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*Supplementary General Conditions
and
Special Provisions*

*McDowell Road Basin and Storm
Drain Design*



Prepared for:

**Flood Control District of Maricopa County
(FCD No. 2006C010)**

KHA Project No. 091131012
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and Associates, Inc.





SUPPLEMENTARY GENERAL CONDITIONS

CONTRACT FCD 2006C010

McDOWELL ROAD BASIN AND STORMDRAIN PROJECT

PCN 420.03.31

Prepared by:

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**Kimley-Horn
and Associates, Inc.**



SUPPLEMENTARY GENERAL CONDITIONS

SPECIFICATIONS

Except as otherwise amended in these Supplementary General Conditions and the Construction Special Provisions, this project shall be constructed in accordance with all applicable Maricopa Association of Governments (MAG) Uniform Standard Specifications and Uniform Standard Details, dated 1998, and including revisions through 2006; Maricopa County Department of Transportation (MCDOT) English Supplement to the MAG Uniform Standard Specifications and Details for Public Works Construction, dated June 2004; the latest version of the City of Mesa Engineering and Design Standards (2005); City of Mesa Amendment to the Uniform Standard Details (2006); ADOT Standard Structure Drawings, dated June 1992; ADOT Construction Standard Drawings, dated April 2000; Standard Specifications for Road and Bridge Construction, 2000; Manual On Uniform Traffic Control Devices For Streets And Highways, 2003 Edition; and the City of Phoenix Traffic Barricade Manual, 1998. All references herein to MAG refer to the Uniform Standard Specifications for Public Works Construction by the Maricopa Association of Governments 1998 edition, including all revisions through 2006.

PRECEDENCE OF CONSTRUCTION DOCUMENTS

This Contract and its designated documents, whether taken separately or together, are to be interpreted according to full intent, meaning, and spirit, and shall be deemed to mutually explain each other and to be descriptive of any materials to be furnished and the work to be performed under this Contract. In cases of any difference or discrepancy between the Construction Documents, the order of precedence shall be a) Addendum to the Invitation for Bids, b) the Contract Agreement, c) Supplementary General Conditions, d) Construction Special Provisions, e) Project Plans, f) MAG Uniform Standard Specifications and Uniform Standard Details, g) MCDOT English Supplement to the MAG Uniform Standard Specifications and Details for Public Works Construction, h) ADOT Standard Specifications for Road and Bridge Construction and Standard Details. In specific cases where the City of Mesa Standards are specified in the plans, they shall supersede the MAG Uniform Standard Specifications.

Subsection 101.2 – Definitions and Terms:

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

its authorized representative, the Division Manager of Planning and Project Management Division.

5. Change the definition for the phrase "Notice of Award" to a letter from the Flood Control District of Maricopa County advising Contractor that it is the successful bidder and the Flood Control District of Maricopa County has accepted its proposal.
6. Change the definition of the term "Owner" to the Flood Control District of Maricopa County, acting through its legally constituted officials, officers, or employees.
7. Whenever the word "District" is used in these Specifications, it shall mean the Flood Control District of Maricopa County.
8. Add the definition for the Maricopa County Minority and Women Owned Small Business Enterprise Program as being the Program adopted by the Board of Supervisors effective January 1, 1992.
9. The term "Landscape Architect" as used in these Special Provisions shall be an individual designated by the Engineer to review the landscape elements of the work.

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

Add the following:

The soil borings logs and geotechnical report and addendum, are attached as **Appendix A** to the Special Provisions. Existing moisture conditions shall be no basis for claim for additional monies or time extensions. The Contractor shall manipulate the existing soil as required to achieve stable soil conditions and the required compaction densities, as well as safe and stable side slopes during construction activities. The soil boring logs show hard caliche soils; the Contractor shall analyze the soil borings and evaluate the existing soil conditions.

Subsection 102.5 – Preparation of Bid:

Add the following:

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

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

The bidder's Arizona State Contractor's License number and the classification under which it proposes to perform the work shall be shown on the proposal. An "A" **General Engineering** License is required for this contract. The two lowest bidders may be required to provide

certification of prior satisfactory completion for similar construction and to furnish a copy of their license and the renewal certificate.

Allowances as shown on the Bid Schedule shall cover the cost to the Contractor, and if applicable, delivered to the site, unloaded and handled on the site, labor, and installation costs. The Contractor's taxes, bonds, insurance, overhead, profit, and other expenses contemplated for the original Allowance amount shall be included in the Base Bid, and not in the Allowance. Whenever the costs are more than or less than the Allowance, the Contract Sum shall be adjusted accordingly by Change Order, the amount of which will recognize proportionate changes, if any, in handling costs on the site, labor, installation costs, taxes, bonds, insurance, overhead, profit, and other expenses. Contractor's monthly Application for Payment shall include supporting documentation of Allowance funds.

Subsection 102.6 – Subcontractors' List:

Add the following:

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

Subsection 102.7 – Irregular Proposals:

Add the following:

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

Subsection 103.6 – Contractor's Insurance:

Add the following:

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

Subsection 103.6.1(D) – Contractor's Insurance:

Add the following:

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

Subsection 103.6.2 – Indemnification of the Contracting Agency against Liability:

Add the following:

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

Subsection 104.1 – Work to be Done:

Add the following to 104.1.1:

The subject project is located in and adjacent to the McDowell Road between Sossaman Road to Hawes Road. A portion of the project is located within City of Mesa jurisdiction limits and a portion is located within MCDOT (Maricopa County) jurisdictional limits. Principal construction features for the project include: clearing and grubbing; removal of existing headwalls; channel excavation; fine grading; construction of a new large diameter rubber gasket reinforced concrete storm drain; special concrete hydraulic splitter structure; concrete junction structures; construction of new box culverts; new cross culverts; waterline vertical realignments; construction of a new sanitary sewer; construction of a new detention basin; landscape enhancement; landscape irrigation; private driveway replacements; pavement replacement; and placement of fill.

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

The Owner and Contractor shall have Milestone meetings at times agreed upon during the pre-construction meeting. These meetings shall be held prior to and all major work elements. The Engineer's approval shall be obtained before commencing work.

All construction activities may occur in areas that are subject to flooding. Flows can occur at any time. The Contractor will remove all of their equipment from the construction area whenever flows could occur that would inundate the equipment or equipment storage areas. Protection from flooding of Contractor's equipment and construction items to be furnished by the Contractor is the Contractor's responsibilities.

The Contractor is required to remove and dispose of excavated materials.

Inspection and Testing:

The Contractor will be responsible for all quality control for the project and will provide the Engineer with copies of the results of all tests performed by the Contractor Quality Control. The Owner and Engineer will provide quality assurance for the project.

Quality control refers to those actions taken by the Contractor, and those parties charged with the procurement and installation of manufactured materials, and the placement and compaction of the soil materials, which provide a means to determine and sometimes quantify the characteristics of the product. The results of a quality control program are compared to the

Special Provisions of other contractual or regulatory requirements. During each aspect of the handling of these materials, quality control is provided by the manufacturer, fabricator, or installer of the materials, or the supplier and earthwork contractor for the soils, to ensure that the materials and workmanship conform to the plans and Special Provisions. The Contractor and the Contractor's suppliers and manufacturers retain quality control responsibility.

Quality assurance is a planned and systematic pattern of all means and actions intended to provide adequate confidence that the materials and procedures conform to the plans and Special Provisions, and any applicable regulatory requirements. The Owner, or their designated representative, provides quality assurance.

Subsection 104.1.2 – Maintenance of Traffic

Add the following:

All traffic and/or control devices on this project shall be provided, maintained and/or controlled as specified in the Uniform Traffic Control Manual, Millennium Edition, and the City of Phoenix Traffic Barricade Manual, 1998 and the City of Mesa revisions to the City of Phoenix Manual.

In all cases during construction, access will be provided for emergency vehicles, trash collection, and school buses as required. The Contractor will notify schools, trash collection, emergency services, etc. at least thirty (30) calendar days in advance of implementing the traffic control plans that may affect their activities. Full closure of any public road is not permitted during the construction of this project without prior approval of the City of Mesa and/or MCDOT. The Contractor shall refer to the Special Provisions Section 401.

Subsection 104.2.3 – Changes:

Add the following:

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

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

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

- (A) The date, nature, and circumstances of the conduct regarded as a change;
- (B) The particular elements of the contract performance for which the Contractor is seeking an equitable adjustment under this section, including any price or schedule adjustments; and

- (C) The Contractor's estimate of the time by which the Owner must respond to the Contractor's notice to minimize cost, delay, or disruption of performance.

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

Subsection 104.2.4 – Cost Estimates or Price Proposals:

Add the following:

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

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

Lump sum cost estimates or price proposals shall be rejected and returned to the Contractor for itemization as described above. Failure of the Contractor to submit properly itemized cost estimates or price proposals shall not constitute an excusable delay.

Subsection 104.2.6 – Value Engineering:

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

(B) **Definitions.**

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

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

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

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

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

- (1) A description of the difference between the existing contract requirement and that proposed, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, and the effects of the change on the end item's performance. All design changes must be submitted on twenty-four (24) inch by thirty-six (36) inch standard drawing sheets along with supporting calculations. An Engineer registered in the State of Arizona shall seal each drawing sheet and at least the content sheet of the calculations.
- (2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revision.
- (3) A separate, detailed cost estimate for the affected portions of the existing contract requirements and the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amount attributable to subcontracts under paragraph (G) below.
- (4) A description and estimate of costs the Owner may incur implementing the VECP, such as test and evaluation and operating and support costs. This is an estimate based only on the Contractor's understanding of additional efforts to be expended by the Owner, should the VECP be accepted. The final cost will be determined by the Owner.
- (5) A prediction of any effects the proposed change would have on collateral costs to the agency, i.e., costs of operation or maintenance.

- (6) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.
 - (7) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved and previous Owner actions, if known.
- (D) **Submission.** The Contractor shall submit VECPs to the Owner's Engineer. All submissions (plans, specifications, etc.) that involve an engineering change to the original construction plans and specifications shall be sealed by an Engineer registered in the State of Arizona.
- (E) **Owner Action.**
- (1) The Owner shall notify the Contractor of the status of the VECP within fifteen (15) calendar days after receipt from the Contractor. If additional time is required, the Owner shall notify the Contractor within the fifteen (15) day period and provide the reason for the delay and the expected date of the decision. The Owner will process VECPs expeditiously; however, it shall not be liable for any delay in acting upon a VECP.
 - (2) If the VECP is not accepted, the Owner shall notify the Contractor in writing, explaining the reasons for rejection.
 - (3) The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Owner.
 - (4) Any VECP may be accepted, in whole or in part, by the Owner's award of a change order to this contract, citing this subsection. The Owner may accept the VECP, even though an agreement on price reduction has not been reached, by issuing the Contractor a notice to proceed with the change. Until a notice to proceed is issued or a change order incorporates a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The Owner's decision to accept or reject all or any part of any VECP shall be final and not subject to disputes or otherwise subject to litigation.
- (F) **Cost Sharing.**
- (1) **Rates.** The Owner's share of savings is determined by subtracting the Owner's costs from instant contract savings and multiplying the result by fifty (50) percent. The Contractor's share shall be the remaining amount.
 - (2) **Payment.** Payment of any share due the Contractor for use of a VECP on this contract shall be authorized by a change order to this contract to accept the VECP, reduce the contract price or estimated cost by the amount of instant contract savings, and provide the Contractor's share of savings by adding the amount calculated to the contract price.
- (G) **Subcontracts.** The Contractor may include an appropriate value engineering clause in any subcontract. In computing any adjustment in this contract's price under paragraph (F) above, the Contractor's allowable development and implementation costs shall include any

subcontractor's allowable development and implementation costs clearly resulting from a VECP accepted by the Owner under this contract, but shall exclude any value engineering incentive payments; provided that these payments shall not reduce the Owner's share of the savings resulting from the VECP.

Subsection 105.1 – Authority of Engineer:

Add the following:

105.1.1 – Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to subsections 105.3 and 106.4. The Engineer will be the sole judge of acceptability. No “or-equal” or substitute will be ordered, installed or utilized without Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any “or-equal” or substitute. Engineer will record time required by Engineer and Engineer's Consultants in evaluating substitutes proposed or submitted by Contractor pursuant to subparagraphs 105.3 and 106.4(B) and in making changes in the Construction Documents (or in the provisions of any other direct contract with Owner for work on the project) occasioned thereby. Whether or not Engineer accepts a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer and Engineer's Consultants for evaluating each such proposed substitute item.

All submissions (plans, specifications, etc.) prepared and/or submitted by the Contractor that involve an engineering change to the original construction plan and specifications shall be sealed by an Engineer registered in the State of Arizona.

Subsection 105.2.1 – Plans and Shop Drawings:

Add the following:

- (A) Shop drawings are defined as drawings submitted to the Engineer by the Contractor pursuant to the contract, showing in detail (i) the proposed fabrication and assembly of structural elements and (ii) the installation (i.e., form, fit and attachment details) of materials or equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract.
- (B) Product Data is information on manufactured items, either stock or modified, and includes descriptive literature, operating data, performance curves, certified dimensional drawings, wiring or schematic control diagrams, piping, instrumentation, parts lists, and operating, maintenance and lubrication manuals.

Subsection 105.3 – Conformity with Plans and Specifications:

Add the following:

105.3.1 – Substitute Construction Methods or Procedures

If a specific means, method, technique, sequence, or procedure of construction is shown or indicated and expressly required by the Construction Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable

to Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Construction Documents. The procedure for review by Engineer will be similar to that provided in subparagraph 106.4(B).

Subsection 105.5 – Cooperation of Contractor:

Add the following:

105.5.1 – Partnering

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

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

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

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

ITEM 105-1 – PARTNERING ALLOWANCE

Subsection 105.5.2 – Pre-Construction Meeting:

Add the following:

After award of the contract and prior to the commencement of the work or mobilization, a pre-construction meeting shall be scheduled at a location and time (prior to mobilization and start of construction) to be agreed upon between the Owner and the Contractor. The Contractor shall make all necessary arrangements to have key personnel of the Contractor's company and of the Contractor's principal subcontractors present at the meeting. Each representative shall have authority to make commitments and act for their firm. The purpose of the pre-construction meeting is to discuss any specific concerns or potential problems that the Contractor is aware of,

to provide general information appropriate to the contract, to identify responsible individuals for various functions within each organization, and to develop tentative dates for the start of construction. The Contractor shall submit to the Engineer during the pre-construction meeting the following documents:

1. Preliminary work schedule/sequence of construction
2. Preliminary traffic control plan and Contractor Contact
3. Emergency telephone numbers
4. Signing authority letter
5. Name and telephone number of the certified safety professional
6. Preliminary copies of the NOI and SWPPP per Subsection 107.2.1
7. Qualifications outlined in Subsection 105.6 and 107.6.3
8. Estimated billing schedule
9. Shop drawings
10. Proposed pavement mix design composition
11. Manufacturer's certification for all materials
12. Material data safety sheets
13. Preliminary survey layout, staking and excavation plans
14. Contractor bid item cost breakdown as noted in the Special Provisions
15. Any other documents specified in the SGC's and SP's

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

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

Subsection 105.5.3 –Construction Progress Meetings:

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

During the construction progress meeting, the Owner's representative will act as chairman and will advise the Contractor of any administrative matters connected with the contract. The Contractor shall submit for review the Contractor's two (2) week rolling schedule. The Contractor's representative at these meetings shall be prepared to discuss and resolve construction problems and concerns, material delivery and vendor data submittals status, construction progress as measured against the Contractor's approved construction schedule and

the Contractor's short range construction activities as provided on the Contractor's two (2) week rolling schedule. The Contractor shall not be relieved of the Contractor's responsibility to fulfill all of the terms of the contract as a result of any inferences drawn or suggestions made available at these meetings.

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

Subsection 105.6 – Cooperation with Utilities:

Add the following:

An attempt has been made to determine the location of all underground utilities, drainage pipes, and structures; however, it shall be the Contractor's responsibility to cooperate with the pertinent utility companies and private irrigation owners so that any obstructing utility installation(s) or private irrigation systems may be adjusted. The location of the underground and overhead utilities as shown on the plans is based on the best available information. The Contractor shall not assume that this represents an exact location of the utility line. No guarantee is made to the accuracy of the location shown on the plans. The Contractor shall determine for himself the exact location of all utilities prior to starting construction. Should Contractor's operations result in damage to any utility the location of which has been brought to the Contractor's attention, the Contractor shall assume full responsibility for such damage. There also exists the strong likelihood that other abandoned older and undocumented underground utility and irrigation lines exist within the project area. Contractor shall contact Arizona Blue Stake (telephone number 602-263-1100) a minimum of two (2) working days before beginning any underground work. In addition, Blue Stake notification(s) shall be maintained on a current basis.

There are several utilities located within the project limits, including power, water, gas, fiber optic, telephone, sanitary, and television. As many utilities as possible have been identified, potholed, and shown on the plans, as well as profiles. The plans indicate a number of pothole locations and pothole elevations of several utilities. The Contractor shall bid their work recognizing that such utility interferences exist and that other such utilities may exist that are not shown on the plans. The Contractor shall consider these utility interferences when bidding the project. All existing utilities, unless otherwise noted shall be protected-in-place (PIP).

