one copy shall be submitted to the Engineer.
3. Footage Counter: A footage counter device which measures the distance traveled by the camera in the sewer device shall be accurate to plus or minus 2 feet in 1,000 feet.
4. Video Titling: Video recording equipment shall include genlocking capabilities to the extent that computer generated data, (i.e., footage, date, size etc.) as determined by the Owner can be overlaid onto video, and both indicated on the television monitor and permanently recorded on the inspection video recording.

D. INSPECTION METHODS

1. The Contractor shall record on the audio track of the video inspection a narrative of the location, direction of view, manhole numbers, pipe diameter and material, date and time of the inspection. The location of laterals and other key features shall be identified as well. The video recording content shall display this same information at the beginning and end of each manhole-to-manhole pipe segment. Video content between manholes shall display the length in feet from the starting point of the given segment.
2. The Engineer shall have access to observe the monitor and all other operations at all times. The system of cabling employed to transport the camera and transmit its signal shall not obstruct the camera's view.
3. Contractor shall physically measure and record on the inspection log, the length of each sewer reach from the centerline of its terminal manholes.
4. The camera shall be pulled through the sewer in either direction, but all segments are to be in the same direction. Maximum rate of travel shall be 30 feet per minute when recording.
5. The camera image shall be down the center axis of the pipe when the camera is in motion. The Contractor is required to provide a 360-degree sweep of the pipe interior, at points of interest, in order to

more fully document the existing condition of the sewer. Points of interest may include, but are not limited to, defects, encrustations, mineral deposits, debris, sediment and any location determined not to be clean or part of a proper line installation and defects in the liner including, but not limited to, bumps, folds, tears, dimples, etc.

6. The video and all inspection documentation should include the sewer line and manhole identifiers shown on the plans. After the rehabilitation of the sewer main is complete, the Contractor shall use the upstream manhole as the identifier in conjunction with the distance meter.
7. The City will review videos and logs to ensure compliance with the requirements listed in this specification and contract documents. If the sewer line, in the sole opinion of the City, is not adequately clean, it shall be recleaned and CCTV inspected by the Contractor at no additional cost to the Owner. If the rehabilitation work, in the sole opinion of the City, has not been properly installed, it shall be reinstalled and CCTV inspected by the Contractor at no additional cost to the Owner.
 - a. Final acceptance of the project will not be granted until sewer line video results, including any re-inspection of deficient sewer main, meet the satisfaction of the Engineer and are in accordance with MAG Section 615.2.
 - b. Camera investigation, associated video with report sheet, by-pass pumping and flushing are considered incidental to the unit prices for sewer main construction in the bidding schedule and no additional payment shall be made for these items.

E. SANITARY SEWER CCTV INSPECTION

1. Upon completion of sewer main rehabilitation, the Contractor shall perform Closed Circuit Televising (CCTV) inspection for 100% of the newly rehabilitated sewer main to provide a video record and associated written report to become the property of the Engineer. The Engineer shall be notified a minimum of 48 hours in advance of proposed scheduled sewer camera inspection, so Engineer, or Representative, may witness the video recording. Any inspection completed without Engineer or Representative witnessing will not be accepted. The sanitary sewer CCTV inspection shall include, but shall not be limited to the following:
 - a. The Contractor shall provide by-pass pumping for sewer main CCTV investigation as specified in the By-pass Pumping and Dewatering Section of these specifications.
 - b. A report sheet shall correlate with the video and provide a detailed data log for camera distance and descriptions from manhole references for services and construction joints.

Pay Item: 615-11 Closed Circuit Television

615-20 SEWER CLEANING

A. DESCRIPTION

1. Scope: This section specifies the requirements for cleaning of the sewers and sewer structures prior to CCTV inspection, Engineer's inspection and rehabilitation.
2. Requirements: The work to be done under this section consists of furnishing all labor and equipment to remove the accumulated sediments and clean the sewers and sewer structures as specified. All sewer lines scheduled for rehabilitation shall be cleaned using hydraulic cleaning equipment. Sewer lines shall be cleaned prior to TV inspection to view current line conditions.
3. Equipment: Sewer line cleaning equipment shall be high-velocity jet (hydra cleaning) equipment. The high-velocity sewer line cleaning equipment shall be constructed for easy and safe operation. The equipment shall have a selection of two or more high-velocity nozzles capable of producing a scouring

action from 15 to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floors. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, high pressure water pump, jet rodder pump capable of pumping at least 80 gallons per minute at 2,000psi, measured at the beginning of the hose reel. The water pump shall also be able to run at 2,000psi while pulling a full vacuum, completely independent from the vacuum system with the ability to vary vacuum without affecting water pressure. The equipment selected by the Contractor shall be subject to the approval of the City. The designated sewer lines shall be cleaned using the approved method and equipment. The equipment shall be capable of removing dirt, grease, rocks, sand, grout, roots and other materials and obstructions from the sewer lines and manholes. Satisfactory precautions shall be taken to protect the sewer line from damage that might be inflicted by the improper use of cleaning equipment. Precautions shall be taken to insure that the water pressure does not cause any damage of flooding to public or private property being served by the sewer section. Roots shall be removed where root intrusion is encountered. Special attention should be used during the cleaning operation to assure almost complete removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines, winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners.

4. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire sewer line section, it will be assumed that major blockage exists and the cleaning effort shall be abandoned.

When additional quantities of water from the public system is required to avoid delay in normal working procedures, the Contractor shall apply for and receive permission from the City. He shall be responsible for obtaining a hydrant meter and paying for charges for the setup, including the water usage bill. All expenses shall be considered incidental to cleaning. Manhole cleaning shall include the entire manhole interior including manhole benches.

5. All sludge, dirt, sand, rock, grease and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. A suitable sand trap, weir, dam or suction device shall be constructed in the downstream manhole to trap all solids and debris for removal and prevent passage to the next downstream section. Passing material from section to section, which could cause line stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted. All solids or semisolids resulting from the cleaning operations shall be removed from the site and legally disposed. It is the responsibility of the Contractor to secure a legal dump site for the disposal of this material. All materials shall be removed from the site no less often than at the end of each day of work. UNDER NO CIRCUMSTANCES SHALL SEWAGE OR SOLIDS REMOVED FROM THE DOWNSTREAM MANHOLE BE DISCHARGED ONTO STREETS OR INTO DITCHES, CATCH BASINS OR STORM DRAINS.
6. Removal of Obstructions: The Contractor shall also utilize a method to remove all protruding materials that may prevent successful CCTV and rehabilitation of the sewer line. A high-speed rotating hydraulic cutter shall be used which shall be capable of removing protruding services, grout or other solid material without excavating. The Contractor is expected to completely remove the obstruction, allowing rehabilitation activities to proceed without the possibility of snagging the liner or causing a backup due to a service lateral protruding against the liner material. The cut will be made flush with the wall of the pipe and the debris shall be pushed down the pipe to the next downstream manhole where it shall be removed and disposed of appropriately. The method used shall be subject to approval by the City.
7. Acceptance of sewer line cleaning shall be made upon the successful completion of the television inspection and shall be to the satisfaction of the City. If TV inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to re-clean and re-inspect the sewer line until the cleaning

is shown to be satisfactory.

B. SUBMITTALS

1. The following Submittal shall be provided:

A letter identifying the methods the contractor plans to employ to remove sediment, debris, grease, scale, encrustations, loose concrete and roots throughout the section of sewer to be lined. The letter shall include a detailed explanation of the cleaning process and a schedule of activities, references where the Contractor has used the identified cleaning method successfully in the past and a list of the actions he plans to take to mitigate impact to the public during the cleaning operation.

C. MATERIALS:

1. No chemicals shall be used without written approval of the City. In no case shall any chemical additive be used which might be considered hazardous or might be considered detrimental to organisms or equipment of a wastewater treatment facility, or detrimental to old or new pipe materials.

D. PRODUCT DATA:

1. Copies of all disposal receipts shall be submitted to the City Public Works Department.

E. EXECUTION:

1. The Contractor shall at all times conduct its work so as to prevent any blockage and minimize surcharging in the sewer manholes and connecting sewer pipelines. Precautions shall be taken to protect the existing host pipe, particularly the corroded crown, sidewalls and manholes from damage that might be caused by the cleaning process or equipment. Damage to existing facilities as a result of the Contractor's work shall be promptly repaired in like kind at the Contractor's expense.

F. CLEANING

1. Cleaning shall remove all sediment, rocks, debris, grout, roots, grease accumulations and obstructions from the length of sewer and manholes to be lined. Cleaning of the sewer and manhole walls in the vicinity of the lining shall remove all grease, scale, encrustation and loose mortar so that no foreign intrusion shall cause imperfections in the lining (ie; bumps, folds, dimples). Sewer cleaning methods may include washing with high- pressure water, mechanical removal or other as approved by the Engineer.
2. Any sediment or debris from cleaning operations larger than U.S. #8 sieve shall not be deposited downstream in the sewer. Sedimentation deposited downstream, as determined by the Engineer, shall be removed at no cost to the Owner. The Contractor shall be thoroughly familiar with all phases of sewer line cleaning to ensure the completion of this Contract without causing a health hazard or damage to the sewage system, public or private properties.
3. The Contractor shall be responsible for transporting and disposing, including all disposal fees, of any sediments and material removed from the sewer structures.

G. DISPOSAL OF SEDIMENTS

1. All sediment and debris removed from the sewer shall be disposed off-site in a lawful manner. Hauling containers shall be watertight. On-site stockpiling of removed material will not be permitted.
2. The Contractor is responsible for obtaining all necessary permits, fees and approvals from all regulatory agencies required to perform the work, including transport of sediments. Off-site disposal of all material removed from the sewer shall be the Contractor's responsibility.
3. The Contractor shall test the sediments before removal from the site to determine if the sediments are hazardous. If the sediments are deemed hazardous, it is the Contractor's responsibility to transport and dispose of the sediment in a manner deemed lawful by all applicable regulatory agencies.

- F. Measurement and Payment shall be lump sum for the complete work for cleaning sewer main and laterals in preparation of Closed Circuit Television

Pay Item: 615-20 Sewer Cleaning

618-1 STORM SEWER CONSTRUCTION

- A. Excavation, backfill and compaction shall be in accordance with YAG & MAG Section 601 and as modified herein.
- B. Bedding and cover shall extend from 6 inches below the pipe to 12 inches over the pipe and shall consist of ABC mechanically compacted in lifts to 95%
- C. Backfill material shall extend from top of cover material to finish sub-grade elevation and be Type I, mechanically compacted to 95%.
- D. Pipe materials and installation shall be in accordance with MAG Section 621 and 760, as stated on the project drawings and as modified herein.
- E. All CMP shall have $2\frac{2}{3}$ " x $\frac{1}{2}$ " corrugations with a minimum gauge of 14. Steel lined or paved CMP will not be allowed.
- F. All joints shall conform to MAG 621.3.1 and shall be watertight.
- G. Measurement and payment shall be in accordance with MAG Specs Section 621.5 and 621.6. No separate payment shall be given for materials used for bedding and cover. They shall be considered incidental to the work and included in the contract unit price.
- H. If during excavation, the Engineer determines the native soil unsuitable for backfill material, he may direct Contractor to dispose of said materials and to use ABC. This additional work shall be paid for in accordance with section "Payment to Contractor", subsection "Force Account" as contained within the specifications.

Pay Item: 618-1 Storm Sewer Construction

618-2 CORRUGATED METAL PIPE

All CMP shall have minimum $2\frac{2}{3}$ " x $\frac{1}{2}$ " corrugations and a minimum gauge of 14 and shall conform to MAG Spec. 760 and shall be installed as per MAG Section 621. Measurement and payment shall be to the nearest lineal foot completed and in place in accordance with the project plans.

618-3 SPIRAL RIB PIPE

Material specified as spiral rib pipe shall conform to MAG Spec. 760.3 and AASHTO M3-36 Type IR. Gauge shall be 14. Measurement and payment shall be to the nearest lineal foot completed and in place in accordance with the project plans.

625-1 SEWER MANHOLE CONSTRUCTION

- A. Sanitary sewer manhole construction shall be in accordance with Y.A.G. Std. Dtl. 4-03P, YAG and MAG Section 625 and 725. Final grade adjustment in roadway sections shall be in accordance with Y.A.G. Std. Dtl. 4-05P.
- B. Existing manholes shall be totally removed, including the bases, and disposed of by the Contractor. Existing rings and covers shall be salvaged and delivered to the City Maintenance Yard and placed as directed by the Engineer. No separate payment will be made for removing manholes or salvaging manhole rings and covers. The cost of this item of work shall be included in the cost of manhole construction.

C. Testing of Sanitary Sewer Manholes

1. A minimum of one hundred percent (100%) of all manholes to be installed are to be tested by exfiltration in accordance with Arizona Department of Environmental Quality Bulletin No. 11, Chapter IV, Section B or by vacuum testing per ASTM C-1244-3 and tested in accordance with Arizona Administrative Code Title 18 Chapter 9 Part E301(D)(3)(f).
2. Testing of sanitary sewer manholes is considered incidental to the price bid for manhole installation and no additional payment shall be made.
3. Sanitary sewer cleanout shall be installed in accordance with C.O.P. Std. Dtl. 4-13.

D. WATERTIGHT RING AND COVER

1. Installation of new watertight ring and cover shall consist of the following:
 - a. Removal of the existing ring and cover, and deliver to the City yard.
 - b. Placement of a new watertight ring and cover.
 - c. Grouting of ring and cover to existing manhole.
2. All rings and covers shall be installed per COP 4-03BP. New rings and covers shall be approved by the City prior to installation.

E. DROP SEWER MANHOLES

- a. Internal Drop
 - i. Internal drop systems shall be installed in existing drop manholes where indicated on the plan sheets and accordance with Detail XXX.
 - ii. Internal drop systems shall be constructed using Reliner Inside Drop System as manufactured by Reliner/Duran Inc.
 - iii. Manholes requiring the installation of an internal drop system and requiring Internal Manhole Coating shall have the protective coating installed and tested prior to the installation of the drop system.
- b. Measurement and Payment
 - i. Payment for internal drop system shall be at the unit price listed in the bid sheet for the project. The unit price shall include by-pass pumping, installation of a grout plug in the existing external drop in accordance with the Project Specifications and YAG Standard Details and all materials necessary for installation of the new drop sewer connections.

F. All water encountered during the work shall be disposed of by Contractor in a manner such that it will not damage public or private property or create a public nuisance or health problem. The costs of furnishing pumps, pipes, special bedding, and over excavation as required to provide a stable foundation, and other equipment and materials shall be incidental to the work.

G. Sewer Line Protection

If sewer main construction is within two feet below an existing water main, the class 350 slip joint ductile iron pipe shall be provided with joint restraint for one joint on each side of the water line crossing. The joint restraint shall be an EBAA Iron Series 800 Coverall Retainer or equal. Payment for ductile iron joint restraint shall be at the unit price bid in the bidding schedule and shall include the joint retainers and their installation. Two joint retainers shall be required at each water line crossing.

H. Payment for manhole installation shall be at the appropriate unit bid price in the bidding schedule and shall include all excavation, backfill, installation, grade ring adjustment, by-pass pumping, and all necessary materials for complete manhole installation.