The Contractor shall ensure that utility interruptions are kept to a minimum. The Contractor shall notify the Engineer and affected landowners of utility interruptions at least two (2) days in advance of any interruptions, and Contractor shall ensure all utilities are connected and operable by the end of the workday that the interruption occurs.

It shall be the responsibility of the Contractor to verify the location of all utilities prior to any construction activities in a particular area where such facilities exist. All existing overhead and underground utilities shall be protected-in-place unless otherwise noted on the plans, these Supplementary General Conditions and/or Special Provisions.

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

Note: The cost for the repair of any damage to utilities, and any loss of revenue due to the loss of service of a utility that is in any way caused by the Contractor's actions shall be the sole responsibility of the Contractor at no cost to the project, Owner, or Engineer.

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

Flood Control District of Maricopa County, Construction Branch Manager.....	602-506-1501 or 4728
Salt River Project (12kv) Jim Rea	602-236-8643
Salt River Project (69kv) Brent Bornmann	602-236-8073
City of Mesa James Neibergall	480-644-4751
Cox Communications Bill Wight.....	623-328-3512
Qwest Al Soto.....	602-630-3706

Existing utilities within the project area may include, but may not be limited to the following:

City of Mesa (COM) Water Lines and Sanitary Sewers:

Water Lines – The City of Mesa owns, operates, and maintains waterlines within the project corridor/limits. The waterlines range in size from two (2) inches in diameter to twenty (20) inches (based on as-built plans) in diameter and pipe materials consist asbestos cement pipe (ACP) and ductile iron pipe (DIP). Other waterline pipe materials may be present. The project includes vertical relocation of waterlines conflicting with new construction as noted on the plans or these Special Provisions.

Several ACP waterline pipes cross construction activities for the new storm drain. These waterlines will not require vertical relocation but will require changing pipe material from ACP to DIP within construction limits. The Contractor shall coordinate all service disruptions with the City of Mesa and must keep these disruptions to less than four (4) hours.

The Contractor shall coordinate with the Engineer and the City of Mesa to obtain permission to have a water line shut down in order to perform their work. The Contractor shall notify the City at least seventy-two (72) hours in advance of the need for a shutdown.

Sanitary Sewers

The City of Mesa owns, operates, and maintains an existing twelve (12)-inch sanitary sewer (east-west) line in McDowell Road which ties into an eighteen (18)-inch sanitary sewer (south) in Sossaman Road. The twelve (12)-inch sanitary sewer has numerous lateral sewer (household) connections from adjacent residential properties along McDowell Road located along the southside and northside of the sewer. The southside household connections are in conflict with the new McDowell Road storm drain. The northside household connections may also be conflict with the new lateral storm drain connections. A new eight (8)-inch sanitary sewer will be constructed parallel to the new McDowell Road storm drain to connect the southside lateral household connections. The Contractor shall be responsible for locating all existing sanitary sewer facilities, lateral household connections, and obtaining accurate inverts prior to construction of the new sanitary sewer.

The Contractor shall confirm that the southside lateral household connections are not currently in service. This notice has been provided to the Engineer from the City of Mesa.

The new sanitary sewer will be connected to the Sossaman Road sewer at the location shown in the plans. The Contractor is notified that the Sossaman Road sewer is a live sewer and as such cannot be taken out of service for any reason or cause. Contractor activities cannot damage or cause extraneous construction debris to enter the Sossaman Road sewer during connection construction activities.

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

SEWAGE DISCHARGE PREVENTION PROGRAM:

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

The program includes the following components:

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

These components are described in more detail below.

Sewage Control Plans:

Purpose:

A sewage control plan (SCP) will be submitted at least seven (7) calendar days in advance to the Engineer whenever the Contractor intends to:

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

The intent of the plan is to ensure that any work done in or near any sewer line containing raw sewage is performed in a safe and controlled manner, and not result in any accidental discharges.

Required Elements of the SCP:

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

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

8. Describe how the public will be protected during the work and include any applicable traffic control plans.
9. Describe the quality control procedures that will be used in the field.
10. Discuss how temporary plugs or flow control devices will be secured and monitored.

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

Plan Approval:

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

Location and Protection of New and Existing Sewer Lines:

Normal blue staking procedures shall be followed first for any work on the project. Sewage control plans shall be required when the work is near or involves any sewer line containing raw sewage.

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

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

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

Handling Private Lateral Service Connections:

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

The Contractor will immediately repair, to the satisfaction of the Engineer, unidentified service connections that are damaged during excavation. Any damaged service

connections shall be reported to the Engineer in writing, including all remedial actions taken.

Sewage Discharge Penalties:

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

Contractor's Qualifications:

The Contractor, or the water and sewer utility Subcontractor, shall have at least five (5) years of experience in the construction of underground large diameter (eighteen [18]-inch or above) water and sewer improvements. This experience shall include working with and around water and sewer utility lines that are in service. The water and sewer utility Contractor/Subcontractor shall submit the following documentation to the Engineer for review and approval of their qualifications:

1. A list of water and sewer work completed over the past three (3) years. List the dates of work, type of work, description of the project, amount of work performed by the Contractor/Subcontractor, and the name and phone number of a contact person with the owning company or agency for which the work was completed.
2. A list of equipment that will be used for this project. The list shall include, as a minimum, equipment type, date of manufacture, and if contractor-owned or rented.
3. A list of key personnel, minimum three, who will perform the actual water and sewer utility work. Each key person must have at least three (3) years of experience in the installation and construction of underground large diameter water and sewer lines. The list shall be accompanied with resumes for each of the key personnel. The resumes shall include the following information and demonstrate compliance with any requirements requested:
 - a) Education.
 - b) Level of applicable formal training.
 - c) Number of years of relevant experience in performing like construction.
 - d) Detailed relevant experience, minimum two projects, and containing project description, date of work, actual work performed by the individual, and references (one for each project, minimum).

4. A list of all violations in the past five (5) years of applicable water and wastewater laws and statutes. State all fines, penalties, lawsuits, and judgments rendered against water and sewer utility Contractor/Subcontractor as a result of violations of applicable water and wastewater laws and statutes.

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

This work shall be considered incidental to the contract and no separate payment will be made.

Salt River Project Distribution Lines

Salt River Project underground and aboveground power lines are located in the project area. Aboveground power lines are located along Sossaman Road and McDowell Road. The Contractor shall use extreme care while digging around underground power lines. Any damage to power lines done by Contractor activities shall be repaired and/or replaced by the Contractor at no cost to the owners. Any loss of revenue due to the damage to the utilities will be the sole responsibilities of the Contractor.

City of Mesa Gas:

There are City of Mesa gas lines approximately four (4)-inches diameter in McDowell Road and within the project corridor/limits. At some of these locations, the City of Mesa will relocate the lines prior to construction to either go below the storm drain pipe or realign horizontally. Extreme caution shall be taken while digging around gas lines.

Qwest Communications:

There are several Qwest Communications lines within the project area. The Contractor shall use extreme care while digging around communication lines. Any damage to cables done by Contractor activities shall be repaired and/or replaced by the Contractor at no cost to the owners. Any loss of revenue due to the damage to the utilities will be the sole responsibilities of the Contractor.

Cox Communications:

There are existing Cox Communications cable lines and fiber optics adjacent to the project. All Cox Communications lines will be protected-in-place unless otherwise noted.

Private Irrigation:

There are existing private irrigation systems within and adjacent to the project. These include the irrigation system along McDowell Road west of Sossaman and particularly along the Las Sendas Channel. These also include the irrigation system along Hawes Road and McDowell Road at Thunder Mountain Estates. The Contractor is responsible for coordinating contractor activities that impact the relocation, disruption, temporary shut-down, repair of contractor damage, and replacement of any private irrigation systems. Any damage to private irrigation systems done by Contractor activities shall be repaired and/or replaced by the Contractor at no cost to the owners. Any loss of revenue due to the damage to the irrigation systems will be the sole responsibilities of the Contractor. Replacement of the loss of plants, trees, and shrubs due to

contractor damage to irrigation systems is the contractor's responsibility and shall be repaired and/or replaced by the Contractor at no cost to the owners.

Subsection 105.6.5 – Construction Water:

The costs for fees, permits, obtaining, transporting, distributions, and use of water for construction activities is considered incidental to the project. The contractor will be required to obtain a water meter from the City of Mesa and pay any associated fees.

Subsection 105.8 – Construction Stakes, Lines, and Grades:

Add the following:

- (A) The Contractor will utilize benchmarks shown in the plans to set line and grade for all construction. All surveying required for the project shall be the Contractor's responsibility. The Engineer will not set any construction stakes.
- (B) Before any construction work is started the Contractor shall perform all base surveys and cross sections of existing conditions that may be required as a basis for quantity determination.
- (C) The Contractor shall submit original construction surveyor's notes duly signed by a Registered Land Surveyor in the State of Arizona to the Engineer at the end of the project. Copies of the survey notes shall be submitted to the Engineer at the first weekly meeting after being generated.
- (D) Record Drawings shall be prepared by the Engineer of Record utilizing red-line working drawings maintained on the project site by the Contractor. The paper red-line working drawings shall be maintained by the Contractor in a current condition at all times, and updated at least weekly until completion of the work and shall be available for review by the Engineer and the Engineer of Record at all times. The final red-line working drawings shall be provided by the Contractor to the Engineer prior to project close out and prior to the final contract payment. Final contract payment may be delayed if it is found that the red-line working drawings are incomplete or inaccurate, and until appropriate corrections are made by the Contractor to the red-line working drawings.
- (E) The final as-built mylar drawings shall be sealed by an Engineer registered in the State of Arizona and shall be provided by the Contractor to the Engineer prior to project close out and prior to the final project payment.
- (F) Prior to project close out, the Contractor will be required to provide the Owner a .DGN 3D file of the constructed basin and embankment grading and certification of the constructed basin's storage volume at the design peak stage basin elevation as provided by the Owner.

Subsection 106.1 – Source of Materials and Quality:

Add the following:

Select material, aggregate base, mineral aggregate, concrete, steel products and pipe shall be obtained from commercial sources. Contractor shall pay all royalties, or any other charges or

expenses, incurred in connection with the securing and hauling of the material. The Contractor may obtain riprap for gabion baskets and gabion mattresses as specified within section 219.2.1 within these specifications. Contractor will be required to furnish Engineer with a list of its proposed commercial sources prior to use, and shall present certificates stating that the material produced from any commercial sources is in accordance with the Uniform Standard Specifications and these Supplementary General Conditions.

Subsection 106.4 – Trade Names and Substitutions:

Replace with the following:

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

- (A) “Or-Equal”: If in the Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.

- (B) Substitute Items: If in Engineer's sole discretion an item does not qualify as an “or-equal” item under subparagraph 106.4 (A), it will be considered a proposed substitute item. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. The procedure for review by Engineer will include the following and may be supplemented in the Special Provisions and as Engineer may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall first make written application to Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice Contractor's achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Construction Documents (or in the provisions of any other direct contract with Owner for work on the project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other Contractors

affected by the resulting change, all of which will be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish additional data about the proposed substitute.

- (C) Contractor's Expense: All data to be provided by Contractor in support of any proposed "or-equal" or substitute item will be at Contractor's expense.
- (D) If the final placement of a product will remain the property of the municipality or utility and/or owned by the municipality or utility, that entity is responsible for issuing written approval for any equivalent or "or-equal" products. The Contractor or Supplier will submit to that entity the request and documentation for written approval of a product substitution. The Contractor will provide the entity's written approval to the Engineer at the Pre-Construction Meeting.

Subsection 106.5 – Contractor's Marshaling Yards:

Add the following:

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

The Contractor will monitor on a daily basis all activities with the Contractor Work Area (CWA), whether on County, City, or private property, that may result in the leakage of oils, fuels, vehicle wash water, which may contaminate soils, and promptly report any suspected leaks to the Engineer. The Contractor will be solely responsible at the Contractor's cost to correct and clean up any such leakage or other related problems.

The Contractor shall grade all construction yards, easements and limits of construction which are disturbed by construction or construction related activities to a condition similar to or better than the pre-existing condition.

Subsection 107.2 – Permits:

Replace with the following:

The Contractor shall obtain all permits and licenses, including but not limited to those required by the City of Mesa, Maricopa County, U.S. Government, any local or federal agency, and Salt River Project; and shall pay all charges, fees, taxes, and provide all notices necessary and incidental to the due and lawful prosecution of the work. Permits for earth moving may be obtained from Air Pollution Control, Maricopa County Department of Environmental Management, 2406 South 24th Street, Suite E-214, Phoenix, Arizona 85034, telephone number 602-506-6700. It is the responsibility of the Contractor to verify permit application fees

A City of Mesa Right-of-Way Use permit must be filed in person at the City. The Contractor should contact Fred Rustam at the Engineering Department at (480) 644-4688 for further information. The Contractor is responsible for meeting all City permit requirements, including insurance requirements.

In particular the Contractor will obtain all necessary AZPDES and SWPPP permits as required and in accordance with subsection 107.2.1.

Subsection 107.2.1 – AZPDES Permit Requirements:

Add the following:

- (A) This project is subject to the Arizona Pollutant Discharge Elimination System (AZPDES) storm water requirements for construction sites under the Arizona Department of Environmental Quality's (ADEQ's) General Permit for Arizona. Under provisions of that permit, the Contractor shall be designated as permittee, and shall take all necessary measures to assure compliance with the AZPDES General Permit for Arizona as well as all other applicable federal, state and local laws, ordinances, statutes, rules and regulations pertaining to storm water discharge. As the permittee, the Contractor is responsible for preparing, in a manner acceptable to the ADEQ, all documents required by this regulation, including but not necessarily limited to:
1. Storm Water Pollution Prevention Plan (SWPPP) for the project, including certification of compliance form. Contractor shall be required to develop, implement, update and revise the SWPPP, as necessary, in order to assure compliance with the ADEQ permit requirements. The SWPPP shall be retained on the project site at all times during construction.
 2. Notice of Intent (NOI) to assure compliance with the AZPDES General Permit for Arizona, including certification of signatures.
 3. Notice of Termination (NOT) of coverage under AZPDES General Permit for Arizona.
- (B) Preliminary copies of the NOI and the SWPPP shall be submitted to Owner during the pre-construction meeting and shall be subject to review by Owner prior to implementation.
- (C) Contractor shall submit the completed and duly signed NOI forms to ADEQ no later than seven (7) days after contract award. Proof of the submittal date must be provided to the Owner. If the work is within one quarter (¼)-mile of an Impaired or Unique Water, the SWPPP needs to be submitted with the NOI to ADEQ. If the location is farther away than that, no SWPPP needs to be submitted to ADEQ but it still must be available on site.
- (D) When the discharge is to an Impaired or Unique Water or is in or near endangered species habitat as identified by ADEQ's smart NOI permitting system, applicants are not authorized under this permit for a minimum of thirty-two (32) business days following the receipt of the NOI and SWPPP. ADEQ may notify operators within this timeframe that there is a cause for SWPPP amendment, or denial of coverage as specified in Parts 1.D.5 and 1.D.6 of the general permit. If notification is not received in the thirty-two (32) business day timeframe, the Contractor may assume coverage under this permit according to ADEQ requirements. Contractor must notify Owner of the status of the NOI prior to commencing work. The applicant shall submit the NOI (application) to:

Arizona Department of Environmental Quality
Water Permits Section/Stormwater NOI (5415B-3)
1110 W. Washington Street
Phoenix, Arizona 85007
or fax to (602) 771-4674

If the facility has the potential to discharge to a municipal separate stormwater sewer system (MS4), the applicant must also forward a copy of the completed NOI to the owner/operator of the MS4 system at the time it is submitted to the Department. A copy of the completed NOI form shall be submitted to:

City of Mesa
Bob Draper
Engineering Construction
200 South Center
Mesa, Arizona 85211

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

- (E) Inspections of all storm water pollution control devices on the project shall be performed by the Contractor every seven (7) days or at least once every fourteen (14) calendar days, and also within twenty-four (24) hours of the end of a storm event of 0.50 inches or greater as required under provisions of the AZPDES General Permit for Arizona. A reduced inspection frequency may be used provided the conditions in Part IV.H.2. of the general permit have been met. Contractor shall prepare reports on such inspections and retain the reports for a period of three years after permit coverage expires or is terminated. Inspection reports shall be submitted monthly to Owner along with progress payment requests. Additionally, Contractor shall maintain all storm water pollution control devices on the project in proper working order, which shall include cleaning and/or repair during the duration of the project.
- (F) Contractor warrants that its employees and Subcontractors of any tier and their employees shall at all times comply with all applicable laws, ordinances, statutes, rules and regulations set forth by all federal, state and local governments and the Arizona Department of Environmental Quality in connection with AZPDES Permitting requirements and laws and regulations pertaining to air, groundwater and surface water quality.