Pay Item: 625a Remove And Replace 60" Manhole

Pay Item: 625b Install New 60" Manhole
Pay Item: 625c Remove Cleanout and Replace with Manhole
Pay Item: 625d Install Internal Sewer Drops at Drop Manholes

626-1 Manhole Coatings

A. DESCRIPTION

1. This section specifies the coating system used for the lining of the manholes as indicated on the drawings. The coating shall yield a hard, durable chemical resistant coating and shall be specifically designed to be applied on a dry surface. The finish coating shall provide a watertight seal and shall adhere to all components of pipeline liner systems.
2. Specific coating terminology used in this section is in accordance with definitions contained in ASTM D16, ASTM D 3960 and the following definitions:
 - a. Dry Film Thickness (DFT): The thickness of one fully cured continuous application of coating.
 - b. Field Coat: The application or the completion of application of the coating system after installation of the surface at the site of the work.
 - c. Shop Coat: One or more coats applied in a shop or plant prior to shipment to the site of erection or fabrication, where the field or finishing coat is applied.
 - d. Tie Coat: An intermediate coat used to bond different types of paint coats. Coatings used to improve the adhesion of a succeeding coat.
 - e. Photochemically Reactive Organic Material: Any organic material that will react with oxygen, excited oxygen, ozone or other free radicals generated by the action of sunlight on components in the atmosphere giving rise to secondary contaminants and reaction intermediates in the atmosphere which can have detrimental effects.
 - f. Volatile Organic Compound (VOC) Content: The portion of the coating that is a compound of carbon, is photochemically reactive and evaporates during drying or curing, expressed in grams per liter or pounds per gallon.
 - g. Touch-Up Painting: The application of a paint on areas of painted surfaces to repair marks, scratches and areas where the coating has deteriorated to restore the coating film to an unbroken condition.
3. Quality Assurance
 - a. References: This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

ASTM D 16-93 Standard Terminology Relating to Paint, Varnish, Lacquer and Related Products.

ASTM D 3359 A-92 Methods for Measuring Adhesion by Tape Test.

ASTM D 3960-92 Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.

ASTM F 595 B-89 Federal Standard Colors.
 - b. Standardization: Materials and supplies provided shall be the standard products of manufacturers. Materials in each coating system shall be the products of a single manufacturer.
4. Delivery and Storage
 - a. Materials shall be delivered to the job site in their original, unopened containers. Each

container shall bear the manufacturer's name, coating type, batch number, date of manufacture, storage life and special directions.

- b. Materials shall be stored in enclosed structures and shall be protected from weather and excessive heat or cold. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life recommended by the manufacturer shall be removed from the site.

B. MATERIALS

1. The pre-approved coatings for the lining of existing manholes include; Sewer Shield Liner 150 Trowelable as manufactured by Environmental Coatings, Mesa, Arizona, or Sauereisen No. 210 as manufactured by Sauereisen, Inc., Pittsburgh, Pennsylvania. The coating color shall be approved by the owner.
2. Primer shall be as recommended by the manufacturer for each application.
3. Defect filler shall be as recommended by the manufacturer for each application. The coating shall contain no more than 20% filler, sand; no fiberglass fillers.
4. Applicator Experience and Qualifications

The coating applicator must have a minimum of two (2) years experience in applying either the specified coating or an equivalent coating. They shall submit a successful performance history for the application of either the specified coating or a similar coating in the wastewater industry:

- a. The coating applicator shall submit three (3) references relating to the quality of workmanship performed on other projects using the same coating being proposed or an equivalent coating.
 - b. The coating applicator shall be an Arizona Licensed contractor with an AE License or equivalent.
 - c. The coating applicator shall submit a manufacturer's certification to apply the coating specified herein.
5. Product Data

Before materials are delivered to the job site, the Contractor shall provide the following information in accordance with these Specifications.

- a. For the filler, primer and finish coating, the Contractor shall furnish a Material Safety Data Sheet (MSDS).
- b. For the filler and finish coating, the Contractor shall provide the manufacturer's application instructions, which shall include the following:
 - (i) Surface preparation recommendations.
 - (ii) Primer type, where required.
 - (iii) Maximum dry and wet mil thickness per coat.
 - (iv) Minimum and maximum curing time between coats, including atmospheric conditions for each.
 - (v) Curing time before submergence in liquid.
 - (vi) Thinner to be used with coating material.
 - (vii) Ventilation requirements.
 - (viii) Minimum atmospheric conditions during which the coating shall be applied.
 - (ix) Allowable application methods.
 - (x) Maximum allowable moisture content.

(xi) Maximum storage life.

c. List of materials proposed to be used under this section and manufacturer's data for each material.

C. COATING

1. Coating products shall not be used until the Owner has inspected the materials and the coating manufacturer's technical representative has instructed the Contractor and Owner in the surface preparation, mixing and application of the coating. The coating manufacturer's technical representative must be a factory representative, not a local representative or an affiliate of the Contractor.
2. Field coats shall consist of one or more finish coats to build up the coating to the specified dry film thickness. Unless otherwise specified, finish coats shall not be applied until other work in the area is complete and until all previous coats have been inspected.
3. All items of equipment, or parts and surfaces of equipment, which are immersed when in service, with the exception of pumps and valves shall have all surface preparation and coating work, performed in the field.

4. Preparations

- a. Surfaces to be coated shall be clean and dry. Before applying coating or surface treatments, oil, grease, dirt, rust, loose mill scale, old weathered coatings and other foreign substances shall be removed except as specified. Oil and grease shall be removed before mechanical cleaning is started. Where mechanical cleaning is accomplished by blast cleaning, the abrasive used shall be washed, graded and free of contaminants, which might interfere with the adhesion of the coatings. The air used for blast cleaning shall be sufficiently free of oil and moisture to not cause detrimental contamination of the surfaces to be coated. The Contractor shall examine all surfaces to be coated and shall correct all surface defects as specified in these Specifications before application of any coating.

The Contractor shall perform an adhesion test after proper cure in accordance with ASTM D3359 to demonstrate that the specified field coatings adhere to the substrate. Test results showing an adhesion rating of 5A on immersed surfaces and 4A or better on all other surfaces shall be considered acceptable. Where unacceptable test results are obtained, the Contractor shall be responsible for removing and reapplying the specified coatings at no expense to the Owner.

- b. Surface preparations for each type of surface shall be in accordance with the specific requirements of the coating specification sheet (COATSPEC). COATSPEC shall be supplied by the manufacturer.

D. SANITARY SEWER MANHOLES

1. This section specifies rehabilitation of existing sanitary sewer manholes. Rehabilitation will provide protections against infiltration and corrosion to the manhole interior as identified on the Drawings. Corrosion protection of existing manholes in projects consist of coating the manhole interior with the specified coating system.
2. Contractor shall furnish all labor, materials and equipment required to clean, modify and coat the manholes indicated on the Drawings. Contractor shall comply with the local authority and all Occupational Safety and Health Administration (OSHA) requirements for confined space entry.
3. All materials specified by name brand or manufacturer shall be delivered unopened to the job in original containers. All safety precautions recommended by the manufacturer in printed instructions or special bulletins shall be obtained, followed and copies supplied to the City.
4. Application of the specified coating system shall be performed by a contractor certified and trained by the manufacturer.