Fines and penalties imposed by the ADEQ against Owner or the Contractor for Contractor's failure to comply with any of the requirements of AZPDES General Permit of Arizona shall be borne by the Contractor at no cost to the project.

- (G) Upon project completion, acceptance and demobilization, Contractor shall submit its completed, duly executed NOT form to the Arizona Department of Environmental Quality (and the appropriate municipality), at the address listed in Section (C) above, thereby terminating all AZPDES permit coverage for the project. Contractor shall then surrender to Owner copies of the SWPPP, inspection information and all other documents prepared and maintained by the Contractor in compliance of the AZPDES General Permit. Contractor shall retain the originals of such documents for a period of three (3) years following the completion of the project.
- (H) The Lump Sum price for the SWPPP shall include all material, labor, and all other costs relating to the preparation, installation and maintenance of the SWPPP during project construction, including assuring proper operation of the pollution control devices installed, and all maintenance, cleaning, and disposal costs associated with clean-up and repair following storm events, runoff or releases on the project. The Lump Sum price for the SWPPP shall be inclusive of all costs, and no additional claims shall be made by Contractor under any other specification provision of these documents, including Changed Conditions. Payment for this bid item shall be upon final completion and acceptance of the project, per Section 109.1.
- (I) Copies of all required forms and guidance for preparing the SWPPP are available in the "Drainage Design Manual for Maricopa County, Volume III Erosion Control." The manual is available at the Flood Control District, 2801 West Durango Street, Phoenix, Arizona 85009.

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

ITEM 107-1 – AZPDES/SWPPP PERMITS

Subsection 107.4 – Archeological Reports:

Add the following:

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

Subsection 107.5 – Safety, Health and Sanitation Provisions:

Add the following:

The entire construction site shall be considered a "Hard Hat Area" and all personnel in the area will be required to wear a hard hat. This includes all Contractor personnel and Subcontractor's employees.

Subsection 107.5.3 – Compliance with the Arizona Communication Standard:

Add the following:

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

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

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

Subsection 107.6 Public Convenience and Safety:

Add the following:

The work area is within and adjacent to areas of public use, including roadways and sidewalks. The contractor shall provide protection measures, including, but not limited to, temporary fencing, as required to ensure the safety of the public in areas adjacent to the work area.

Subsection 107.6.3 Public Information and Notification:

Add the following:

Informing the public on a regular basis of construction activities and associated disruptions and inconveniences will be extremely important on this project. The Contractor shall employ a specialty public information service as a subcontractor to provide the community relations program for the project as described herein. Contractor shall work closely with the Contractor's subcontractor in developing and carrying out the community relations program. Contractor shall submit a history of the subcontractor's qualifications and experience in public information services at the pre-construction meeting for acceptance by the Engineer. The community relations program shall be designed to run the full length of calendar days in the contract for this project. The program will include but not be limited to:

1. Distributing a pre-construction information letter to all residents, businesses, fire stations, churches, schools, etc. within one half (1/2)-mile from project improvements.
2. Printing and distribution of public notices and/or newsletters as required or as directed by the Engineer within the above described geographic areas.
3. All public involvement and information activities will be in accordance with the Owners "Public Involvement and Public Information Guidelines, Latest Edition (August 2004)", a copy of which can be obtained from the Flood Control District Public Involvement Office at 602-506-2983.

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

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

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

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

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

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

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

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

ITEM 107-2 – PUBLIC INFORMATION AND NOTIFICATION ALLOWANCE

Subsection 107.6.4 – Project Signs:

Add the following:

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

ITEM 107-3 – PROJECT SIGNS ALLOWANCE

Subsection 107.8 – Use of Explosives:

Delete in its entirety and replace with the following:

The use of explosives or blasting has not been approved for any construction activities on the project.

Subsection 107.9 – Protection and Restoration of Property:

Add the following:

The Contractor shall protect-in-place all existing structures and other features along the project corridor and as may be identified on the plans, including but not limited to existing utilities, mail boxes, chain link fences, irrigation facilities, roadways, traffic signs, fencing, block walls, signs, railroad, and other structures and features near construction activities and existing vegetation outside of the right-of-way limits.

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

Subsection 107.10 – Contractor's Responsibility for Work:

Add the following:

- (A) The Contractor shall maintain dust control measures at all times during the project. This is especially important along the project in the vicinity of residential areas. The Engineer reserves the right to direct the Contractor to maintain dust control measures.
- (B) Contractor is advised that the work will be subject to stormwater flows of water of varying amounts. Owner assumes no responsibility for notifying Contractor of any anticipated flows, nor for any damages incurred by Contractor to equipment or to any of the Contractor's work as a result of any flows of water.
- (C) Storm water runoff generally flows from north to south and from east to west. The Contractor shall take all necessary precautions to protect the Contractor's work from

damage that may be caused by such runoff and ponding. Runoff may enter the project limits, and contain debris, sediment, and vegetation, from the Thunder Mountain Basin (located at the northeast corner of Hawes Road/McDowell Road); from flows along McDowell Road east of Hawes Road flowing west; from flows north of McDowell Road crossing McDowell Road; from flows in Las Sendas channel; and from flows entering the McDowell Detention Basin site.

- (D) The Contractor shall take all necessary action to protect the public from the construction work area.
- (E) Management of surface flows, subsurface flows, and groundwater within the project limits will be necessary in order to construct the project. The Contractor will develop a plan for such water management and submit it to the Engineer for review. No separate payment will be made for water management. The cost of water management shall be incidental to the total cost of the project.

ITEM 107-4 WATER MANAGEMENT

Subsection 108.1 – Notice to Proceed:

Delete Paragraph (A) and replace with the following:

- (A) Contractor shall commence work within thirty (30) calendar days after the Notice to Proceed or receipt of the AZPDES General Permit, whichever is the first to occur, and complete all work within **three hundred sixty five (365)** calendar days beginning with the date specified in the Notice to Proceed. An **additional ninety (90)** calendar days is provided in the contract *solely* for the Seeding Maintenance and Establishment Period. This results in a total contract duration of four hundred fifty-five (455) calendar days.

Subsection 108.2 – Subletting of Contract:

Add the following:

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

Subsection 108.4 – Contractor's Construction Schedule:

Delete in its entirety and replace with the following:

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

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

Subsection 108.4.1 – Contractor's Billing Schedule:

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

Subsection 108.5 – Limitation of Operations:

Add the following:

The normal workweek shall be forty (40) hours, Monday through Friday, and the work hours will be determined at the pre-construction meeting. This does not imply that this contract can be completed on time utilizing normal working hours. The Contractor shall furnish sufficient forces and shall work such hours including overtime operations as necessary to ensure the completion of the work within the time required. **No night work will be allowed on this project.** Night work is defined between the hours of 7:00 PM and 6:00 AM. To work other than normal working hours, for other than emergency situations, the Contractor shall give the Engineer at least twenty-four (24) hours advance written notification and receive written approval before working. The notification shall include: the working hours, the type of work to be performed, and the name of and a phone number for the person in charge. Should the Contractor elect to perform any work after regular working hours, on weekends, or legal holidays, any charges incurred by the Owner for inspection of the work, surveys or tests of materials will be deducted from monies due or to become due to the Contractor.

Subsection 108.9 – Failure to Complete on Time:

Add the following:

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

Subsection 109.2 – Scope of Payment:

Add the following:

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

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

Contractor's fee and profit. This rate shall further include all site clean-up costs and hauling of construction debris to disposal sites designated by the Engineer.

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

Payment shall not be made for unused materials.

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

Subsection 109.7 – Payment for Bond Issue and Budget Projects:

(A) To third paragraph, add:

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

(B) Add the following:

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

(C) The Contractor's monthly pay estimate will be processed by the Owner's Construction Branch during the last week of the month.

Subsection 110 – Notification of Changed Conditions and Dispute Resolution

Delete in its entirety and replace with the following:

The Contractor and Owner shall follow the established rules in the Maricopa Procurement Code.



SPECIAL PROVISIONS

CONTRACT FCD 2006C010

MCDOWELL ROAD BASIN AND STORM DRAIN PROJECT

PCN 420.03.31

Prepared by:

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SECTION 201 – CLEARING AND GRUBBING

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

SUBSECTION 201.1 – DESCRIPTION

The work shall consist of removal and disposal of objectionable material including all vegetation including shrubs, gin waste, trees of all sizes (those not specifically called for salvage and relocation or to be protected in place under these special provisions) from the right-of-way, easements, detention basin, and such other areas as may be specified in the special provisions, required to perform grading operations, or shown on the construction plans.

Sixty (60) days prior to moving or destroying native plant species, the Contractor shall file a formal notice of intent with the Arizona Department of Agriculture.

This work also includes the removal and stockpiling of the top six (6) inches of topsoil from the basin grading limits. The topsoil removal shall include removal and stockpiling of vegetation, native debris, and surface aluminum.

Prior to starting clearing and grubbing the Contractor must verify the location of existing utilities that may be damaged during this work.

SUBSECTION 201.5 – PAYMENT

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

Measurement for topsoil removal and stockpiling is covered under Section 430.6 of these Special Provisions. Payment for topsoil removal and stockpiling is covered under Section 430.4 of these Special Provisions.

SUBSECTION 201.6 – REMOVAL OF TREES

Section 201.6 is modified to include all trees required to construct project, regardless of tree diameter. Salvage and relocation of trees is located in Section 430 of these Special Provisions.

SUBSECTION 201.7 – PAYMENT, REMOVAL, AND DISPOSAL OF TREES

Replace this section with the following:

No payment will be made for the removal or disposal of trees regardless of size. The cost thereof shall be included in the price of appurtenant construction of the specific bid item.

SECTION 202 – MOBILIZATION

Mobilization shall conform to the specifications as follows:

SUBSECTION 202.1 – DESCRIPTION

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

ENGINEERS FIELD OFFICE:

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

The office shall be a building or mobile trailer erected at a location convenient to the project. The Contractor's and the Engineer's offices shall not be in the same building or mobile trailer although the offices shall be located next to each other or within reasonable walking distance. All field office trailers will comply with ADA access requirements for the general public's use.

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

The field office shall be an approved and weatherproof building or mobile trailer providing a minimum of six hundred (600) square feet of clear floor space, not including the toilet area. The structure shall have a minimum ceiling height of seven (7) feet and shall be provided with weatherproof doors equipped with adequate locking devices. Windows shall also be provided with adequate locking devices. The Contractor shall also provide the following:

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

- A. Heating and Cooling – Adequate electrically powered equipment to maintain an ambient air temperature of seventy-two (72) degrees Fahrenheit plus or minus eight (8) degrees.
- B. Telephone and answering machine or service – Two (2) telephones with two (2) outside lines for the exclusive use of the Engineer. The Contractor will pay for the cost of the line and local calling charges. The District will pay for long distance charges made on these lines. The Contractor will install an answering machine for the exclusive use of the Engineer or provide an answering service for the duration that the field office is in operation.
- C. Toilet – A commode and wash sink in a separately enclosed room with locking door within the building or mobile trailer, properly ventilated and complying with applicable sanitary codes. Contractor shall provide toilet paper, paper towels, soap, hot and cold water, waste basket, and sewer service.

- D. Maintenance – The Contractor shall maintain all facilities and furnished equipment in good working condition, and the office and toilet shall be cleaned and sanitized weekly.
- E. Fire Extinguisher – Two (2) non-toxic, dry chemical, fire extinguishers meeting Underwriters Laboratories, Inc. approval for Class A, Class B, and Class C fires with a minimum rating of 2A: 20B: 10C.
- F. Electricity – Contractor shall provide electric power and pay for all electric services.
- G. Furnishings – Two (2) office desks with drawers, five (5) office chairs (padded, swivel type), one (1) drafting table (adjustable height) three (3) feet by six (6) feet, two (2) eight (8) foot conference tables, twelve (12) folding chairs, two (2) four (4) drawer legal size file cabinets, three (3) wastebaskets, and one (1) draftsman's stool. All furnishings shall be new and in good working order.
- H. Fax, Printer, Copier – Contractor shall provide a new dedicated fax, printer, and copier for the exclusive use of the Engineer. The printer and copier shall be capable of producing 8.5 by 11 inch and 11 by 17 inch copies.
- I. First Aid Kit – Contractor shall provide a first aid kit.
- J. Potable water supply – Contractor shall provide a potable water supply and pay for all water service.
- K. Parking spaces with dust proof surface for ten (10) vehicles.
- L. Security – Window and door security bars will be provided on the field office. The field office will also include an interior alarm system which is monitored by a security service approved by the Engineer for the duration of the contract. The Contractor shall pay for the security monitoring service for the duration of the project.
- M. A dedicated high-speed/broad band internet connection will be provided for the use of FCD personnel and the Engineer. All costs and equipment (i.e. modem; cable installation) associated with this service shall be borne by the Contractor.

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

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

SUBSECTION 202.2 – PAYMENT

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

ITEM 202-1 – MOBILIZATION

SECTION 206 – STRUCTURE EXCAVATION AND BACKFILL

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

SUBSECTION 206.1 – DESCRIPTION

Add the following to this section:

The work includes structure excavation, backfill, and shoring/retention systems required for the construction of the concrete structures, catch basins, box culverts, and cut-off walls as designated on the plans or in these specifications.

Trench excavations for box culvert construction shall not be closer than six (6) feet from Contractor developed detour traveled lanes within the paved street sections of McDowell Road, Sossaman Road, and Hawes Road. The Contractor may determine that a distance of greater than six (6) feet is required due to construction techniques and soil conditions. The limit of excavation shall be a maximum of sixteen (16) feet from each side of the construction centerline. Since vertical or near vertical trench walls may be required to install the box culverts, shoring/retention systems shall be required to provide for trench and adjacent detour road stability.

The Contractor shall also be responsible for all other shoring/retention systems locations as deemed necessary by the Contractor during construction to protect maintenance roads, underground utilities, and other equipment as noted in the project drawings. The design of such temporary shoring/retention systems for the trench is the responsibility of the Contractor, and plans for such structures shall be sealed by an Arizona Registered Engineer and submitted to the Engineer prior to construction for review.

Sequence of Construction

Construction of 7-foot by 4-foot Reinforced Concrete Box Culvert – Temporary shoring/retention systems shall be provided for the construction of the box culvert. One (1) lane of traffic in each direction shall be maintained on Sossaman Road and McDowell Road at all times during the construction of the box culvert. The Contractor's shoring/retention system plan shall address the protection and/or suspension of all utilities that cross the trench.

The Contractor shall submit to the Engineer, a Proposed Construction Sequence Plan for review and approval four (4) weeks prior to commencing work on any items affected by the Proposed Construction Sequence Plan. The Plan shall include any necessary shoring/retention system measures. All shoring/retention systems and slope stabilization measures shall include the required calculations and necessary details for construction, sealed by a Professional Engineer registered in the State of Arizona. The design for shoring shall meet the requirements of Section 5 of the Standard Specifications for Highway bridges, 17th Edition, 2002 for nongravity cantilevered walls. The design of individual wall elements shall be performed by the service load design method per applicable section of AASHTO. The calculations for the shoring/retention systems shall include an active earthwork pressure of thirty-five (35) pounds per square foot, a vehicular highway loading of HS20 as specified in Section 3 of said specifications, and any loading due to adjacent underground and/or above ground utilities. The submittal for shoring design shall conform to Section 105.03 of the ADOT Standard Specifications for Road and Bridge Construction.

The plan shall include the Contractor's proposed detour location in relation to the trench.

All construction joints necessary for phased construction shall be constructed perpendicular to the construction centerline. Any construction joints proposed by the Contractor to be placed at a skew to the construction centerline shall be designed and submitted to the Engineer for approval.

SUBSECTION 206.2 – FOUNDATION MATERIAL TREATMENT

Add the following to this section:

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

SUBSECTION 206.4 – STRUCTURAL BACKFILL

Add the following to this section:

Compaction of structural backfill soils against embedded footings or walls shall be accomplished to a minimum ninety-five (95) percent of the maximum ASTM D698 density. Compaction operations shall be accomplished by mechanical methods. Water settling or jetting shall not be permitted. Compaction against culverts and retaining walls shall be accomplished using manual or remote control compaction equipment only. Compaction against or within three (3) feet of structure walls shall be accomplished using manual compaction equipment only.

Backfill behind subsurface walls designed to support utilities, pavement, channels, or other facilities should be compacted to density criteria from Section 211 of these Special Provisions. Backfills should consist of granular soils that exhibit low expansive potentials and are free of vegetation, debris, organic contaminants, and fragments larger than three (3) inches in size, which exhibit low expansive potential and a plasticity index (PI) of less than five (5). On-site soils may be used in structural fills or backfills more than three (3) feet below the final grade.

On-site soils may be used in structural fills or backfills except for high plasticity on-site soils (PI less than twelve [12]) that may not be used in structure fills or backfills. Imported soil used for fills under pavements, channels, backfill around structures should be granular soils conforming to the following requirements:

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

(Arizona Test Method)

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

SUBSECTION 206.5 – PAYMENT

Add the following to this section:

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

SECTION 211 – FILL CONSTRUCTION

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

SUBSECTION 211.1 – DESCRIPTION

Add the following to this section:

The work in this section consists of the placing and compacting of fill material as noted on the plans for detention basin fill, for landscaping berms, and for any miscellaneous fill. The material excavated from the basin is suitable for these operations provided the materials meet the requirements of these Special Provisions.