5. All structural rehabilitation work performed by the Contractor shall be guaranteed against faulty workmanship and/or materials for a period of 2 years after final acceptance of work.
6. The coating system shall be specified in these Specifications.
7. The Contractor shall clean manholes to be rehabilitated when cleaning the sewer as specified in these Specifications. Contractor shall also be responsible for any additional surface preparation beyond water blasting as required by the coating system manufacturer. Where additional preparation is required, the Contractor shall provide all labor, materials and equipment as necessary, at no additional cost to the Owner.
8. Before application of the coating system, the surface must be clean and free of dust, laitance oil, grease, chemical contaminants and any previously applied coatings. Suitable heaters shall be used as needed to produce a surface-dry condition. The surface will be vacuumed to make sure that loose particles are not present.
9. Contractor shall protect the CIPP lined sewer from debris, overspray or any detrimental activity due to restoration of the manholes.
10. Holes shall be filled using a grout as recommended by the coating manufacturer, and approved by the Engineer. The grout filler shall be used to bring all areas of holes and pitting up to the nominal surface of the manhole so that there is an even interior surface in the manhole without waves, pits or holes. Any exposed rebar shall be cleaned, and all areas of corrosion removed, prior to application of the grout as recommended by the coating manufacturer and approved by the Engineer.
11. After surface preparation is complete, all loose material shall be removed from the sewer and manholes.
12. The Contractor shall install the coating system in the manholes after the installation of the CIPP lining of the sewer. Quantities of materials may vary significantly based on interior surface and conditions. The coating shall be applied to overlap the liner.
13. A sufficient forced air supply shall be maintained to provide and maintain a temperature of 50 to 90 degrees F and a circulating airflow inside the structures during the coating process or per the manufacturer's recommendations.
14. Contractor shall repair all defects in the coating system where directed by the Engineer.
15. The surface of the installed coating will be cleaned and prepared to permit visual inspection by the Engineer. Any areas of the coating showing poor adhesion, excessive air inclusion or edge or seam defects shall be properly repaired and re-inspected.
16. Coated surfaces shall be free from runs, drops, ridges, waves, laps and brush marks. Coats shall be applied so as to produce an even film of uniform thickness completely coating corners and crevices. Painting shall be done in accordance with the requirements of SSPC Paint Application Specification No. 1. SSPC Paint Application Specification shall be supplied by the manufacturer.
17. The Contractor's equipment shall be designed for application of the materials specified. The coating shall be obtained with the proper thickness and surface characteristics as recommended by the coating manufacturer.
18. Each coat shall be applied evenly and sharply cut to line. Care shall be exercised to avoid over-coating or spattering on surfaces not to be coated.
19. Atmospheric Conditions: Coatings shall be applied only to surfaces that are dry and only under conditions of evaporation rather than condensation. Coatings shall not be applied during rainy, misty weather or to surfaces upon which there is frost or moisture condensation. During damp weather, when the temperature of the surface to be coated is within 10 degrees F of the dew point, the surfaces shall be

heated to prevent moisture condensation thereon. During coating, and for a period of at least 8 hours after the coating has been applied, the temperature of the surfaces to be coated, the coated surfaces and the atmosphere in contact shall be maintained at or above 40 degrees F and 10 degrees F above the dew point. Paint, when applied, shall be approximately the same temperature as that of the surface on which it is applied. Fans or heaters shall be used inside enclosed areas where conditions causing condensation are severe.

- 20. Protection of Surfaces: Items which have been coated, shall not be handled, worked on, or otherwise disturbed, until the coating is completely dry and hard.
- 21. Film Thickness and Continuity: Coating system thickness is the total thickness of the finished coats. The surface area covered for various types of surfaces shall not exceed those recommended by the manufacturer. Coatings shall be applied to the thickness specified, and in accordance with these Specifications. In testing for continuity of coating about welds, projections (such as bolts and nuts), and crevices, the Owner will determine the minimum conductivity for smooth areas of like coating where the dry mil thickness has been accepted. This conductivity shall then be taken as the minimum required for these rough or irregular areas. Pinholes and holidays shall be repainted to the required coverage.
- 22. Safety and Ventilation: Requirements for safety and ventilation shall be in accordance with SSPC Paint Application Guide No. 3. SSPC Paint Application Guide shall be supplied by the manufacturer.
- 23. Cleanup: Upon completion of coating, the Contractor shall remove surplus materials, protective coverings and accumulated rubbish and thoroughly clean all surfaces and repair any over spray or other paint-related damage.

E. COATING SYSTEM SPECIFICATION SHEETS

1. Alternative 1

Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified.

COATING SYSTEM

IDENTIFICATION: Sewer Shield Liner 150 Trowelable

SURFACE: Concrete/Masonry

SURFACE PREPARATION: Abrasive Blasting

CONCRETE: Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds and laitance shall be removed from surfaces by abrasive blasting and chipping, and voids and cracks shall be repaired as specified in these Specifications and as indicated by the underlayment paragraph. After blasting concrete should be detergent-washed to remove oil, grease and other contaminants. All active hydrostatic leaks must be stopped by use of a water stop, waterproofing or urethane grout as recommended by the manufacturer.

UNDERLAYMENT: Holes and any other defects up to 2 inches deep shall be filled with C120 (manufactured by Environmental Coatings). If the defect is larger than 2" deep, a high early cement fill shall be used. Loose or splattered underlayment shall be removed by scraping and chipping. The C120 and high early cement fill shall be applied as recommended by the manufacturer.

APPLICATION: Field: Filler shall dry a minimum of 5 hours at 70 degrees F prior to application of Sewer Shield 150.

Coating shall be applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Drying time between coats shall be as recommended by coating manufacturer.

SYSTEM THICKNESS: 125 mils dry film

COATINGS: Coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

2. Alternative 2

Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified.

COATING SYSTEM

IDENTIFICATION: Sauereisen SewerGard No. 210 Trowelable

SURFACE: Concrete/Masonry

SURFACE PREPARATION: Abrasive Blasting or Hydroblasting

CONCRETE: Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, laitance oils, grease, dust, chemical contaminants and any previously applied coatings shall be removed from surfaces by abrasive blasting or hydroblasting, and voids and cracks shall be repaired as specified in these Specifications and as indicated by the underlayment paragraph. After blasting concrete should be detergent-washed to remove all oil, grease and other contaminants. All active hydrostatic leaks must be stopped by use of an approved Sauereisen water stop, waterproofing or urethane grout as recommended by the manufacturer.

UNDERLAYMENT: Sauereisen No. F-120 Trowelable shall be used to fill holes and any other defects. Loose or splattered underlayment shall be removed by scraping and chipping. Sauereisen No. F-120 Trowelable shall be applied as recommended by the manufacturer.

APPLICATION: Field: Underlayment shall dry a minimum of 5 hours at 70 degrees F prior to the application of SewerGard No. 210 Sprayable. Underlayment must be cured by means of for spray, wet burlap or appropriate Sauereisen curing compound. The Contractor shall follow coating manufacturer's requirements for bonding the coating systems to the installed sewer liner. Coating shall be applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations. Only one coat should be applied to obtain the system thickness. The Contractor shall follow coating manufacturer's requirements for bonding the coating system to the installed liner.

SYSTEM THICKNESS: 125 mils dry film

COATINGS: Coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.50

F. SPARK TEST

All coated surfaces shall be spark tested for holes. The spark tester used shall provide 14,000 volts. If pinholes are found, the Contractor shall repair the coating as recommended by the manufacturer and retest. All testing and repair work shall be at the Contractor's expense.

G. DEFECT REPAIR

1. All surface defects including tie holds, minor honeycombing or otherwise defective concrete, shall be repaired. All voids, holes, rough or irregular concrete shall be filled.
2. The Contractor shall use the repair and fill material recommended by the coating manufacturer to repair or fill all defects. Areas to be patched shall be cleaned. Minor honeycombed or otherwise defective areas shall be cut out to solid concrete to a depth of at least one inch. The edges of the cut shall be perpendicular to the surface of the concrete. Patches on exposed surfaces shall be finished to match the adjoining surfaces after they have set. Finishes shall be equal in workmanship, texture and general appearance to that of the adjacent concrete. Concrete with honeycombing which exposes the reinforcing steel or with defects, which affect the structural strength, shall be corrected.

H. BONDED WARRANTY

The coating applicator shall supply a two-year bond, payable to the City of Prescott (City) for the coating that is approved by City. The two-year bond shall cover both the material costs and the labor costs associated with installing the approved coating. The bond shall also be unconditional in nature covering any type of failure in the coating and agreeing to repair or replace it at no cost to City at any point during this two-year period. The coating applicator shall also supply a warranty from the coating manufacturer addressed to the bonding company and City. The warranty shall state, at a minimum, that the coating is applied in accordance with the manufacturer's instruction and that the coating will not fail for a period of two years. The definition of coating failure is that blistering, cracking, embrittlement or softening of the coating is starting to occur.

I. TESTING OF SANITARY SEWER MANHOLES

1. A minimum of one hundred percent of all manholes to be installed are to be tested for exfiltration in accordance with Arizona Department of Environmental Quality Bulletin No. 11, Chapter IV, Section B or by vacuum testing resulting in times greater than testing criteria listed below for a one-inch drop (from ten-inches to nine-inches) of mercury in negative pressure and tested in accordance with Arizona Administrative Code, Title 18, Chapter 9, Part E301(D)(3)(f).