SUBSECTION 211.1.1 – SOIL COVER

Soil composition for landscaping areas shall meet the material specification of Item 430-2 – Topsoil Plating and shall be provided in the areas identified on the plans.

SUBSECTION 211.2 – PLACING

Delete the 1st paragraph in its entirety. Replace the first paragraph with the following:

Rocks and other solid material which are larger than four (4) inches in greatest dimension shall not be placed in fill areas. No broken portland cement concrete or bituminous type pavement will be allowed in any fill or fill construction.

SUBSECTION 211.3 – COMPACTING

Add the following to this section:

Areas over which fills are to be placed for the construction of the detention basin shall be cleared and scarified and excavated as noted in these Special Provisions or as directed by the Engineer. Loose or unsuitable materials in foundations for fill construction of the detention basin shall be removed and replaced with competent compacted materials as directed by the Engineer. This work is incidental to fill construction.

Delete the 7th paragraph in its entirety. No broken Portland cement concrete or bituminous type pavement will be allowed in any fill or fill construction.

SUBSECTION 211.5 – MEASUREMENT

No measurement for fill construction will be made.

SUBSECTION 211.6 – PAYMENT

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

SECTION 215 – EARTHWORK

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

SUBSECTION 215.1 – DESCRIPTION

Add the following to this section:

The work in this section consists of excavation, fill, grading, and disposal of excavated and removed material for the construction of the detention basin as shown on the plans.

SUBSECTION 215.3 – EXCAVATION

Add the following to this section:

The basin shall be excavated to the neat lines shown in the plans.

SUBSECTION 215.4 – FILL AND BACKFILL

Add the following to this section:

Fill shall be placed around the perimeter of the basin as shown in the plans and per Section 211. The cost for such fill as part of grading shall be considered incidental to the basin excavation. The surface of locations requiring fills shall be scarified six (6) inches deep, vegetative material and fragments larger than three (3) inches in size removed, and the soil compacted in accordance

with Subsection 211.3. Fill placed for landscaping berms is covered separately under Section 211.

SUBSECTION 215.5 – GRADING

Replace this section with the following:

Grading of the basin, embankments, access roads, and inlet channels and culvert outlet channels shall conform to the following tolerances:

- A. A vertical tolerance of none above and three (3) inches below the specified grade will be allowed on:
 - 1. Basin side slopes in both cut and fill
 - 2. Embankments and access road side slopes in cut
 - 3. Inlet channels and culvert outlet channels in both cut and fill

- B. A vertical tolerance of none above and three (3) inches below the specified grade will be allowed on:
 - 1. Top surface of access road in both cut and fill
 - 2. Embankments and access road side slopes in fill
 - 3. Top surface of embankments in both cut and fill

- C. A vertical tolerance of plus or minus 0.1 foot from the specified grade will be allowed on:
 - 1. All landscaped areas
 - 2. The basin bottom

SUBSECTION 215.7 – MEASUREMENT

Replace this section with the following:

Measurement for excavation will be made according to the quantity of material in cubic yards excavated from natural ground to the finished grade and neat lines shown on the plans. Subgrade excavation required for O&M access roads, perimeter roads and access ramps, and for riprap placement will be considered incidental to the roads and ramps as per Sections 301 and 310, and riprap per Section 220. The Engineer will verify the quantities of excavation by a method, which in the Engineer's opinion is best suited to obtain an accurate measurement.

Measurement of payment for excavation of the basin will be made according to the quantity of material excavated from natural ground to finished grade as shown in the plans and completed using the average end areas method as follows:

- A. Contractor shall obtain cross sections after clearing and grubbing and prior to any excavation.
- B. Cross section shall be taken at a minimum spacing sufficient to accurately represent the volume of material removed and with a sufficient number of points to describe the existing ground surface.

- C. Cross sections shall be taken at a minimum of fifty (50) foot stations for the basin, and at angle points and the beginning and ending of curves.
- D. After excavation the Contractor shall obtain new cross sections at the same locations as the existing ground cross sections were taken.
- E. The Contractor shall plot the cross sections where taken as described above showing both the original and final grades, and shall provide volumetric calculations.
- F. The Contractor shall submit the cross sections in electronic format, in either .dgn or .dxf format, and in hard copy form sealed by a Registered Land Surveyor.

No measurement shall be made for culvert inlet or culvert outlet excavation.

SUBSECTION 215.8 – PAYMENT

Add the following to this section:

Payment for excavation of the detention basin shall be made on the basis of the price bid per cubic yard, which price shall include all labor, equipment, and materials necessary for the item and shall including forming O&M ramps in the embankments and disposal of excess material

ITEM 215-1 – DRAINAGE EXCAVATION

No payment will be made for excavation, shaping, and grading of channels as such; the cost thereof shall be included in the bid price for the constriction or installation of the items for which said channel excavation or grading is incidental or appurtenant.

SECTION 220 – RIPRAP CONSTRUCTION

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

SUBSECTION 220.1 – DESCRIPTION

Add the following to this section:

The construction of riprap shall consist of furnishing and placing bedding and stone as shown on the plans and special provisions. Sacked concrete riprap shall not be allowed. Material for riprap shall conform to Section 703 of the MAG Uniform Standard Specifications and as modified herein.

SUBSECTION 220.8 – PAYMENT

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

- ITEM 220-1 – RIPRAP CONSTRUCTION – TYPE I**
- ITEM 220-2 – RIPRAP CONSTRUCTION – TYPE II**
- ITEM 220-3 – RIPRAP CONSTRUCTION – TYPE III**

SECTION 225 – WATERING

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

SUBSECTION 225.1 – DESCRIPTION

Add the following to this section:

The work under this section shall consist of furnishing and applying all water required for control of dust, for the safety and convenience of the traveling public, and for the reduction of the dust nuisance to adjacent properties.

The Contractor shall obtain the necessary permits under the County Air Pollution Statutes. It shall be the responsibility of the Contractor to keep the construction site moistened to prevent dust pollution to the air and adjacent properties.

SUBSECTION 225.2 – WATER SUPPLY

Add the following to this section:

The Contractor shall make their own arrangements for construction water. Subject to the convenience of the City of Mesa, the Contractor may be permitted to connect to existing facilities where available. The Contractor shall meter and bear the cost of City water for construction.

SUBSECTION 225.5 – PAYMENT

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

SECTION 301 – SUBGRADE PREPARATION

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

SUBSECTION 301.3 – RELATIVE COMPACTION

Revise compaction table to read:

All Streets.....	95 Percent
Other Traffic Ways	95 Percent
Curbs and Gutters	95 Percent
Sidewalks	90 Percent

SUBSECTION 301.7 – MEASUREMENT

Add the following to this section:

No measurement for subgrade preparation will be made.

SUBSECTION 301.8 – PAYMENT

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

SECTION 310 – UNTREATED BASE

Untreated base shall conform to Section 310 of the MAG Uniform Standard Specifications.

SUBSECTION 310.1 – DESCRIPTION

Add the following to this section:

This work consists of the placement of ABC for pavement replacement as described in Section 336.

SUBSECTION 310.4 – PAYMENT

Add the following to this section:

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

SECTION 321 – ASPHALT CONCRETE PAVEMENT

Asphaltic concrete pavement shall conform to Section 321 of the MAG Uniform Standard Specifications except as modified herein and the City of Mesa Amendment to the MAG Uniform Standard Specifications (2006).

For all pavement work covered by this section, the following applies:

After the asphalt concrete surface course has been placed, all manholes, valve boxes, cleanouts and other existing structures shall be built up or otherwise adjusted to finish grade. The adjustment shall be per MAG Standard Detail 270 and 422.

SUBSECTION 321.5.5 – PRESERVATIVE SEAL

Replace this section with the following:

A surface treatment per Sections 333 or 334 will be required when the surface course asphalt is an R mix as defined by the East Valley Asphalt Mix Design Criteria. When the surface course

asphalt is an A mix, the surface treatment will be required when specified in the contract documents (special provisions, plans, bid proposal, etc.) or when, in the opinion of the Engineer, the traffic conditions of the street justifies the treatment. The application rate and the type of treatment shall be approved by the Engineer.

SUBSECTION 321.5.6 – CRITERIA

Add the following to this section:

The Contractor shall be responsible for providing the City of Mesa with an acceptable product per the applicable current MAG Sections and the current East Valley Asphalt Criteria. Routine testing of the aggregates, binder, anti-strip material and the asphalt mixture shall be the responsibility of the Contractor or the Contractor's representative.

The City of Mesa shall test, as it deems necessary. If the City test results are not in agreement with the Contractor's test results, the Contractor shall have the option to retain a third party consultant for testing. The consultant shall be a Professional Engineer registered in the State of Arizona, knowledgeable in asphalt pavements and approved by the City Engineer. The consultant's expertise shall include but not be limited to design, production, transportation, placement and compaction of hot Mix Asphalt. The standards outlined in the East Valley Asphalt Criteria, MAG Uniform Standard Specifications, etc. shall be used for the testing of the asphalt mix. The number and locations of the test samples shall be approved by the City Engineer. The results of the third party shall be binding. All cost incurred by the consultant shall be at the Contractor's expense.

SUBSECTION 321.6 – CORRECTIVE REQUIREMENTS FOR DEFICIENCIES

Add the following to this section:

When more than one (1) deficiency occurs in the same asphalt as discussed in the following Subsection 321.6.1, 321.6.2 and 321.6.3, the corrective action will be the most stringent of the deficiencies. If all three (3) deficiencies occur in the same asphalt, the Engineer has the option to require the asphalt to be removed and replaced with material meeting the specification requirements for the mix type involved. If the asphalt remains in place and the Contractor selects the option to pay a cash amount with the City, the amount of the money paid shall be the sum of all individual monetary penalties for each deficiency.

SUBSECTION 321.6.1 – THICKNESS

Replace this section with the following:

When, in the opinion of the Engineer, there is reason to believe that the pavement may be deficient in thickness, cores will be taken by the Engineer at random locations, with one (1) core per pass of the paver or portion thereof of width and not less than five hundred (500) feet of lineal distance, with a minimum of one (1) core per pass of the paver width between intersecting streets or portions thereof. When a deficiency of more than one-quarter ($\frac{1}{4}$) inch is found and at the option of the Contractor, two (2) additional cores will be taken not closer than one hundred (100) feet apart nor closer than one hundred (100) feet to the original core, and the average of

these three (3) cores will be used to determine the amount of the deficiency. The Contractor shall make necessary arrangements and pay all costs for the additional cores. The City will provide the laboratory testing. Further cores may be taken by the Contractor, if he so chooses, to determine the limits of the deficiency. The City may request companion cores for their testing and analysis. The cores shall be at no additional cost to the City and shall not be used in determining the average thickness of the pavement. Thickness of the cores shall be determined by average caliper measurement. When pavement thickness is deficient by one-quarter ($\frac{1}{4}$) inch or less, it will be paid for at the contract price.

When the pavement (base or surface) is deficient in thickness by more than one-quarter ($\frac{1}{4}$) inch but less than or equal to one-half ($\frac{1}{2}$) inch, the Contractor has the option 1) to remove the defective asphalt mix and replace it with asphalt of proper thickness, 2) to place an overlay as discussed in the following paragraph or 3) to provide a monetary compensation to the City. The monetary compensation will be a payment of \$1.00 per square yard for all deficient mat thicknesses. When the contracting party is the City of Mesa, a Change Order will be issued reducing the specified amount of money. When the contracting party is other than the City of Mesa, the Contractor shall pay the specified amount of money to the City of Mesa prior to acceptance.

In the case of deficient base asphalt, when the asphalt is placed thinner than specified but not more than one-half ($\frac{1}{2}$) inch and with the approval of the Engineer, the Contractor can provide additional surface asphalt to compensate for the base.

When the deficiency of the pavement thickness exceeds one-half ($\frac{1}{2}$) inch, the pavement shall be overlaid on the area affected, but in no case less than one City block or six hundred sixty (660) feet whichever is less in length, for the width of pavement, with a new mat of material specified by the Engineer. The thickness of the overlay shall be equal in thickness to the deficiency but not less than three times the nominal maximum aggregate size unless otherwise approved by the Engineer. This is to be done at no additional cost to the City. Note: Removal or milling of all or a portion of the asphalt surface may be required to achieve the minimum thickness and/or to provide the correct elevation of the asphalt surface at the control points (lip of gutter, valley gutter, etc.).

SUBSECTION 321.6.2 – DENSITY

Replace this section with the following:

When, in the opinion of the Engineer, there is reason to believe that the compaction of the mixture is deficient, either by inadequate or excessive compaction, cores will be taken in the same pattern as that defined in the first paragraph of Subsection 321.6.1 – Thickness. The cores shall be tested for specific gravity per AASHTO T166.

The Contractor has the option to remove and replace the defective asphalt mix or to provide corrective action as specified below. Replacement or corrective action shall apply to the affected area but not less than one city block or six hundred sixty (660) feet, whichever is less.

The tolerances for deficient compaction and related corrective action shall be per Tables A or B.

TABLE A	
Corrective Action for Inadequate Specific Gravity	
Below Minimum requirements established in section K above. (%)	A or R – Asphalt Mix As defined by East Valley Asphalt Criteria
Less than 1.0	Apply a Surface Treatment See Note #1
1.0 to less than 2.0	Apply a Surface Treatment Plus Monetary Compensation See Notes #1 & 2
2.0 to less than 3.0	Apply a Surface Treatment Plus Monetary Compensation See Notes #1 & 3
Greater than or equal to 3.0	Remove and Replace Defective Asphalt See Note #5

TABLE B	
Corrective Action for Excessive Specific Gravity	
Greater than the minimum established in Section K above (%)	A or R* – Asphalt Mix As defined by East Valley Asphalt Criteria
Greater than 2.0 to less than 3.0	Monetary Compensation and Delete any Surface Treatment See Notes #3 & 6
3.0 to less than 4.0	Monetary Compensation and Delete any Surface Treatment See Notes #4 & 6
4.0 and greater	Remove and Replace Defective Asphalt See Note #5

* Only applies for R Asphalt mixes when air voids are less than six (6) percent.

Notes:

1. A surface treatment shall be applied per Section 333 or Section 334. The application rate and the type of treatment shall be approved by the Engineer. The surface treatment shall be applied at no cost to the City.
2. The monetary amount of \$0.50 per square yard per inch of depth for each square yard having the deficiency shall be paid to the City for long-term maintenance created by the deficient asphalt. If the Contracting Agency is the City of Mesa, a change order will be issued deducting the monies from the contract. If the Contracting Agency is someone other than the City of Mesa, the Contractor shall pay the specified amount of money to the City of Mesa prior to acceptance.
3. Same as Note #2 above except the amount paid shall be \$1.00 per square yard per inch of depth of the deficient asphalt.
4. Same as Note #2 except the amount paid shall be \$1.50 per square yard per inch of depth of the deficient asphalt.
5. The minimum thickness of the removed asphalt shall be three times the nominal size of the aggregate unless otherwise approved by the Engineer. If the removal is the total asphalt section, the Contractor shall use any means available to him for the removal. If only partial removal is required, the removal will be with a cold asphalt milling machine. The removal and replacement of the asphalt shall be at no cost to the City.
6. Delete the surface treatment as required in Detail M-19.1, Note #7.

SUBSECTION 321.6.3 – MINERAL AGGREGATE

Replace this section with the following:

When in the opinion of the Engineer, there is reason to believe that the asphalt cement content of the mix is either deficient or in excess, cores will be taken in the same pattern as that defined in the first paragraph of Subsection 321.6.1 – Thickness. The cores shall be tested for asphalt content per Subsection 710.4.2. When the asphalt cement content of any core is found to be either deficient or in excess, two (2) additional adjacent cores will be collected and tested. The average of the three tests shall be used to determine the final asphalt cement content at that point.

A) Asphalt Content Exceeding the Limits:

When the asphalt cement content is in excess of that established in Subsection 710.4.2 but not beyond 0.2 percentage points above the limit and if the air voids of the in-place material is between 3.0 and 7.0 percent inclusive, and the air voids of the laboratory compacted specimen, composed of the same asphalt mix placed in the field, is within 1.0 percent of design, the Contractor may comply with the following paragraph. In all other cases, the Contractor shall remove and replace the asphalt concrete with new material at no additional cost to the City. The limits of the corrective action shall be over the affected area but not less than one city block or six hundred sixty (660) feet.

The Contractor shall remove any areas of bleeding, but in no case less than the specified roller width, as directed by the Engineer, and replace the affected material with new material meeting the specification requirements for the mix type involved. This shall be done, any time within the one (1) year warranty until the bleeding has been corrected, at no additional cost to the City. Should the stability of the mix be affected by the excess asphalt cement to such an extent that the pavement is displaced under normal traffic load, within the one (1) year warranty, the areas affected shall be removed and replaced with new material, at no additional cost to the City. The criteria for determining stability of the mix shall be three-eighths (3/8) inch movement or more of the asphalt (rutting or shoving) measured with a ten (10) foot straight edge in any direction.

B) Asphalt Content Below the Limits:

When the asphalt cement content is below the limit established in Subsection 710.4.2 but not beyond 0.2 percentage points below the limit, the Contractor shall have the option of removing and replacing the deficient asphalt or to place a surface treatment on the affected area per Sections 333 or 334. The application rate and the type of treatment shall be approved by the Engineer. The limits of the corrective action shall be over the affected area but not less than one (1) city block or six hundred sixty (660) feet. In addition to the treatment, the Contractor shall pay \$0.50 per square yard per inch of depth of deficient asphalt, to the City for long term maintenance created by the deficient asphalt. If the Contracting Agency is the City of Mesa, a change order will be issued deducting the monies from the contract. If the Contracting Agency is someone other than the City of Mesa, the Contractor shall pay the specified amount of money to the City of Mesa prior to acceptance.

When the asphalt cement content is greater than 0.2 percentage points below that established in Subsection 710.4.2, the Contractor shall remove the asphalt concrete and replace it with material

that meets the specifications at no additional cost to the City. The limits of the corrective action shall be over the affected area but not less than one city block or six hundred sixty (660) feet.

SUBSECTION 321.9 – PAYMENT

No additional payment shall be made for tack coat. Tack coat shall be incidental to the payment for pavement replacement. No payment shall be made for sawcutting pavements and pavement removal. Sawcutting and pavement removal shall be incidental to the payment for pavement replacement.

SECTION 322 – ASPHALT CONCRETE OVERLAY

Construction shall conform to Section 322 of the MAG Uniform Standard Specifications except as modified herein.

SUBSECTION 322.1 – DESCRIPTION

Add the following to this section:

This item is for the milling and replacement of the pavement milled in McDowell Road as shown on the plans.

SUBSECTION 322.4 – PREPARATION OF SURFACES

Add the following to this section:

All pavements to be removed shall first be sawcut.

The pavement shall be milled, as delineated on the plans, to one-half (1/2) inch depth.

SUBSECTION 322.7 – MEASUREMENT AND PAYMENT

Replace this section with the following:

There will be no measurement or payment for milling, the cost thereof shall be included as part of the basis of price bid per square yard for Bid Item 322-1 for Structural Section 2.

Measurement for pavement overlay will be by the square yard, based upon dimensions indicated on the plans. Pavement outside the normal construction limits damaged by the Contractor's operation will not be measured.

Payment for asphalt concrete pavement overlay (Structural Section 2) shall be made on the basis of price bid per square yard. No payment will be made for the slurry seal coat as such, the cost thereof shall be included in the bid price for Pavement Overlay. Payment shall be full compensation for all work required for the construction including, but not limited to, sawcutting, milling, tack coats if required and preservative seal coat.

ITEM 322-1 – PERMANENT PAVEMENT OVERLAY – STRUCTURAL SECTION 2

SECTION 336 – PAVEMENT MATCHING AND SURFACING REPLACEMENT

Construction shall conform to Section 336 of the MAG Uniform Standard Specifications except as modified herein.

SUBSECTION 336.1 – DESCRIPTION

Add the following to this section:

This item is for the replacement of the pavement cuts in McDowell Road, Sossaman Road, and Hawes Road, and any pavement replacement for cross streets, for the construction of the storm drain, connector pipes, waterline pipes, and sanitary sewer, and any other project improvements in the paved roadway.

Pavement matching and replacement within the City of Mesa shall be conducted according to these Special Provisions, City of Mesa Standard Detail M 19.4, and the construction plans using limits shown and pavement structure section 1. Pavement matching and replacement within the Maricopa County shall be conducted according to these Special Provisions, MAG Standard Detail 200, Type B, T-top, the construction plans using the limits shown on the plans and using the pavement structure sections noted on the roadway plans.

This item also includes the placement of ABC (four [4] inch depth) to the limits shown on the plans for private driveways, where indicated. This item includes shaping, grading, restoring to grade, all private driveways disturbed by Contractor activities.

SUBSECTION 336.2.2 – PAVEMENT TO BE REMOVED

Add the following to this section:

All pavements to be removed shall first be sawcut.

Replacement of pavement cuts (where pavement is removed and replaced for storm drain construction) shall be seal coated as delineated on the plans after installation of permanent pavement replacement in accordance with Section 336.2.2. The seal shall be a slurry seal coat with a type II aggregate mix (MAG Section 715). The cost of the slurry coat shall be included in the cost of the permanent pavement replacement.

SUBSECTION 336.2.3 – PERMANENT PAVEMENT REPLACEMENT

Add the following to this section:

The acceptable surface profile from the existing surface across a pavement replacement shall not vary more than one-quarter ($\frac{1}{4}$) inch from the lower edge of a twelve (12) foot straightedge with the straightedge is place parallel or perpendicular to the centerline of the roadway. When the width of the pavement replacement is greater than six (6) feet, compliance with the specification shall be measured by placing the straightedge a minimum of four (4) feet overlapping the existing pavement.

SUBSECTION 336.4 – MEASUREMENT

Replace this section with the following:

Measurement for pavement and surfacing replacement will be by the square yard, based on the limits shown on the plans. Pavement outside the normal construction limits, as shown on the plans, damaged by the Contractor's operation, will not be included for payment.

SUBSECTION 336.5 – PAYMENT

Replace this section with the following:

Payment for asphalt concrete pavement replacement shall be made on the basis of price bid per square yard. Payment for structural section 1 is inclusive for pavement replacement within the City of Mesa and within the County jurisdiction (no separate payment is provided for using COM 19.4 and MAG Standard Detail 200 Type B T-Top). No payment will be made for the slurry seal coat or the ABC as such, the cost thereof shall be included in the bid price for Pavement Replacement. Payment shall be full compensation for all work required for the construction including, but not limited to, subgrade preparation, ABC, asphalt concrete, earthwork, tack coats if required and preservative seal coat.

**ITEM 336-1 – PERMANENT PAVEMENT REPLACEMENT – STRUCTURAL
SECTION 1 (COM M 19.4 AND MAG STANDARD DTL 200 TYPE B T-
TOP)**

ITEM 336-2 – NOT USED

ITEM 336-3 – RESURFACE DRIVEWAY (4 INCHES AB)

SECTION 340 – CONCRETE CURB, GUTTER, SIDEWALK, AND DRIVEWAY

Concrete sidewalk and concrete single curb and gutter shall conform to Section 340 of the MAG Uniform Standard Specifications and City of Mesa Supplement except as modified herein.

SUBSECTION 340.1 – DESCRIPTION

Add the following to this section:

This work shall include the construction of concrete sidewalk replacements and concrete single vertical curb and gutter as shown on the plans. Work shall include sawcutting, subgrade preparation, placing of ABC, concrete, and forms as shown on the plans or specified in these special provisions.

This work also includes the construction of private residential concrete driveway as shown on the plans. Work shall include sawcutting, removal of existing driveway to the limits shown on the plans, concrete, subgrade preparation, curing, and forms as shown on the plans for specified in these special provisions.

SUBSECTION 340.6 – PAYMENT

Payment for the construction of concrete sidewalk shall be at the price bid per square yard based on actual field measurement and shall include full compensation for furnishing all labor,

materials, tools, and equipment and doing all the work involved in constructing the concrete sidewalk in place as specified on the plans, and in these special provisions. This includes but is not limited to preparation of ground surfaces, excavation, trenching, color additives and color matching, aggregate base course, furnishing concrete, placing, and finishing.

Payment for concrete curb and gutter shall be at the price bid per linear foot based on actual field measurement. Payment shall include full compensation for furnishing all labor, materials, tools, and equipment and doing all the work involved in constructing the concrete sidewalk in place as specified on the plans, and in these special provisions. This includes but is not limited to preparation of ground surfaces, excavation, trenching, aggregate base course, furnishing concrete, placing, and finishing.

Payment for concrete driveway shall be at the price bid per square yard based on dimensions noted on the plans. Payment shall include full compensation for furnishing all labor, materials, tools, and equipment and doing all the work involved in constructing the concrete driveway in kind as specified on the plans, and in these special provisions. This includes preparation of ground surface, removal of existing concrete driveway, sawcutting, furnishing concrete, placing, and finishing.

ITEM 340-1 – CONCRETE CURB – SINGLE CURB (MAG STD DETAIL 222, TYPE A)

ITEM 340-2 – CONCRETE CURB AND GUTTER (MAG STD DETAIL 220, TYPE A)

ITEM 340-3 – CONCRETE SIDEWALK, FIVE FOOT (MAG STD DETAIL 230)

ITEM 340-4 – CONCRETE DRIVEWAY REPLACEMENT (MAG STD DETAIL 230)

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

Manhole frames and covers and valve boxes shall be adjusted to grade per Section 345 of the MAG Uniform Standard Specifications except as modified herein.

SUBSECTION 345.5 – PAYMENT

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

SECTION 350 – REMOVAL OF EXISTING IMPROVEMENTS

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

SUBSECTION 350.1 – DESCRIPTION

Add the following to this section:

The work includes the removal and disposal of existing structures, pavement, curb, gutter, sidewalk, manholes, headwalls, masonry block wall, storm drain, sanitary sewer and household

connections, abandoned utilities, and any other obstacles to construction. Holes, cavities, and trenches resulting from the removal of structures shall be backfilled in accordance with Sections 206 and 211.

Removal of sewer pipe shall include sewer pipe, manholes, and miscellaneous pipe fittings. Where the existing sanitary sewer is abandoned in place, the Contractor shall plug the existing sewer outside the limits of the construction. All plugs required for the abandonment of existing sewer lines shall be considered incidental to the removal of existing sewer line. Plugs shall be per MAG Standard Detail 427.

Removal of water pipe shall include water pipe and miscellaneous appurtenances and fittings. Where the existing water pipe is abandoned in place, the Contractor shall plug the existing water pipe outside the limits of the construction. All plugs required for the abandonment of existing water lines shall be considered incidental to the removal of existing water line. Plugs shall be water tight.

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

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

Weigh tickets from all landfill disposals shall be furnished to the Engineer.

SUBSECTION 350.4 – PAYMENT

Payment for removal and disposal of existing concrete and/or corrugated metal culvert pipe (regardless of pipe diameter or pipe shape) shall be on the basis of the price bid per lineal foot. Payment shall be full compensation for furnishing all labor, materials, tools and equipment, removal of concrete and attached handrails, CMP end sections, hauling, and disposal and other items necessary to conduct this work.

ITEM 350-1 – REMOVE EXISTING PIPE CULVERT

Payment for removal and disposal of concrete headwalls including footing and apron shall be on the basis of the price bid per each. Payment shall be full compensation for furnishing all labor, materials, tools and equipment, removal of concrete and attached handrails, hauling, and disposal and other items necessary to conduct this work.

ITEM 350-2 – REMOVE EXISTING CONCRETE HEADWALL

Payment for removal of concrete curb and gutter shall be at the price bid per linear foot as shown on the project plans or as modified and approved by the Engineer. Payment shall be full compensation for furnishing all labor, materials, tools and equipment, removal of concrete curb and gutter, hauling and disposal and other items necessary to conduct this work.

ITEM 350-3 – REMOVE EXISTING CONCRETE CURB AND GUTTER

Payment for removal of concrete sidewalk shall be at the price bid per square yard as shown on the project plans or as modified and approved by the Engineer. Payment shall be full compensation for furnishing all labor, materials, tools and equipment, removal of concrete sidewalk, hauling and disposal and other items necessary to conduct this work.

ITEM 350-4 – REMOVE EXISTING CONCRETE SIDEWALK

No payment for the removal and disposal of existing sewer and water pipe shall be made. The removal of sewer and water pipe is incidental to the project and the cost thereof shall be included in the bid price for the construction or installation of the sanitary sewer and water line realignments as noted on the plans or these Special Provisions.

Payment for removal and disposal of existing storm drain shall be on the basis of the linear foot. Payment shall be full compensation for furnishing all labor, materials, tools and equipment, removal of storm drain, hauling, and disposal and other items necessary to conduct this work.

ITEM 350-5 – REMOVE EXISTING STORMDRAIN

Payment for removal and disposal of existing concrete driveway shall be on the basis of the square yard and to the limits shown on the plans. Payment shall be full compensation for furnishing all labor, materials, tools and equipment, removal of concrete driveway, hauling, and disposal and other items necessary to conduct this work.

ITEM 350-6 – REMOVE EXISTING CONCRETE DRIVEWAY

Payment for removal and disposal of existing block wall shall be on the basis of the linear foot. Payment shall be full compensation for furnishing all labor, materials, tools and equipment, removal of block wall, hauling, and disposal and other items necessary to conduct this work.

ITEM 350-7 – REMOVE BLOCK WALL

Payment for removal and disposal of existing single vertical curb shall be on the basis of the linear foot. Payment shall be full compensation for furnishing all labor, materials, tools and equipment, removal of single curb, hauling, and disposal and other items necessary to conduct this work.

ITEM 350-8 – REMOVE SINGLE VERTICAL CURB

SECTION 401 – TRAFFIC CONTROL

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

SUBSECTION 401.1 – DESCRIPTION

Add the following to this section:

All traffic control shall conform to the Construction Specifications for this project and the request of the Engineer. Part VI of the "Manual On Uniform Traffic Control Devices For Streets And Highways," (MUTCD) 2003 Edition (U.S. Department of Transportation, Federal Highway Administration) and all revisions thereto, the City of Phoenix Traffic Barricade Manual, current

edition, City of Mesa revisions to the City of Phoenix Traffic Barricade Manual, and all revisions thereto shall serve as a guideline in Contractor's application of traffic control.

It shall be the Contractor's responsibility to provide, erect and maintain and remove after completion of the work all necessary signs, barricades, temporary traffic signals, barriers, berms, lights, high level warning devices, delineators, and any other required devices, uniformed officers, and flagman, necessary to properly mark and control the construction area for the safe and efficient movement of traffic. Temporary traffic control devices shall be installed prior to the start of any work. It shall be the Contractor's responsibility to construct the required bypass lanes, if needed, in order to make the roads available to traffic. The City of Mesa's approval of the Contractor's traffic control method shall not relieve the Contractor of its responsibility to protect the work zone, Contractor's personnel, or the general public.

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

The City of Mesa has traffic control plan approval jurisdiction for McDowell Road west of Sossaman Road and MCDOT has traffic control plan approval jurisdiction for McDowell Road from Sossaman Road to Hawes Road. City of Mesa will coordinate approvals with MCDOT.

SUBSECTION 401.5 – GENERAL TRAFFIC REGULATIONS

Add the following to this section:

Traffic Control Plans shall be submitted to the City of Mesa and MCDOT for approval a minimum of fourteen (14) days prior to construction. The Contractor will transmit an approved copy of the Traffic Control Plans(s) to the Engineer prior to any construction activity in the affected area(s). The Traffic Control Plan shall include the placement of all traffic control devices, including all conflicting signs to be covered/removed or relocated, or other features that may conflict with the placement of temporary signage. This plan shall be professionally drawn on twenty-four (24) inches by thirty-six (36) inches reproducible medium and shall be submitted to the Engineer at the Pre-Construction Conference. The plan shall be signed and sealed by an Arizona registered professional engineer. The Contractor will update the plan as appropriate throughout the duration of the project as traffic control requirements change. Revised plans shall be submitted as noted in this paragraph.

The Contractor shall establish reasonable work zone lengths. Work zones shall be permitted on only one (1) arterial roadway at any given time.

A road closure for the convenience of the Contractor is not authorized, except as specified in these Special Provisions, without the prior approval of the Engineer and the City of Mesa and MCDOT. Lighted flashing arrow boards shall be used for lane closures on arterial streets after dark and on any multi-lane closure, day, or night. Road closures need to be coordinated with the City of Mesa Fire Department.

At the time a lane closure is requested, the right of way permit number shall be provided to the City of Mesa Transportation Department. The City of Mesa Transportation Department and the Engineer reserve the right to cancel any closure that has been determined to be unsafe to the public.

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

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

Plates shall cover any open trenches during non-working periods as possible.

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

Access to all adjacent properties and crossroads shall be maintained whenever possible. When access cannot be maintained, Contractor shall notify the Engineer, adjacent landowners and the City of Mesa Transportation Department and MCDOT at least forty-eight (48) hours in advance of the access closure. In no case, shall the access be closed for more than four (4) hours. Access for the City of Mesa fire station, churches, and schools along McDowell Road shall be maintained at all times.

In order to keep nighttime noise to acceptable levels, no work shall be conducted during the hours of 7:00 PM to 6:00 AM. This includes equipment warm-up, and any other work that creates noise which could disturb adjacent residents. Exceptions may be granted by the Engineer. Contractor shall implement special noise abatement procedures for nighttime work.

Contractor shall maintain or relocate all existing signal indications, warning signs, STOP, YIELD, and street name signs, erect, clean and in full view of the intended traffic at all times. Portable signs shall be used to supplement blocked or removed signs. Contractor shall reset all disturbed signs to permanent locations when construction is completed. The Contractor shall cover all existing signs that are in conflict with the traffic control signing. Contractor is responsible for the cost of replacing lost, stolen, or damaged traffic signs.