Manhole Depth	Minimum Test Duration Time in Seconds	
	48" Dia. Manhole	60" Dia. Manhole
10 ft. or less	60	75

2. Testing of sanitary sewer manholes is considered incidental to the price bid for manhole installation and additional payment shall be made.
3. Manhole exfiltration tests shall be completed on one-hundred percent (100%) of all manholes. Vacuum testing in accordance with Y.A.G. Standard Specifications may be used in lieu of exfiltration testing.
4. Testing is considered incidental to the price bid for sewer main installation and no additional payment shall be made for this item.
5. Testing of sanitary sewer manholes is considered incidental to the price for manhole installation and no additional payment shall be made.

J. MEASUREMENT AND PAYMENT

Payment for manhole coating shall be at the unit price listed in the bid sheet for the project. The unit price

shall include by-pass pumping and all materials necessary for internal coating of manholes specified on the plan sheets. Table A is a list of the manholes within the sanitary system and existing characteristics.

Pay Item: 626-1 Coat Manhole

Table A - Manhole Coating Quantities

PLAN SHEET	MH ID	MANHOLE DIAMETER (ft)	MANHOLE DEPTH (ft)	INTERNAL COATING (sf)	ADDITIONAL STRUCTURE WORK

630-3 GATE VALVES

- A. Valves shall be resilient wedge gate valves, Waterous 500 series, Clow, Mueller, or equal, suitable for use in line and in wet tapping water main in conjunction with tapping sleeves. Gate valves shall be mechanical joint except where flange joints are specifically detailed in project plans or where required for tapping sleeves and hydrant installation.
- B. Thrust restraint shall be provided on all valves in accordance with COP Std. Dtl. 3-05P, all bends in accordance with MAG Std. Dtl. 303-1 and 303-2. No separate payment will be made for thrust blocking and the cost shall be included in the water main unit price.
- C. Valve boxes shall be in accordance with COP Std. Dtl. 3-15P.
- D. Debris caps shall be installed on all valves within project limits according to MAG Std. Dtl. 392 and shall be color-coded according to YAG Std. Dtl. 3-15P. Debris caps shall be SW Services DC600 or approved equal.
- E. The Contractor shall notify customers of scheduled water service disruption a minimum of 24 hours in advance of construction. Customers shall not be without water service nor shall the water main line be out of operation for a total time period greater than four (4) hours, inclusive of contract time period from issuance of Notice to Proceed to Final Acceptance by the Engineer.
- F. Payment for valves, box and cover shall be at the unit bid price shown in the bidding schedule, except valves on tapping sleeves and hydrant installations shall be included in the appropriate bid item in the bidding schedule.
- G. Retrofit Debris Caps on Valves: Debris caps shall be installed on all valves within project limits according to MAG Std. Dtl. 392 and shall be color-coded according to YAG Std. Dtl. 3-15P. Debris caps shall be SW Services DC600 or approved equal. Payment shall be per each installed complete and in place.

Pay Item: 630-3a 6" Gate Valve, Box, & Cover

Pay Item: 630-3b 8" Gate Valve, Box, & Cover

630-4 TAPPING SLEEVES AND VALVES

- A. The City of Prescott Utility Department shall be notified 48 hours in advance to schedule water main tap. The Contractor shall be responsible for payment to the City Utility Department for the actual cost of the required labor, equipment, and materials for City Water Department to perform water main tap work. The Contractor shall add the cost of this work to the unit price bid in the bidding schedule for tapping, sleeve, valve, box and cover. Tapping sleeves shall be in accordance with COP Std. Dtl. 3-05P and MAG Section 630.4.

- B. Valves for tapping sleeves shall be resilient wedge gate valves as specified under Valves in these special provisions.
- C. Debris caps shall be installed on all valves within project limits according to MAG Std. Dtl. 392 and shall be color-coded according to YAG Std. Dtl. 3-15P. Debris caps shall be SW Services DC600 or approved equal.
- D. Payment for tapping sleeves shall be at the unit price bid in the bidding schedule and include the tapping sleeve, valve, box and cover, and all appurtenant fittings for complete assembly.

Pay Item: 630-4 6" Tapping Sleeve, Valve, Box, and Cover

630-6A AIR/VACUUM RELEASE VALVES

- A. Air/vacuum release valves shall be 1" in accordance with COP Std. Dtl. 3-17P as modified per project drawings.
- B. Payment for air/vacuum release valve installation shall be at the unit price bid in the bidding schedule and shall include all materials and appurtenant fittings at noted for a complete installation.

Pay Item: 630-6a Air/Vacuum Release Valve Assembly

630-6B BLOW OFF INSTALLATION

- A. Blow off installation shall be in accordance with COP Std. Dtl. 3-18P. Contractor shall be required to provide Mega-Lug restraint for all joints for a distance specified per MAG Section 303.
- B. Payment for blow off installation shall be at the unit price bid in the bidding schedule and shall include all materials and appurtenant fittings as noted for complete installation. No extra payment shall be made for Mega-Lug restraint.

Pay Item: 630-6b Blow-Off Assembly

710 ASPHALT CONCRETE

SECTION 710-2.1 Asphalt Binder: shall be deleted as replaced as follows:

- a. The asphalt binder shall be a Performance Grade (PG) PG 64-22 Asphalt conforming to the requirements of AASHTO M 320-09 Performance-Graded Asphalt Binder. The binder grade shall be as specified in the contract documents or as directed by the Engineer.
- b. The Public Works Director may review a request by the Contractor to change from a PG 64-22 binder grade to a PG 64-16 grade. The owner may require the Contractor to provide supporting justification and/or data for changing the grade of binder from PG 64-22 to PG 64-16.

SECTION 710-3.2 Mix Design Criteria: add the following:

- a. The intent of this supplement is to use only 1/2 inch or 3/4 inch Marshall or Gyratory Mix Designs within the specification unless specifically called out in the project specifications.
- b. The asphalt mix design shall be for high traffic volume, unless otherwise specified.

SECTION 710-3.2.1 Marshall Mix Design: make the following change:

- a. In Table 710-3 change the Tensile Strength Ratio minimum percent requirement from 65 to 75. A tensile strength ratio of 75 percent may require more than one percent mineral admixture.

725 PORTLAND CEMENT CONCRETE

- A. All Portland cement concrete placed under this contract shall be Class A in accordance with YAG & MAG Specs Section 725, as designated on the Project drawings, and as modified herein.
- B. Subsection 725.6 shall be revised by adding: All portland cement concrete shall contain 5%, plus or minus 1%, entrained air of evenly dispersed air bubbles at the time of placement. The air-entraining agent shall contain no chlorides. The air-entraining agent shall be added to the batch in a portion of the mixing water. The solution shall be batched by means of a mechanical batcher capable of accurate measurement. Air entrainment in the concrete shall be tested in accordance with AASHTO T-152. Air entrainment shall be tested at time of sampling in accordance with ASTM C143 and C231 respectively. The cost of this testing shall be the responsibility of the Contractor.
- C. Subsection 725.10 shall be revised by adding: The slump of portland cement concrete shall be tested in accordance with the requirements of AASHTO T119, ASTM C143 and ASTM C231 respectively. Concrete that does not meet the specification requirements as to slump shall not be used, but shall be removed from the job at no cost to the City Engineer. Slump tests will be taken in the field by a representative of the Contractor's quality control firm. The cost of this testing shall be the responsibility of the Contractor.
- D. Concrete cylindrical specimens for compression tests will be taken in the field by a representative of the Contractor's quality control firm in accordance with AASHTO T141 and T-23. These samples will be tested for compressive strength in accordance to AASHTO T22. Concrete samples will be taken in accordance with YAG & MAG 725.10 except as noted hereinafter. One set of not less than four (4) cylinders per fifty (50) cubic yards of ½ days pour shall be prepared and retained to verify compressive strength of the mixture. One (1) cylinder shall be tested at seven (7) days and two (2) at twenty-eight (28) days. The fourth (4th) cylinder shall be retained for up to sixty (60) days. If the 28-day test does not meet the minimum strength requirement, cores shall be taken as provided herein and the cost of such will be the responsibility of the Contractor. Acceptance shall be based on minimum 28-day strength requirements. The cost of testing shall be the responsibility of the Contractor.
- E. ADVERSE WEATHER CONDITIONS. Placement of all portland cement concrete shall conform to the requirements of YAG & MAG Section 505.6.2. No separate payment shall be made for adverse weather concreting. The work shall be considered incidental and included in the unit price bid for construction or installation of the appropriate contract pay item.

**City of Prescott
12-inch Waterline Relocation
SR 89 White Spar Road
Project No. CIP 12-003
Yavapai County**

SPECIAL PROVISIONS

The following Special Provisions shall modify and supersede the various sections of the City of Prescott Technical Specifications as indicated.

The word “water main” and “waterline” shall be used interchangeably and will be understood to indicate the same.

105-7 COOPERATION BETWEEN CONTRACTORS

Maricopa Association of Governments (MAG) Standard Specification is modified to add:

The following utility companies have facilities within the project limits and will have utility adjustments and relocations before and during waterline construction:

Arizona Department of Transportation (ADOT)	Steve Mishler	602.712.8678	MMishler@azdot.gov
Arizona Public Service (APS)	Bobby Garza	928.776.3655	Baldemar.Garza@aps.com
Cable One	Johnny Cedillo	928.443.3348	johnny.cedillo@cableone.net
CenturyLink	David Lynch/Karen Porter	928.776.2559	David.Lynch@CenturyLink.com
City of Prescott	Joel Berman	928.777.1130	joel.berman@prescott-az.gov
Unisource Energy Services	Ellen Sides Jeff Brown	928.771.7225 928.499.2668	Esides@uesaz.com/ Jbrown@uesaz.com

It is anticipated that APS, Cable One, CenturyLink will complete their utility relocations prior to the start of waterline construction. However, the Contractor shall coordinate with the utility companies as necessary.

Unisource Energy Services (UES) – will require extensive coordination during the waterline construction. Coordination costs are considered incidental to contract.

Unisource Energy Services (UES) will be relocating approximately 3,250 feet of 4-inch covered steel gas main from Station 21+00 through Station 51+00. The gas pipe will run on the east side of SR 89 White Spar Road approximately under the proposed sidewalk. UES will maintain a minimum of 36-inches of cover from finish grade and maintain adequate separation from other utilities and drainage infrastructure.

UES Pipeline Contractor will remove existing gas line (approximately 1,000 feet) prior to construction of the new waterline, from approximately station 22+40 to 33+00, this portion of gas line is in conflict with

the new waterline horizontal alignment. The gas line is scheduled to be installed and in service prior to water construction. Unisource intends to have gas line removals complete by November 2012. However, coordination with Unisource Pipeline Contractor is required to ensure removals are completed prior to waterline construction.

Contractor shall start at Cooper Basin Road and work south to station 22+40 or start construction at Apache Drive at station 38+21 and work north to station 33+00.

ADOT Roadway & Drainage Improvements, White Spar Rd, Project No 89YV309 H7553 01C – will require coordination during the waterline construction. Coordination costs are considered incidental to contract. The ADOT roadway project is scheduled to be mobilizing in October 2012. It is anticipated that there will be overlap between the start of the ADOT roadway project and completion of waterline construction. Coordination and scheduling between the two contractors is required.

105-8 CONSTRUCTION STAKING

Section 105-8.H is modified to add:

2. Payment for Construction staking, measured as provided above, will be made at the contract lump sum price. Payment will be made in equal one-third portions. The first payment will be paid with Contractor's initial billing. The second payment will be made when the total payments to Contractor for the bid items, equals one-half of the total bid by Contractor. The remaining one-third will be paid as part of the final payment due to the Contractor. However, final payment will NOT be made unless the Contractor has received approval of as-builts by the Engineer.

Section 105-8 is modified to add:

1. The Geometric Sheet, Sheets 11 & 12 and Geometric Data Sheet, Sheet 13 and Survey Control Points, Sheet 14 are contractually binding and shall be the basis for the Contractor's horizontal and vertical control.

105-9 AS-BUILT PREPARATION AND COORDINATION

Section 105-9.A to F shall be replaced in its entirety with:

- A. As-built data gathering will be performed by the CONTRACTOR'S SURVEYOR. During the construction phase and prior to any backfilling or covering, the CONTRACTOR will survey the work for the purpose of as-built preparation. Surveying shall be performed and certified by a Registered Land Surveyor in good standing with the Arizona State Board of Technical Registration. The CONTRACTOR will supply all horizontal and vertical as-built data in (ASCII) format, including a northing, easting, elevation and description of all work completed under this contract (PROJECT CONTROL SHEETS). As-built data shall include, but not be limited to all items noted below.
 1. The alignment of the waterline including all horizontal and vertical bends. If the waterline continues in a straight alignment for more than 100 feet, the waterline will be surveyed every 100 feet.
 2. Valves, bends, blow offs, air release valves, tracer wire stations, water meters, and hydrant locations.

3. Water and sewer crossing – Contractor/Surveyor shall show vertical separation between pipes measured in the field.
- B. NOT USED
- C. The CONTRACTOR must provide access for the SURVEYOR to verify all as-built information prior to backfilling or covering. The CONTRACTOR shall not backfill or cover an item of work until verification has been completed by the SURVEYOR. If an item of work is determined by the ENGINEER or OWNER to be backfilled or covered prior to being recorded by the SURVEYOR, the CONTRACTOR at the direction of the ENGINEER shall uncover the item of work at no additional cost to the OWNER.
- D. The CONTRACTOR shall maintain a redlined copy of the project plans including changes made in construction of the project. The redline copy shall be updated on a weekly basis in preparation for the weekly as-built field meeting. **The CONTRACTOR shall provide the ENGINEER with a copy of the redline plans and as-built survey data upon completion of the project.** The redline copy will be sealed by a Registered Land Surveyor in good standing with the Arizona State Board of Technical Registration. All point files and applicable data shall be provided to ENGINEER.
- E. Weekly field meetings with the CONTRACTOR, ENGINEER and CITY shall occur to review As-Built information for conformance with the specifications shall include (ASCII) files weekly. The CONTRACTOR shall provide the ENGINEER with a schedule of work items to be constructed in the upcoming 30 day period, including approximate dates of installation prior to backfilling or covering. The CONTRACTOR field redlines will be reviewed for notation of changes in the work. Missing, erroneous or deficient data must be corrected by the CONTRACTOR at no additional cost to the OWNER.
- F. Measurement and Payment
 1. The quantity of “As-built Preparation and Coordination” measured for payment shall be the lump sum bid by the CONTRACTOR. The contract unit price per lump sum paid for “As-built Preparation and Coordination” shall be full compensation for all labor, materials, and equipment to perform the work as described in this section

Pay Item: 105-9 As-built Preparation and Coordination

107-1 Storm Water Pollution Prevention Plan (SWPPP)

Section 107-1 is modified to add:

Contractor shall comply with these additional requirements by ADOT and the ADOT Highway Encroachment Permit for this project.

The contractor shall give attention to the impact of the construction operations upon natural landscape, and shall take care to maintain natural surroundings undamaged at no additional cost to the Department. The contractor shall minimize soil disturbance by implementing Low Impact Development (LID) methods to control erosion as close as possible to the source of disturbance.

The contractor shall use all means necessary to significantly reduce impacts by staging/stockpiling and carrying out project activities in such a way as to minimize the potential for erosion and discharge of pollutants from the project site.