Contractor shall erect portable concrete barriers when deemed necessary by the Engineer. When space permits, the approach ends of all portable barriers shall be flared a minimum of ten (10) feet away from the travel lane. When space does not permit, barrier ends shall be protected with impact attenuators, as required in the MUTCD.

One lane of traffic in each direction of travel shall be maintained at all times. Left turn lanes shall be maintained at all major intersections, unless approved by the Engineer. Traffic shall be maintained on pavement at all times utilizing minimum eleven (11) foot wide lanes. Lane closures will not be allowed on both McDowell Road and Sossaman Road at the same time. Lane closures will not be allowed on both McDowell Road and Hawes Road at the same time.

All advance road closed warning signs shall use distance advisory criteria and be mounted on channels driven into the ground. All conflicting speed limit signs shall be covered.

Contractor shall provide and maintain all necessary signs, barricades, and centerline vertical panels until the road is striped.

The Contractor shall be responsible for the removal of all signs and barricades. The Engineer or the City of Mesa and/or MCDOT reserves the right to have these items removed from the street at Contractor's expense if they are not removed at the end of the work shift.

Construction shall not commence or proceed without an approved Traffic Control Plan. At the pre-construction conference, the Contractor shall submit for review the Contractor's plan for the sequence of construction. A Traffic Control Plan (TCP) covering the signing and staging shall be submitted and approved prior to the start of each stage of construction. The Traffic Control Plans shall address all construction staging and special provisions requirements. The Traffic Control Plans shall also be submitted to the City of Mesa and MCDOT for approval.

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

The Contractor will develop routes for haul trucks on public streets, which will be submitted in writing to the Engineer, the City of Mesa Transportation Department, and MCDOT for review and approval. The submittal shall include, but limited to, the proposed travel direction, turn movements, hours of use, street sweeping, watering for dust control, and clean up. Presently established truck routes must be used.

No flagging of traffic will be permitted during the peak traffic hours of 6:00 AM to 8:30 AM and 4:00 PM to 7:00 PM weekdays. If construction requires, intermittent flagging will be allowed from 8:30 AM to 4:00 PM to facilitate access for heavy construction equipment.

MCDOT shall determine approach speed limits and speed limits with the construction area.

Sequence of Construction

- The project shall follow a phasing plan approved by the Engineer. All lanes shall be maintained on a paved surface at all times during construction. This may be accomplished by using existing, new, or temporary asphalt pavement (non-pay item). Trenches shall be completely backfilled and either paved with temporary asphalt pavement, or covered with metal plating as necessary to comply with this requirement.
- Night work will **not** be allowed.

- The right to direct the sequence of construction is a function vested solely with the Engineer. Prior to commencement of the work, the Contractor shall prepare and submit to the Engineer a written phasing plan and work schedule for the project. This plan and work schedule shall be submitted to the Engineer at the Pre-Construction Conference for review.
- When approved, the phasing plan and work schedule shall not be changed without the written consent of the Engineer. Orderly procedure of all work to be performed under this contract shall be the full responsibility of the Contractor. The work schedule shall include the hours per day and the days per week that the Contractor plans to work on the project site.

Residential and Business Area Requirements

- The Contractor shall communicate in writing by use of door hangers, and in person as necessary, with all residences, businesses, schools, churches, fire stations, and other entities impacted by the proposed construction. Written communication shall be completed prior to construction and during construction as refinements are made. The Contractor shall provide information on the planned traffic restrictions including timing, starting dates, and finish dates by the areas restricted. This information shall be refined and made more specific, such as maps identifying temporary parking areas by date, excavation limits by date, truck routes, waterline shut downs for waterline relocations, and other impacts to the neighborhood.
- Driveways to individual residences along McDowell Road shall not be blocked for more than four (4) hours. At minimum steel plates must be placed at driveway locations when the trench will need to remain open for more than four (4) hours.

SUBSECTION 401.6 – MEASUREMENT

Replace this section with the following:

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

- There will be no direct measurement or payment for furnishing, installing, maintaining, or removing temporary asphalt pavement, subgrade preparation including earthwork, traffic signs, and installing temporary drainage facilities, the cost of being considered incidentals to the cost of the project.
- Uniformed off-duty law enforcement officer's hours will not be measured.

SUBSECTION 401.7 – PAYMENT

Replace this section with the following:

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

ITEM 401-1 – TRAFFIC CONTROL

SECTION 430 – LANDSCAPING AND PLANTING

Landscaping and Planting shall conform to Section 430 of the MAG Uniform Standard Specifications except as modified herein.

SUBSECTION 430.1 – DESCRIPTION

Section 430.1 of the MAG Standard Specifications is modified to add the following:

Provide complete landscaping and planting installation in accordance with the Contract Documents and conform to the MAG Uniform Standard Specifications, current edition Section 430 and 795 as amended by the City of Mesa. Any sections of MAG not indicated herein or modified by the Drawings shall remain in effect per the MAG Documents.

Work shall include, but is not limited to: site fine grading; material procurement; material testing; soil preparation; planting of nursery stock; planting of Flood Control District provided tall pot plants with biodegradable tree protectors anchored to bamboo stake; DriWATER Irrigation Supplement (SoilMoist® or other polymer- based products are NOT acceptable watering products/equivalents for arid land planting) installations to designated plants per the plans, details, and schedule, and one complete replacement of each DriWATER Irrigation Supplement installation at the specified application frequency per the specifications and details; the fabrication and installation of landscaping protective cage installations; staking; seed mix installation; landscape surface preparation; landscape restoration where necessary; obtaining and paying all required permits and fees; providing all necessary traffic control; and maintenance, establishment and warranty of all landscape work.

SUBSECTION 430.2 – GENERAL

Section 430.2 of the MAG Uniform Standard Specifications is modified to add the following:

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

Protection of existing surfaces beyond the limits of site grading modifications are to remain undisturbed from Contractor activities with the exception of hydroseeding and be protected during construction. Contractor shall stake out limits of construction and obtain Engineer approval prior to the start of grading operations or any other construction. Contractor shall install temporary protective fencing at the limits of site grading modifications at the basin site and along McDowell Road. Temporary protective fencing shall consist at a minimum of four (4) foot height T-bar stakes at thirty (30) feet o.c. with a double strand of gold nylon rope. Temporary protective fencing shall remain in place for the duration of construction. Contractor shall completely remove temporary protective fencing at the conclusion of construction.

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

Any subsurface obstructions, materials, or substances which conflict with or impact the installation of plants or may be detrimental to plant health shall be excavated and removed to a minimum of one (1) times the rootball container depth and three (3) times the rootball container width unless otherwise noted in the Plans and Specifications.

All landscape plants, materials, and surfaces shall be planted, established, and maintained in accordance with these Plans and Specifications, and the Maintenance/Establishment period shall be ninety (90) calendar days from the completion and acceptance date of all pre-maintenance inspection and landscape planting and restoration punch list items of the project as determined by the Engineer. If this period extends beyond the final acceptance date of the project, the Owner will retain ten (10) percent of the bid for project landscaping until the requirements for final acceptance are met at the end of the maintenance/establishment period.

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

1. The restoration of existing landscape and all non-paved landscape areas as indicated on the plans.
2. The removal, relocation, or replacement of existing landscape plants and other materials or surfaces, which are disturbed or damaged by this project.

Materials and installation shall conform to MAG Sections 430, 440, and 795 respectively, except as noted herein or on the drawings.

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

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

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

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

SUBSECTION 430.2.1 – RELATED WORK

Add this section to the MAG Uniform Standard Specifications:

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

SUBSECTION 430.2.2 – QUALITY CONTROL

Add this section to the MAG Uniform Standard Specifications:

Within fourteen (14) days after the award of contract, the Contractor shall submit a list of all specified landscape materials, sources, locations, phone numbers, and contact persons to the Engineer for review and approval. Prior to bringing plant materials onto the site, the Engineer is to visually inspect the proposed materials. The Contractor shall make all necessary arrangements with the Engineer to have the plant material inspected in accordance with MAG Section 430.52. The Engineer may reject any material, which shall be replaced with acceptable material by the Contractor.

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

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

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

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

SUBSECTION 430.2.3 – FINISHED LANDSCAPE SURFACES

Add this section to the MAG Uniform Standard Specifications:

The work consists of furnishing all equipment, materials, and labor required for the grading and preparation of landscape surfaces within the project area, in the locations shown and in accordance with the project plans, MAG, and these Specifications.

Finished landscape surfaces shall consist of a mixture of native soil and granular materials naturally found in the on-site soils, water settled to bring larger aggregate to the surface. The finished surface shall result in a soil surface color and texture to match existing undisturbed adjacent desert areas. Contractor shall prepare minimum thirty (30) foot by thirty (30) foot

sample area for approval. The approved sample area shall be maintained and used as the installation control standard for the remainder of the project areas designated to receive topsoil plating/desert pavement. Contractor shall have the sample approved prior to obtaining or installing any desert pavement materials.

Finish grade for landscape surfaces in all areas shall be as shown on the construction drawings and as follows: one (1) inch below any paved roadway surfaces and flush with any unpaved surfaces.

SUBSECTION 430.2.4 – SALVAGED PLANT MATERIAL

Add this section to the MAG Uniform Standard Specifications:

The work consists of furnishing all equipment, materials and labor required for the salvage, transport, maintenance and replanting of existing plant material identified in the plans and specifications to be salvaged including the set-up of a temporary on-site nursery and irrigation system.

Salvage of plant material shall be performed by an experienced salvaged Contractor and in accordance with USDA and Arizona Department of Agriculture standards for salvage of desert plant material.

Plant material to be salvaged shall be located in the Salvaged Plant Nursery per the plans and specifications and protected throughout the duration of constructions. Salvaged plant material shall be maintained in a healthy and vigorous condition and a temporary irrigation shall be provided to salvaged plant material.

All existing plant material on the site shall be clearly flagged with tape or plastic tags visible from all directions and color-coded as follows:

- Red – salvage and relocate
- White – preserve and protect in place
- Blue – destroy

Tags shall be numbered and correspond to the plant inventory per the plans and specifications. Tagged material must be clearly marked with waterproof ink and include the number which corresponds to the number shown on the plans. Tags must be attached so that they will remain on the plant for the duration of the salvage and nursery storage period.

In order to avoid sunburn damage when relocating saguaro and other miscellaneous cacti, care shall be taken that the plant is placed so that it faces the same compass direction and orientation in which it originally grew. The plants shall be marked on the north side prior to digging. Marking shall be accordance with USDA and Arizona Department of Agriculture standards in such a manner that it remains until the plant is replanted and approved by the Engineer.

All protective fencing shall be in place and approved by the Engineer before any earth moving equipment is moved onto the site and before any salvage, clearing, or grubbing takes place.

No nails, wire, or other objects that damage the cambium or cause injury to the salvaged plant may be used during the salvage process. All efforts shall be taken by using padding or other approved methods to preserve the integrity of the bark.

All material to be salvaged shall be removed and inspected in the on-site nursery by Engineer before any clearing or grading takes place.

Trees and protected plant material or material noted for salvage that are destroyed or die during the salvage, relocation, or maintenance period will be replaced at the Contractor's expense with a plant of the same size and kind by the Contractor a minimum of ninety (90) days before the completion of the project. The Engineer shall approve all replacement material. A maximum of ten (10) percent of the salvageable plant material will not be required to be replaced if lost.

No salvageable plant material shall be removed from the site without approval from the Engineer.

Plant material identified as "to be destroyed" shall be chipped/mulched and redistributed throughout the basin site per the plans and specifications.

SUBSECTION 430.3 – TOPSOIL PLATING/DESERT PAVEMENT AND GRADING

Section 430.3 Lawn Areas of the MAG Uniform Standard Specifications, for purpose of this project shall apply to Topsoil Plating/Desert Pavement and Grading.

Topsoil plating/desert pavement and grading shall consist of the smooth and even distribution of the topsoil/desert pavement (two [2] inches minimum depth) derived from stockpiles previously established in accordance with Section 201, in the areas designated for desert pavement, in accordance to the drawing lines, grades, and elevations without deviation unless specific express written approval from the Engineer.

The Contractor is responsible for quality control to achieve completed dimensions and elevations as designed. The Contractor also has an obligation to notify the Engineer upon discovery of discrepancies within the dimensions or elevations prior to work for clarification or approved field design changes. Final grades shall be in accordance to the drawing lines, grades, and elevations without deviation unless specific express written approval from the Engineer. The Contractor shall meet all existing grades uniformly with a smooth transition at project boundaries. All landforms, swales, and areas to be seeded shall be graded to a smooth, flowing, rounded surface providing positive drainage and visual landform continuity. Final grade is to be reviewed and approved by the Engineer.

There are no gradation or plasticity index requirements for topsoil.

There are no placement requirements for topsoil. Placement shall be conducted using the appropriate combination of heavy equipment, small equipment, and labor. The Plans indicate measurements that define the limits of the topsoil plating/desert pavement and grading.

There is no specified compaction for topsoil/desert pavement.

SUBSECTION 430.4 – DECOMPOSED GRANITE AREA

Section 430.4 Decomposed Granite Area of the MAG Uniform Standard Specifications, for purpose of this project shall apply to Tall Pot Planting.

SUBSECTION 430.4 – TALL POT PLANTING

SUBSECTION 430.4.1 – GENERAL

The work under this item consists of furnishing all equipment, materials, and labor necessary to complete the planting operation of tall pot plants, and maintaining the tall pot plants during the establishment period in accordance with plans and these technical specifications.

Contractor shall be responsible for the transport of plants from Flood Control District nursery to the site, and installation to include planting of tall pot plants with biodegradable tree shelters, stakes, and DriWATER Irrigation Supplement, and doing all work required to install the tall pot plants in strict compliance with the Plans and Specifications. All equipment and methods shall be approved by the Engineer prior to performing the work. It is the contractor's responsibility to assure that the correct equipment to properly perform the work is on site and the properly trained personnel are present to operate that equipment.

All tall pot plants will be furnished by Flood Control District. Tall pot plants shall remain at the Flood Control District nursery until twenty-four (24) hours prior to installation. Plants shall be placed by tall pot pit only when pit has been properly augured, watered, and approved by Engineer. Contractor is certifying that pit is proper depth and properly watered within last 24 hours if a tree is placed by the hole.

All crewmembers at the project site to augur pits, water, and plant tall pot plants should be trained by a supervisor in a language that they can clearly understand at the beginning of each workday. It should not be assumed that new crewmembers will get proper instruction from other crew members. Each crewmember shall be provided with a written checklist in the appropriate language. All crewmembers and other personnel shall be provided with a written "chain of command" sheet for each project site including the names and contact information for the District Landscape Architect and Environmental Representative, and the planting crew leader and supervisor. The supervisor shall check all tall pot planting steps (with plans and specifications in hand) prior to planting each group of tall pot plants.

SUBSECTION 430.4.2 – TALL POT PITS

Tall pot pits shall be sized per the details, unless otherwise indicated in the Plans and Specifications.

Tall pot pit backfill may utilize on-site native soil as long as the soil meets the specifications for Native Planting Backfill Mix.

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

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

In areas of caliche or in hard dig conditions, tall pot pits shall be over-excavated to a minimum depth of thirty-six (36) inches and a minimum width of forty-eight (48) inches, 20 pounds of gypsum shall be evenly added to the bottom of the pit, and the pit backfilled with native planting backfill mix compacted to between eighty-five (85) percent and ninety (90) percent compaction prior to auguring of tall pot pit. The tall pot pit shall be filled with water and allowed to drain twice prior to installation of tall pot plant. Contractor shall notify Engineer if pit does not drain within 48 hours.

All pits shall be excavated to the detailed dimensions with the sides of pit roughened or scarified. Prior to installing tall pot plants, the Engineer is to visually inspect the tall pot pits for proper size and depth. The Contractor shall make all necessary arrangements with the Engineer to have the tall pot pits inspected. The Engineer may reject any tall pot pits, which shall be re-excavated/-prepared by the Contractor.

In areas of very soft, sandy, or cobble soils where the tall pot pit caves in as the augur is removed, filling the hole with water prior to planting is not necessary. The tall pot pit shall be augured 8"-12" in diameter to the depth dimensioned on the plans and specifications to loosen the soil column. The pit shall then be cleared to the width dimensioned on the plans and specifications, and the tall pot plant placed into the pit. The pit shall then be backfilled with Native Backfill Mix while lifting the tall pot tube and filling the pit with water creating a Native Backfill Mix slurry. The tall pot pit shall be thoroughly soaked at the end of each day's planting session. Where no irrigation system is provided, one (1) quart of DriWATER Irrigation Supplement shall be poured into the pit during backfilling, and four (4) quarts of DriWATER Irrigation Supplement shall be installed at grade level per the plans and specifications and the manufacturer's recommendations.

SUBSECTION 430.4.3 – TALL POT WATERING

Tall Pot Plants shall be thoroughly "soak watered" until water drips out the bottom of the tube in the nursery one day prior to delivery to project site, or at the project site just after delivery.