When needed, the contractor shall apply perimeter control Best Management Practices (BMPs) (wattles and/or silt fence) on the down-slope perimeter of construction disturbed soil areas, as well as on-site

staging, and stockpiling. Perimeter control BMPs shall be installed in accordance with the manufacturer's instructions. The contractor shall adjust the field layout of erosion control and sediment prevention elements as approved by the City/Engineer. The contractor shall also observe ADOT traffic safety standards when installing perimeter control BMPs in the traffic clear zone/recovery area.

During construction the contractor shall minimize vehicular travel or equipment operation on the unpaved soil areas to maximum extent practicable (MEP). The contractor shall develop and implement procedures to avoid earth disturbance, soil compaction, and damage to vegetative cover from vehicular travel or equipment operation during inclement weather or unsuitable soil conditions. The contractor shall stabilize all construction disturbed soil areas at no additional cost to the Department.

No grout, concrete or wash water shall be disposed within the project limits or its vicinity. The contractor shall install concrete washout BMP as needed and under the direction of the City/Engineer. This BMP shall include proper disposal of all excess grout, concrete, and wash water.

The contractor shall not use unpaved areas within the project limits for staging or stockpiling without first installing erosion control and sediment prevention BMPs and as directed and approved by the City/Engineer. Staging and stockpiling on the unpaved areas shall be avoided to MEP.

Erosion/Sediment Control Beyond The Project Limits:

The contractor shall apply erosion/sediment and water quality protection BMPs as required by the commercial material source owner and environmental permit standard at no additional cost to the Department.

The contractor shall apply erosion/sediment and water quality protection BMPs for off-project-site staging, material storage, maintenance yard, disposal spots, and stockpiling areas as required by the facility owner and environmental permit standard at no additional cost to the Department.

The contractor shall only use off-project-site staging, material storage, maintenance yard, disposal spots, and stockpiling areas covered with existing environmental permit for operation.

336-1 MATCHING AND SURFACING REPLACEMENT

Section 336-1.A to B shall be deleted and replaced in its entirety with:

- A. AC trench pavement replacement required for waterline installation shall be a minimum three inch (3") thickness, on eight inches (8") of ABC compacted to 95% of laboratory density in accordance with Detail 1, Sheet D01, hot mix temporary asphaltic concrete pavement, and COP Dtl. 2-01P, MAG Sections 601.6 and 336, except as modified herein or on the plans or special provisions:
 - 1. AC pavement replacement shall be required for all trench cuts as indicated on the plans. Installation of Unique Paving Material (UPM) or other high performance cold mix will not be permitted for permanent installation. The Contractor shall be required to maintain pavement trench cuts to the satisfaction of the City/Engineer. Temporary pavement replacement with UPM in accordance per COP dtl. 2-01P will be required in right-of-way until temporary hot mix trench pavement replacement (in accordance with Detail 1, Sheet D01) can be performed.

2. The Contractor shall coordinate with City/Engineer a minimum of two (2) working days in advance to provide information to asphalt supplier so City/Engineer may reserve the services of a licensed independent testing laboratory to provide laboratory density in accordance with requirements of ASTM D-1559, 75 blow Marshall density.
 3. Temporary striping as required by ADOT shall be incidental to the cost of pavement replacement (Shop Drawings submittal required).
- B. Measurement And Payment
1. Asphaltic concrete pavement restoration will be based on trench widths defined in MAG Section 601.2 and YAG Table 601-1. Measurement will be based on linear feet of trench times the neatline width based on Detail 1, Sheet D01, Temporary Pavement, and COP Dtl. 2-01P. Additional areas such as for manhole or valve cutouts will be measured separately. Payment will be by square yard of trench pavement replacement at the unit bid price for AC trench pavement replacement in the bidding schedule and shall include all saw cutting, removal and disposal of existing pavement, plus all labor and material for complete installation of AC replacement. No extra payment will be made for temporary pavement required for maintenance of utility trench cuts or for trench widths wider than called out by YAG Specifications. No extra payment will be made for width in excess of COP Dtl. 2-01P unless such measurement has been agreed upon in writing prior to sawcutting.

Pay Item: 336-1a Temporary Pavement & Trench Detail, Type A, Detail 1

400-1 TRAFFIC CONTROL

Section 400-1.A to H shall be deleted and replaced in its entirety with:

- A. Traffic control during construction shall be performed in accordance with MAG Section 401 and the Manual on Uniform Traffic Control Devices for Streets and Highways, US Department of Transportation Federal Highway Administration, latest edition with the latest revisions, Arizona Department of Transportation (ADOT) Traffic Control Manual, the project plans, and as stated herein. **Traffic Control plans shall be submitted to ADOT and the City of Prescott for approval. In addition, the Contractor shall adhere to ADOT Highway Encroachment Permit for this project.**
 - a. Contractor shall maintain traffic as indicated ADOT Highway Encroachment Permit.
 - b. Temporary pavement required for traffic control shall be included in Contractor's cost for traffic control.
 - c. Any deviation from the approved traffic control plan will require approval from both ADOT and the City of Prescott.
- B. Prior to beginning the project, Contractor shall submit for approval a Traffic Control Plan for the entire project. Contractor shall obtain approval from ADOT and the Director of Public Works for the Traffic Control Plan and Schedule prior to any construction. Contractor shall submit the Traffic Control Plan to ADOT and Director of Public Works at or before the project preconstruction conference. The Contractor shall adhere to ADOT Highway Encroachment Permit. The traffic control plan shall include the following stipulations:
 - a. White Spar Road is an ADOT roadway (State Route 89), and Contractor shall maintain one (1) north bound and one (1) south bound travel lane during construction, closure of SR 89 is not allowed.

- b. No lane closures and lane restrictions will be allowed during weekends, Holidays, Holiday Weekends, and Special Events. The Contractor shall coordinate with ADOT and the City regarding holiday weeks and special events.
 - c. No night time construction work will be allowed. Night time hours begin at 6 PM and continue until 6 AM.
 - d. Access to driveways shall be provided at all times. One lane access (to allow for one-half driveway construction) shall be provided at all times. Notification to property owner/manager shall be provided 72 hours in advance of driveway construction.
 - e. Access to sideroads shall be provided during construction. As a minimum, one lane/direction shall be provided at all times. When this is not practical, public notice shall be provided 1 week in advance of traffic control changes and approved by the Department. Under no circumstances shall consecutive sideroads be closed to traffic at the same time.
- C. Written notice shall be given to ADOT and the Director of Public Works or their representative on the job 48 hours prior to any changes in detours or routes of access. The notice shall give specific details with maps showing the access to all residences and businesses affected by the project.
 - D. The Police and Fire Departments shall be continually updated on access routes along and through the site during construction.
 - E. All traffic control devices required for the project shall be the responsibility of Contractor.
 - F. When required to cross, obstruct, or close a street, traffic way, or sidewalk for a short duration that is approved by ADOT and the Director of Public Works, the Contractor shall provide and maintain suitable bridges, detours or other approved temporary means for the accommodation of vehicular and pedestrian traffic.
 - G. When traffic conditions at the construction site warrant the use of certified police personnel to direct traffic, arrangements shall be made with the City of Prescott Police Department, Yavapai County, or Department of Public Safety for off-duty officers.
 - H. Payment for traffic control shall be at the applicable unit price bid in the Contract Documents.
 - 1. Preparation of traffic control plan shall be inclusive of all submittals, reviews and if needed, resubmittals. Included in Contractor's cost are all traffic control barricades, temporary signs and devices, message boards, flaggers, pilot car and driver and full conformance to the approved traffic control plan from both ADOT and the City of Prescott. Incidental traffic related items shall include all other pertinent tools, equipment, devices, labor and or work required to provide safe and effective traffic control in accordance with the approved traffic control plan.
 - 2. Off-duty officers shall be per hour for actual time directing traffic. It does not include time spent setting up or taking down devices.

Pay Item: 400-1a Traffic Control Plan & Devices
Pay Item: 400-1b Off-Duty Police Officers

601-2 ROCK EXCAVATION FOR UTILITY AND/OR DRAINAGE CONSTRUCTION

Modified to delete Section 601-2.B. Blasting

Blasting is NOT an approved method of rock excavation for this project. Contractor shall submit and receive approval of method prior to rock excavation.

A soils report is available for this project from the ADOT Tracs No 089 YV 309 H7553 01C project. The soil boring logs contained with the report represents the conditions encountered on the date of drilling at the particular locations. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of the boring location. The soils report and soil boring logs do not constitute a part of this contract and are included for the Contractor's convenience only. They are not intended to imply that the character of the material is the same as that shown in the logs at any point other than where the boring was made. The Contractor shall satisfy themselves regarding the character and amount of rock, gravel, clay and water to be encountered in the work to be performed.

610-1 WATER MAIN PIPING

Section 610-1.P is modified to add:

All waterline fittings specified on project plans and necessary for construction, shall be included in the Contractor's unit price for waterline construction. **CLSM, shading and pipe bedding required as specified in the temporary pavement and trench details shall be included in the unit price for waterline construction as indicated in the bid schedule.** Transition fittings, couplings, special restrained fitting, joint restraint, tee, bends, and other fittings necessary to connect into the existing waterlines shall be included in the Contractor's unit price for waterline construction. In addition, connection to the existing 2-inch waterlines, which includes copper pipe and fittings, bronze service saddle, corp stop valve will be included in the waterline unit bid price.

Payment items from City of Prescott Technical Specifications shall be deleted and replaced with the following payment items:

Pay Item: 610-1a	4-inch Waterline (DIP CL 350)
Pay Item: 610-1b	6-inch Waterline (DIP CL 350)
Pay Item: 610-1c	8-inch Waterline (DIP CL 350)
Pay Item: 610-1d	12-inch Waterline (DIP CL 350)

610-2 TEMPORARY WATER MAIN PIPING

Section 610 of the City of Prescott Standard Specifications is modified to add the following:

- A. This section describes the requirements and procedures for temporary waterline systems and appurtenances. This section includes 6-inch or greater HDPE solid wall (DR ratio, shall be based on 150 psi working pressure), AWWA C906 temporary pipeline, valves, and appurtenances that enable the water services to remain in service during the new waterline construction. All existing water services shall be moved to the temporary HDPE line so that customer service interruptions are avoided.
- B. A 6-inch waterline (HDPE) shall be installed above grade as necessary to facilitate the construction of new waterline. The Contractor shall submit schematic diagram of proposed temporary waterline to Engineer and City for approval (**Shop drawing required**).
- C. Pressure testing for the temporary waterlines shall be per the Section 610-15 of the City of Prescott Technical Specifications.
- D. All temporary piping, fittings, and service connections shall be furnished, installed, and maintained by the CONTRACTOR for the duration of construction, and the CONTRACTOR shall make connections to a water source designated by the ENGINEER and shown on plans.

- E. All pipe, valves, fittings, hose and connections furnished by the CONTRACTOR shall be of good quality, clean, meet NSF 61 requirements and suitable for conveying potable water in the opinion of the ENGINEER.
- F. The temporary pipe shall be installed in such a manner that it will not present a hazard to traffic and will not interfere with access to homes and driveways along its route. Cover plates shall be installed as necessary for pedestrian and vehicle traffic.
- G. Valves shall be installed at the beginning and the end of the temporary pipeline, and at 200' intervals or as directed by the ENGINEER. The use of pressure reducing valves (PRV) may be required as directed by the ENGINEER for individual service connections.
- H. Concrete or other equivalent thrust blocking (restrained joints) may be required where HDPE line is located, as required.
- I. The CONTRACTOR shall be responsible for **disinfecting all pipe**, connections, flushing, and assisting the City in taking water samples for bacteriological testing in accordance with Section 610-15 of the City of Prescott Technical Specifications. Previously used HDPE pipe that has been used in sanitary sewer or sewer force main application is specifically NOT allowed.
- J. Following disinfection and acceptance of the temporary pipe as a potable water system, the CONTRACTOR shall maintain continuous service through the temporary piping to all customers normally served both directly and indirectly by the pipeline. Once the temporary pipe has been accepted, the CONTRACTOR shall shut down and remove existing pipeline in conflict with the new pipeline.
- K. Upon completion of the work, the CONTRACTOR shall remove the temporary piping and appurtenances and shall restore all ground surfaces and water service connections to the satisfaction of the ENGINEER.
- L. If repairs to temporary piping are necessary, CONTRACTOR shall make such repairs in a timely manner as directed by the OWNER. If progress in making repairs is inadequate, or in the event of emergency, the OWNER may take immediate corrective measures, which may include the performance of repair work by City forces or another contractor. All costs for corrective measures shall be borne by the CONTRACTOR.
- M. Payment will be made at the lump sum bid price. Such payment shall be compensation in full for furnishing and installing the pipe, fittings, valves, specials, adapters, etc., complete in place, standard details, and/or Temporary Waterline Plan approved submittal, and shall include all costs of excavation, removal of obstructions, shoring and bracing, bedding, backfilling, compaction, maintenance of traffic, testing, disinfecting, connections to existing lines or works, disposal of existing pipelines and materials. Asbestos cement pipe, lead joints, and other potential hazardous materials shall be disposed of in accordance with applicable federal, state, and local regulations.

Pay Item: 610-2 Temporary Waterlines, Valves, and Appurtenances

610-11a New Water Service And Private Water Service Line Reconnection

Section 610-11a.K shall be deleted and replaced in its entirety with:

- K. Payment for new water service and reconnection shall be at the appropriate unit bid price shown in the bidding schedule and shall include service saddle, corporation stops, piping, fittings, meter yoke, boxes, customer shutoff valve, pressure regulator, and all components required for reduced pressure zone assembly and enclosure (Hot Box), concrete pad, plus all appurtenant fittings for complete assembly for connection to existing water customers service line. The Contractor shall be responsible for testing and certification of all components.

Pay Item: 610-11a 1-inch Copper Water Service, COP Std Det 3-16P & 3-21P

**Pay Item: 610-11b 2-inch Copper Water Service, COP Std Det 3-16AP
& 3-21P**

610-40 WATER MAIN REMOVAL

Section 610 of the City of Prescott Standard Specifications is modified to add the following:

- A. Existing water main and appurtenances as shown on the plans shall be removed in its entirety. Removed materials not identified to be salvaged shall become the property of the Contractor to dispose of. Removed materials identified to be salvaged shall be delivered to the City of Prescott Maintenance Yard (1481 Sundog Ranch Rd, Prescott, Arizona), and placed as directed by the City/Engineer. Salvaged materials shall not be used in new main installation.
- B. Removal and payment of water mains, valves, and fire hydrants assemblies, and water services shall include excavation, backfilling and compaction in accordance with the pavement and trench details shown on the project plans. Water main removals shall include cut and plugging of existing water mains, concrete plugs per plans, fittings, blind flanges and all work necessary to disconnect existing water system from new water main construction. Asphalt pavement and ABC thickness shall be as a minimum per the temporary pavement detail shown on the construction plans.

Pay Item: 610-40a Remove Existing Waterline, Valves, Fire Hydrants, Water Services and Appurtenances

630-3 GATE VALVES

Section 630-3.C shall be deleted and replaced in its entirety with:

- C. Valve boxes shall be in accordance with COP Std. Dtl. 3-15P. Except a concrete collar shall not be installed in areas of temporary asphalt pavement. These valve boxes will be adjusted by the ADOT roadway Contractor.

Payment items from City of Prescott Technical Specifications shall be deleted and replaced with the following payment items:

Pay Item: 630-3a 4-inch Gate Valve, Box, & Cover

Pay Item: 630-3b 8-inch Gate Valve, Box, & Cover

Pay Item: 630-3c 12-inch Gate Valve, Box, & Cover

630-4 TAPPING SLEEVES AND VALVES

Payment items from City of Prescott Technical Specifications shall be deleted and replaced with the following payment items:

Pay Item: 630-4 8-inch Tapping Sleeve, Valve, Box, and Cover