Once the Tall Pot Plant is in the pit and the pit has been back filled, the plant must be "soak watered" to remove all air pockets in the planting pit per the Plans and Specifications. Use of a water sprayer at the base of the plant is NOT acceptable for this step.

SUBSECTION 430.4.4 – TALL POT PLANT PROTECTORS

Biodegradable plant protectors shall be provided and installed around Tall Pot Plants to help prevent herbivory from rodents and other small animals once planted. Biodegradable plant protectors shall be Forestry Suppliers, Inc. Item 17017, Rigid Seedling Protector Tubes (or exact equivalent approved by District) supported with Forestry Suppliers, Inc. Item 17010 three-eighths (3/8) inch by four (4) foot Bamboo Stake (or exact equivalent approved by District). Biodegradable plant protectors shall be installed below soil grade approximately 1-inch to help secure it and keep small animals from getting under it easily. To prevent wind milling and damage to the plant, protectors are to be anchored to the bamboo stake by two cable ties, one at soil level, and one further up the bamboo stake. Plant protectors shall be installed before the plants get too bushy.

Leggy species such as mesquite and desert willow do well with biodegradable plant protectors. Bushy species such as paloverde and ironwood need to have the protectors installed before they get too bushy, otherwise wire cages must be used.

If wire cages are used, either because the protectors were not installed in the nursery, the biodegradable protector installed at the nursery is damaged, or because the plants have gotten too bushy while in the nursery, they shall be installed when planting at the project site. Cages shall be one (1) to two (2) feet in diameter and two (2) to three (3) feet tall. Cages shall have open tops to prevent damage to the tip of the plant. Cages shall be secured at the project site by burying the cages two (2) to three (3) inches below soil grade. Wire cages shall be marked with a red flag.

Growth of plants inside wire cages must be monitored and the cages removed if they begin to restrict plant growth, or after one full growing season (12-15 months) whichever comes first.

SUBSECTION 430.5 – TREE, SHRUB, AND GROUND COVER PLANTING

Add the following to this section:

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

SUBSECTION 430.5.1 – SUBSTITUTIONS

Add the following to this section:

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

SUBSECTION 430.5.6 – SHRUB AND TREE PITS

Add the following to this section:

Plant pits shall be sized three times the root ball width and one times the root ball depth, unless otherwise indicated on the Plans.

Plant pit backfill may utilize on site native soil as long as the soil meets the specifications for Native Planting Backfill Mix.

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

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

All pits shall be excavated to the detailed dimensions with the sides of pit roughened or scarified. Prior to installing plant material, the Engineer is to visually inspect the pits for proper size and depth. The Contractor shall make all necessary arrangements with the Engineer to have the pits inspected. The Engineer may reject any pits, which shall be re-excavated/prepared by the Contractor.

SUBSECTION 430.5.7 – CACTI PLANTING

Add this section to the MAG Standard Specifications:

The Contractor shall provide and install cacti as designated by project plans and specifications.

All equipment and methods shall be approved by the Engineer prior to performing the work.

In order to avoid sunburn damage when relocating saguaro and other miscellaneous cacti, care shall be taken that the plant is placed so that it faces the same compass direction and orientation in which it originally grew. The plants shall be marked on the north side prior to digging. Marking shall be accordance with USDA and Arizona Department of Agriculture standards.

Cacti provided for this project shall have a minimum twelve (12) inch diameter root mass. Cacti with an insufficient root mass will be rejected.

When transporting cacti, before becoming unstable, cacti shall be secured with wide, nylon, padded straps. The straps shall be placed against the plant so that it will not be scarred, scraped, or otherwise damaged during the relocation and transplanting process. Extreme care shall be taken in handling to avoid breaking arms and limbs.

Roots and the base of each plant will be carefully inspected for evidence of borers, rot, nematodes, and broken or bruised roots. For saguaros, cut through the tap root to provide a flat base with diameter sufficient to bear weight of unsupported saguaro.

The Contractor shall treat any cut or wound to the skin with agricultural dusting sulfur. All broken or bruised roots on cacti shall be cut off with a clean, sharp, bypass pruner and the cuts liberally dusted with agricultural dusting powder.

Ensure good drainage for all cacti. Do not apply supplemental water for a period of three (3) weeks after planting minimum.

Plant pit shall be a minimum of six (6) inches wider than the extent of the severed lateral roots.

The Contractor shall place proper orientation to the north. Cacti planting depth should be the same depth at which plant was grown. Cacti shall be planted at original grade to which they have been grown.

To provide stabilization, a three (3) inch mound of soil shall be formed around the bases of Saguaros, barrels, and other cacti to divert water from the root areas until they have healed and become callused.

SUBSECTION 430.6 – HEADER INSTALLATION

Section 430.6 Header Installation of the MAG Uniform Standard Specifications, for purpose of this project shall apply to Landscaping Hydroseed.

SUBSECTION 430.6 – LANDSCAPING HYDROSEED

SUBSECTION 430.6.1 – GENERAL

The work under this item consists of furnishing all materials, preparing the soil, applying seed-mulch mixture and maintaining seeded areas during establishment period in accordance with plans and these technical specifications. Areas to be seeded include areas indicated on plans. The Engineer may adjust the schedule and the locations of the seeding operations within the limits of the project. The Engineer shall establish exact dates to commence seeding and reserves the right to postpone seeding until conditions are suitable.

The Contractor shall provide, upon request to the Engineer, past performance data that indicates the Contractor's equipment and procedure are suitable or shall demonstrate the Contractor's performance. The Engineer has final approval as to equipment and procedure.

SUBSECTION 430.6.2 – MATERIALS

Seed: Seed shall consist of materials, application rates, and quantities as indicated on plans.

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 the purity.

The seed source shall be from elevations within 1,000 feet of elevation of project site, and for regulatory mitigation site, shall be from within 50 miles of project site. 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 nine months prior to the delivery date. Weed content of seed shall not exceed 0.5 percent.

Wood Fiber Mulch: The wood fiber shall be natural wood fiber having the property of dispersing readily in water, heat processed in such a manner so that it does not contain any growth or germination inhibiting factors and shall have no toxic effect when combined with the seed or other materials. The fiber shall be dyed green to allow visual monitoring during application, using a dye, which is non-injurious to plant growth.

Wood fiber shall be delivered in undamaged containers labeled and bearing the name of the manufacturer and showing the air-dry weight content, the maximum being twelve (12) percent plus or minus three (3) percent at the time of the manufacture, and with a pH range of 4.5 to 6.5.

Tackifier: Tackifier shall consist of organic muciloid liquid concentrate diluted with water and a psyllium base containing no agents toxic to seed germination. Addition of fertilizer to the slurry mix shall not change the properties of the tackifier. When applied, tackifier shall form a transparent crust permeable by water and air.

Water: Water shall be free of oil, acid, salts, or other substances harmful to plants. The source shall be approved by the Engineer prior to use.

SUBSECTION 430.6.3 – CONSTRUCTION REQUIREMENTS/EXECUTION

Perform seeding work only after other work affecting ground is complete. All **areas intended for native seeding shall not be treated with a pre-emergent control**. Protect existing utilities, walls, paving, irrigation systems, and other facilities from damage caused by seeding operations.

Where equipment can operate, the area to be seeded shall be prepared by disking, harrowing, or by other approved methods of loosening the surface soil to a minimum depth of four (4) inches. Remove and dispose of all sticks, roots, rubbish, and other deleterious material. All native rock material, which does not interfere with seeding operations, may remain on ground surface. Finish grade and surface appearance shall attempt to match finish and texture of natural desert areas.

On slopes too steep for equipment to operate, the area shall be prepared by hand raking to a minimum depth of four inches. On sloping areas, all disking, harrowing and raking shall be directional and parallel to the contours of the areas involved. All areas, which are eroded, shall be restored to the specified condition, grade, and slope as directed prior to seeding.

Seeding operations shall not be performed on undisturbed soil outside the clearing and grubbing limits of the project. Seeding operations shall not be performed when wind would prevent uniform applications of materials or would carry seeding materials into areas not to be seeded.

All non-paved, non-roadway areas disturbed by construction operations, which are not designated to receive riprap or other installations, shall receive seed mix.

The homogeneous mixture shall be applied to the seeding area by means of hydraulic-type equipment, which shall provide continuous mixing, and agitation action to the mixture of water, fertilizer, seed, and wood fiber. The mixture shall be applied through a pressure-spray

distribution system providing a continuous, non-fluctuating discharge and delivery of the mixture in the prescribed quantities.

Contractor may propose alternative means of applying seed depending on area to be seeded. Alternative method (other than by means of hydraulic equipment) must be approved by Engineer prior to start of operation.

The application rates for seed mix materials shall be applied as specified.

<u>Materials</u>	<u>Pounds Per Acre</u>
Seed Mix	Per plans
Wood cellulose fiber	1500
Chemical fertilizer	None
Tackifier	125
Water	Sufficient amount to form a homogeneous mixture capable of being applied by commercial hydromulching equipment.

Apply seed, mulch, fertilizer, and tackifier in a two-step process.

Step 1 – Mix seed with wood cellulose fiber (two hundred [200] pounds per acre) and water to form a slurry mix.

Step 2 – Apply slurry mix of one hundred twenty-five (125) pounds per acre of tackifier, one thousand three hundred (1300) pounds per acre of wood fiber mulch, and water.

Contractor shall provide maintenance of all seeded areas for a minimum of ninety (90) days until a healthy stand is achieved. Maintenance shall include watering and weeding. The Contractor shall be responsible for watering the hydromulched areas. Initial watering of seeded areas will be done to maximize growth of seedlings. The Contractor shall water for duration of maintenance period or through one (1) full growing season whichever is later, perform soil preparation and reseeding as required to provide a fully established stand of plants at the stated time, at no additional cost to the Owner. One (1) full growing season shall refer to complete plant growth cycle, from germination to seed development for all seed species, which characteristically germinate during the seasonal period in which the seeding operations are completed through the end of the ninety (90) day maintenance/establishment period. The method of watering shall be the Contractor's responsibility. The Contractor may utilize the alternate hydro seed irrigation system to water those seed mix areas which can be watered by the system in the event that that the alternate is made a part of the Contract.

The Contractor shall provide protective devices as required to protect seeded areas from traffic for a minimum of ninety (90) days. Repair and reseed areas damaged by traffic, erosion, or poor germination. Reseed to obtain successful germination based on the supplier's specified germination rates and species used. The work provided for will be found complete when the planted seeds yield a minimum stand, as determined by the Engineer based on the supplier's specified germination rates and species used and the seeded areas are free from weeds and disease.

SUBSECTION 430.8 – PLANT GUARANTEE AND MAINTENANCE

Add the following to this section:

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

All existing and new plants shall be kept in a healthy, growing condition by watering, pruning (do not prune tall pot plants), spraying, weeding and any other necessary operations or maintenance. Plant saucers (including tall pot saucers) and beds shall be kept free of weeds, and other undesirable vegetation. Plants shall be inspected at least once per week and appropriate maintenance performed.

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

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

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

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

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

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

SUBSECTION 430.8.1 – WARRANTY

Add the following section to the MAG Standard Uniform Specifications:

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

One (1) and five (5) gallon shrubs and ground cover – one (1) year from the date of substantial completion

Tall pot plant material – one year from the date of substantial completion

Trees and all other plant material – one year from the date of substantial completion

Seed Mix Areas – warranty a full stand of native plants at the end of the maintenance/establishment period or through one full growing season whichever is later, perform soil preparation and reseeding as required to provide a fully established stand of plants at the stated time, at no additional cost to the Owner. One full growing season shall refer to complete plant growth cycle, from germination to seed development for all seed species, which characteristically germinate during the seasonal period in which the seeding operations are completed through the end of the ninety (90) day maintenance/establishment period.

Replacements: Immediately replace, repair, or repeat applications as specified over any rejected plant material or surfaces at no cost to the Owner. Immediately replace with like kind, in a satisfactory condition, any plant materials not surviving, in poor condition, or not showing vigorous healthy new growth at the end of the pertaining warranty period, all at no cost to the Owner. Tall pot replacement plants will be provided by the Flood Control District. However, if in the opinion of the Engineer, plant loss is excessive and determined to be a result of the Contractor's workmanship, the Contractor shall be responsible to provide nursery stock replacements including irrigation connections required for nursery stock plant installations. Perform replanting as specified herein for the original planting. Maintain, establish, and warranty all replacement plantings the same as required for original plantings.

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

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

Final Inspection: Notify the Engineer seven days prior to the end of the warranty period that final landscaping inspection is requested. The Engineer will make an inspection and give the

Contractor notice of any plantings or other work of this section that are not acceptable and require correction: Contractor shall immediately make such corrections.

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

SUBSECTION 430.9 – PLANT ESTABLISHMENT PERIOD

Add the following to this section:

The Contractor shall request an inspection by the Engineer whenever substantial completion of the planting and related work has been accomplished. After this initial inspection, and subject to the Engineer's approval of the work, the Engineer will issue a written field notification to the Contractor setting the effective, beginning date for plant establishment. The plant establishment period shall be for a period of ninety (90) calendar days, but is subject to extension by the Engineer if the landscape areas are improperly maintained, appreciable plant replacement is required, or other corrective work becomes necessary.

At final project acceptance or at the end of the plant establishment period, the Engineer will make a final acceptance inspection of the planted areas.

SUBSECTION 430.10 – MEASUREMENT

Measurement for removal and stockpile of topsoil (desert pavement) shall be conducted on a plan view square yard basis as measured in the field by survey.

Measurement for payment of topsoil plating and grading (distribution of desert pavement) shall be conducted on a plan view square yard basis as measured in the field by survey.

Measurement for payment of salvaged, relocation, and planting of existing trees (including but not limited to establishment and maintenance of salvaged plant nursery, and salvage, transport, maintenance, and replanting of existing plant material) shall be conducted on the basis of each tree required by the plans, salvaged and replanted.

Measurement for payment of salvage, relocation, and planting of existing saguaro (including but not limited to establishment and maintenance of salvaged plant nursery, and salvage, transport, maintenance, and replanting of existing saguaro) shall be conducted on a per linear foot basis (including measurement of the height of the main trunk and arms) of each saguaro required by the plans to be salvaged and replanted.

Measurement for payment of salvage, relocation, and planting of existing cacti shall be conducted on the basis of each cactus (other than saguaros) salvaged and replanted.

Measurement for payment of tall pot tree planting shall be conducted on the basis of each tall pot plant required by the plans and installed.

Measurement for payment of container tree, shrub, ground cover, and cacti plantings shall be conducted on the basis of each plant by size required by the plans and installed.

Measurement for payment of hydroseeding shall be conducted on a plan view per acre basis as measured in the field by survey for each hydroseed mix specified in the plans and specification.

The unit price bid items includes the cost for all work to furnish and install the complete landscaping shown or as indicated in the Plans and Specifications including the respective notes, legends, and detail drawings that are not covered by any other Bid Item.

SUBSECTION 430.11 – PAYMENT

Payment for removal and stockpile of topsoil (desert pavement) shall be paid for at the contract unit price per square yard basis as stipulated in the proposal.

Payment of topsoil plating/desert pavement and grading shall be paid for at the contract unit price per square yard as stipulated in the proposal.

Payment for salvage, relocation, and planting of existing trees shall be made in conformity with the terms of the contract and will be based on the contract unit price per each. The per (EA) unit bid price shall be full compensation for any site preparation, materials, salvage, transport, storage and performing all work including maintenance/establishment necessary to complete the salvage and planting operation in conformity with the Plans and Specifications.

Payment for salvage, relocation, and planting of existing saguaro shall be made in conformity with the terms of the contract and will be based on the contract unit price per each linear foot (including length of the height of the main trunk and arms) of each saguaro salvaged and replanted. The per (EA) unit bid price shall be full compensation for any site preparation, materials, salvage, transport, storage and performing all work including maintenance/establishment necessary to complete the salvage and planting operation in conformity with the Plans and Specifications.

Payment for salvage, relocation, and planting of existing cacti shall be made in conformity with the terms of the contract and will be based on the contract unit price per each. The per (EA) unit bid price shall be full compensation for any site preparation, materials, salvage, transport, storage and performing all work including maintenance/establishment necessary to complete the salvage and planting operation in conformity with the Plans and Specifications.

Payment for tall pot planting shall be made in conformity with the terms of the contract and will be based on the contract unit price per each. The per (EA) unit bid price shall be full compensation for any site preparation, transport of plants from Flood Control District nursery to the site, and performing all work including maintenance/establishment necessary to complete the planting operation in conformity with the Plans and Specifications.

Payment for container tree, shrub, ground cover, and cacti planting shall be made in conformity with the terms of the contract and will be based on the contract unit price per each. The per (EA) unit bid price shall be full compensation for any site preparation, purchase, transport, and performing all work including maintenance/establishment necessary to complete the planting operation in conformity with the Plans and Specifications.

Payment for hydroseed shall be made on a per acre basis per each hydroseed mix specified in the plans and specifications. The per acre (AC) unit bid price shall be full compensation for any site preparation, hydroseed, tackifiers, all specified components and the application, including furnishing all materials, labor, tools, and equipment and for performing all work including maintenance / establishment necessary to complete the landscaping hydroseed operations to complete the preparation and application of Hydroseed Mixes.

Payment for the plant establishment period shall be included in the unit cost for tall pot planting, tree, shrub, and ground cover planting, and landscaping hydroseeding.

ITEM 430-1 – REMOVE AND STOCKPILE TOPSOIL

ITEM 430-2 – TOPSOIL PLATING AND GRADING (DISTRIBUTE DESERT PAVEMENT)

ITEM 430-3 – SALVAGE EXISTING TREE

ITEM 430-4 – SALVAGE EXISTING SAGUARO

ITEM 430-5 – SALVAGE EXISTING CACTI

ITEM 430-6 – TALL POT TREES

ITEM 430-7 – CONTAINER TREES

ITEM 430-8 – CONTAINER SHRUBS (5 GALLON)

ITEM 430-9 – CONTAINER SHRUBS (1 GALLON)

ITEM 430-10 – CONTAINER CACTI (5 GALLON)

ITEM 430-11 – LANDSCAPING HYDROSEED MIX A

ITEM 430-12 – LANDSCAPING HYDROSEED MIX B

SECTION 440 – LANDSCAPE IRRIGATION SYSTEM INSTALLATION

Landscape Irrigation System shall conform to Section 440 of the MAG Uniform Standard Specifications except as modified herein.

SUBSECTION 440.1 – DESCRIPTION

Add the following to this section:

Provide complete installation of a fully automated landscape irrigation system in accordance with the Contract Documents and conform to MAG Uniform Standard Specifications current edition Section 440 and 757, and City of Mesa requirements. Any Sections of the MAG Uniform Standard Specifications not indicated herein or modified by the Drawings shall remain in effect per the MAG Documents.

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

Landscape irrigation system installation work shall include, but is not limited to: material procurement, material and installation testing, all above and below ground system installations, trenching, piping, valves, backflow prevention assemblies, controllers, wiring cabinet/cage enclosures with pads, fittings, emitters, preparation of record drawing as-builts, obtaining and

paying all required permits and fees, providing all necessary traffic control and maintenance and warranty of all irrigation work.

The Contractor shall furnish all necessary labor, materials, and equipment required to complete the installation of the automated irrigation system providing full coverage to all plants and seed mix areas as shown or as indicated on the Landscape Irrigation Drawing Plan Sheets, including the respective notes and detail sheets that are not covered by any other Bid Item.

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

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

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

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

SUBSECTION 440.1.2 – SELECTED PLANTS NOT RECEIVING IRRIGATION

Add this section to the MAG Standard Specifications:

Irrigation system installations shall not be provided, only, to plants designated on the drawings to receive DriWATER (or equivalent) installations or indicated as no water.

SUBSECTION 440.1.3 – RELATED WORK

Add this section to the MAG Standard Specifications:

The Contractor shall be responsible for the procurement, installation, and completion of all work items and components of work items indicated, including: coordination, scheduling and

sequencing of all work between the various trades required to complete the work and in accordance with the Contract Documents.

SUBSECTION 440.2 – GENERAL

Add the following to this section:

SUBSECTION 440.2.1 – QUALITY CONTROL

Add this section to the MAG Uniform Standard Specifications:

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

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

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

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

SUBSECTION 440.2.2 – SUBMITTALS

Add this section to the MAG Uniform Standard Specifications

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

No substitution will be allowed without prior written approval by the Owner.

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

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

Record Drawings

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

1. Water meter location including connections through backflow preventer.
2. Controller location including connections through power service source.
3. Mainline pipe.
4. Isolation ball valves.
5. Quick coupler valves.
6. Control valves.
7. Routing of drip lateral lines.
8. Routing of control wiring.
9. End location and length of all sleeving and/or conduits.

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

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

Controller Charts

- A. Record drawings shall be acceptable to the Owner before controller charts are prepared.
- B. Provide one controller chart for each controller supplied prior to final acceptance.
- C. The chart shall show the area controlled by the automatic controller and the area each controller station or valve covers. Each chart shall be the maximum size, which will fit inside the controller enclosure/cabinet door.
- D. The chart is to be a reduced drawing of the actual as-built system. However, in the event the controller sequence is not legible when the drawing is reduced, the necessary information shall be enlarged on the original to a size that will be readable after reduced.

- E. The chart shall be a black line or blue line on a white background and a different color shall be used to indicate the area of coverage for each station.
- F. When completed and approved, the chart shall be hermetically sealed (laminated) between two (2) pieces of plastic, each piece being a minimum ten (10) mils thick.
- G. These charts shall be completed and approved prior to final inspection of the irrigation system.

Product Handling

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

Project Understanding Confirmation

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

SUBSECTION 440.4 – LANDSCAPE IRRIGATION SYSTEM RESTORATION

Add the following to this section:

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

SUBSECTION 440.5 – TRENCH EXCAVATION AND BACKFILL

Add the following to this section:

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

SUBSECTION 440.6 – PIPE INSTALLATION

Add the following to this section:

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

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

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

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

Existing Trees (where applicable)

In the event that it is necessary to excavate adjacent to existing trees, the Contractor shall use all possible care to avoid injury to trees and tree roots. Excavation in areas where roots two (2) inch and larger occur shall be done by hand. All roots two (2) inches and larger in diameter, except directly in the path of pipe or conduit, shall be tunneled under and shall be heavily wrapped with burlap to prevent scarring or excessive drying. Where a trenching machine is run close to trees having roots smaller than two (2) inches in diameter, the wall of the trench adjacent to the tree shall be hand-trimmed, making clean cuts through. Roots one (1) inch and larger in diameter shall be painted with two coats of Tree Seal or equal. Trenches adjacent to trees should be closed within twenty-four (24) hours, and where this is not possible, the side of the trench adjacent to the tree shall be kept shaded with burlap or canvas.

SUBSECTION 440.6.1 – PLASTIC PIPE AND FITTINGS

Add this section to the MAG Uniform Standard Specifications:

All PVC pipe shall bear the following markings:

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

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

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

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

Sleeves shall be PVC schedule 40, Type I for size four (4) inches and less, and Class 200, SDR 21, for sizes larger than four (4) inches.

Perforated pipe shall be PVC schedule 40, Type I

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

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

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

Detectable tape shall be applied to all pressurized main line.

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

1. Non-continuous pressure buried lateral line piping shall be PVC Class 200 with solvent-weld joints for sizes three-quarter (3/4) inch and larger, and PVC Schedule 315 for one-half (1/2) inch size.
2. Pipe shall be made from NSF approved, Type I, Grade II PVC compound conforming to ASTM resin specification D1784. All pipes shall meet requirements set forth in Federal Specification PS-22-70, with an appropriate standard dimension ratio.

3. Except as noted in paragraphs 1 and 2 above, all requirements for non-continuous pressure lateral line pipe and fittings shall be the same as for solvent-weld pressure mainline pipe and fittings as set forth in Section 440.3.1 of these specifications.

SUBSECTION 440.6.2 – BRASS PIPE AND FITTINGS

Add this section to the MAG Uniform Standard Specifications:

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

SUBSECTION 440.6.3 – COPPER PIPE AND FITTINGS

Add this section to the MAG Uniform Standard Specifications:

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

SUBSECTION 440.7 – VALVES, VALVE BOXES AND SPECIAL EQUIPMENT INSTALLATION

Add the following to this section:

Automatic Remote Control Valves, Electric Solenoid Type: The automatic remote control valves shall be as indicated on drawings or alternate approved by the Engineer. Valve Boxes:

All remote control valves, isolation ball or gate valves, pressure regulators, wye filters, wire splices, pipe stub-ups or flush outlets unless otherwise indicated, shall be installed in suitable plastic or other type valve access box of proper size as required for easy access to the valve. Access boxes shall be completed with plastic or other approved type lids. All valve boxes, lids and extensions, where required, shall be from a single manufactured source either Carson/Brooks or Ametek bolt down locking models, or alternate approved by the Engineer. Provide stainless steel bolts, nuts, washers and all other required hardware for all valve box lids. Valve boxes installed in desert pavement or rock ground cover areas shall be beige in color.

Cements, Cleaners, Primers, and Joint Sealant Compounds:

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

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

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

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

Manual Flush End Cap Assembly:

The drip system manual flush end cap assembly shall be as detailed on the drawings.

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

SUBSECTION 440.7.1 – OTHER MISCELLANEOUS MATERIALS, EQUIPMENT, OR SPECIAL INSTALLATIONS

Add this section to the MAG Uniform Standard Specifications:

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

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

SUBSECTION 440.9 – AUTOMATIC CONTROL SYSTEM INSTALLATION

Add the following to this section:

The Automatic Controller(s) shall be the existing controller located on-site at the City of Mesa Sulfide Station. Controller shall be grounded and shall be securely enclosed in its own locking valve box. The Contractor shall provide station area coverage maps, sealed in plastic, for the controller. The Controller shall be capable of fully automatic operation of the system.

The controller(s) shall have the minimum number of stations to run the existing system plus the number of stations as indicated on the Drawings.

Controllers shall include all required solenoid adapters required to operate the specified valves.

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

Control wiring shall be U.L. approved for direct underground burial, controller shall have its own common wire to respective valves. Wire connections to remote control electric valves and splices of wire in the field, if allowed by the Engineer, shall be made as shown on the details on the plans, using Pentite wire connectors and sealing cement. All connector joints shall be

absolutely waterproof so that there is no chance for leakage of water and corrosion buildup on the joint.

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

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

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

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

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

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

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

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

SUBSECTION 440.10 – FLUSHING AND TESTING

Add the following to this section:

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

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

SUBSECTION 440.10.1 – MAINTENANCE PERIOD

Add this section to the MAG Uniform Standard Specifications:

- A. Automated landscape irrigation system shall be maintained in accordance with the Contract Documents and MAG Section 440 for a period of ninety (90) calendar days from the completion and acceptance date of all pre-maintenance inspection and irrigation punch list items of the project as determined by the Owner.
- B. A pre-maintenance inspection will be performed upon substantial completion of all landscape planting and irrigation work under this contract. The Contractor shall be present at the inspection and a punch list of items requiring remedial work shall be generated. Upon completion of the punch list items and approval by the Owner, the ninety (90) day maintenance/establishment period will begin.
- C. Final Maintenance Inspection: At the end of the ninety (90) day maintenance/establishment period a final inspection will be performed. If, after this inspection, the Owner agrees that all irrigation system and components are in satisfactory operating condition, written Notice of Acceptance will be given to the Contractor for irrigation installation and commencement of the required warranties will start.
- D. The Owner staff and Contractor's representative will perform a bi-weekly inspection. Any items requiring replacement shall be replaced and all corrective work shall be completed prior to the next bi-weekly inspection meeting.

SUBSECTION 440.10.2 – WARRANTY

Add this section to the MAG Uniform Standard Specifications:

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

SUBSECTION 440.10.3 – RECORD DRAWINGS

Add this section to the MAG Uniform Standard Specifications:

The Contractor shall maintain an accurate set of as-built plans on site. At the end of each day work accomplished shall be updated on the as-built plans. The Contractor shall dimension from two permanent points of reference to locate the following:

- Connection to existing water lines;
- Gate valves;
- Routing of pressure lines (dimension at a minimum of 100 feet along routing);
- Remote control valves;
- Routing of control wiring; and
- Other related equipment as directed by the Engineer.

The above-mentioned as-built plans shall be turned over to the Owner at the conclusion of the project. Before final inspection evidence that the Owner has received this material must be shown to the Engineer.

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

Before the final inspection, the Contractor shall deliver to the Engineer one (1) copy of the as-built plans to review. Delivery of this set of plans does not relieve the Contractor of the responsibility of furnishing required information that may be requested by the Engineer. The Contractor shall make corrections noted and submit final as-built plans to the Engineer for approval and acceptance. The Engineer will not certify payment requests or make final payment if as-built plans are not current or complete.

SUBSECTION 440.10.4 – CONTROLLER CHARTS

Add this section to the MAG Uniform Standard Specifications:

The Engineer shall approve As-Built drawings before controller charts are prepared. The chart shall show the area controlled by the automatic controller and shall be the maximum size, which will fit inside the controller door, and still be legible. Identify the area of coverage of each remote control valve, using a distinctively different color, drawing over the entire area of coverage. Following review of the charts by the Engineer, they shall be hermetically sealed between two (2) layers of twenty (20) millimeter thick plastic sheets. These charts shall be completed and approved prior to final inspection of the irrigation system.

SUBSECTION 440.10.5 – OPERATION AND MAINTENANCE MANUALS

Add this section to the MAG Uniform Standard Specifications:

Submit four (4) operation and maintenance manuals to the Engineer for review prior to final acceptance. The manuals should include the complete technical description of materials and products used, guarantee statement, complete operating and maintenance instructions on all

major equipment. Contractor to provide a demonstration to maintenance personnel, with Owner's representative present, of controller functions, and recommended controller programs, as established by the Contractor. Contractor also to review recommended watering rates for new plant materials.

SUBSECTION 440.10.6 – EQUIPMENT TO BE FURNISHED

Add this section to the MAG Uniform Standard Specifications

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

Equipment to be furnished:

- Two (2) five (5) foot valve keys for operation of gate valves;
- Three (3) valve box keys or wrenches; and
- One (1) hand held controller programming transmitter unit.

SUBSECTION 440.11 – MEASUREMENT AND PAYMENT

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

Measurement and payment shall be in accordance with Section 109. The lump sum established in the proposal sheets shall be full compensation for furnishing all labor, materials, tools and equipment, and performing all work necessary to complete the sprinkler irrigation system described or specified in the contract documents, Special Provisions Section 757. Also include replacement of existing improvements damaged by waterline installation (curb, gutter, sidewalk, pavement, landscaping).

ITEM 440-1 – LANDSCAPE IRRIGATION SYSTEM

SECTION 460 – AESTHETIC TREATMENT

SUBSECTION 460.1 – GENERAL

This work under this section includes all work and materials necessary to furnish and install the complete aesthetic treatment shown or as indicated in the Plans and Specifications including the respective notes, legends, and detail drawings that are not covered by any other Bid Item. All work shall conform to the requirements of the Plans and Specifications.

This work also includes installation and construction of the landscape boulders for the energy dissipating structure as part of Structure No. 15.

SUBSECTION 460.2 – CONCRETE FORMS

Provide and install specialized formwork for aesthetic treatment of concrete structures as identified in the plans and specifications in accordance with the manufacturer's recommended procedures and Subsection 460.2.1 Form Liners.

SUBSECTION 460.2.1 – FORM LINERS

Provide and install form liners for aesthetic treatment of the following four structures in accordance with the manufacturer's recommended procedures and these specifications:

1. Structure No. 1 (Headwall, forty-eight [48] inch pipe outlet)
2. Structure No. 2 (Impact Energy Dissipator)
3. Structure No. 14 (Headwall, forty-eight [48] inch pipe inlet)
4. Structure No. 15 (Headwall, triple forty-two [42] inch pipe outlet)

Form liners used for this work shall consist of Dura-Cast[®] ABS formliner for creating textures (patterns in architectural concrete) in poured-in-place or precast concrete as distributed by Greenstreak, Inc., or approved equal. The patterns for the form liners shall be Fractured Texture No. 373D, or approved equal.

Sample of each pattern and shop drawings of all specialized formwork and of form liner placement shall be submitted by the Contractor for approval by the Engineer. The shop drawings shall identify the locations and use of each panel. The Engineer reserves the right to review and relocate the various patterns on each wall during the shop drawing review process.

Form Liners:

The Contractor shall be responsible for coordinating the final aesthetic layout of the form liner pattern with the Engineer. The cost to perform the coordination for the final design shall be incidental to the project.

The number and size of the liners shall be determined by the Contractor. The intent is to have all exposed concrete surfaces identified in the plans and specifications conform to the patterning specified. The liners are to be large linear pieces. Patchwork liners will not be accepted. All liner fabrication is to be approved by the Engineer.

In areas where form liners are to be seamed to accommodate dimensions of the forms or intent of the design, the seam shall be placed in areas that will be less noticeable. Seams shall be finished so as to appear seamless and as one cohesive pattern. Unless otherwise indicated on the Plans, the Contractor may not seam through a pattern's face unless approved by the Engineer.

The Contractor shall comply with the form liner manufacturer's recommendations for the methods of securing liners to supporting formwork and the use of form liner releasing agents. Twisted wire ties shall not be allowed for securing liners to form work. Form oil shall be a non-staining petroleum distillate free from water, asphaltic and other insoluble residue or equivalent product. The form oil shall be worked into all areas, especially pattern recesses.

Construction Methods:

The Contractor shall fabricate formwork to support the form liners and the related accessories with minimum deflection. The Contractor shall provide method of sealing form joints to prevent loss of water from wet concrete based on manufacturer's recommendations. The Contractor shall take necessary steps to insure no damage to joints or cast surfaces occurs during stripping operations. The concrete section thickness for the form liner shall be in addition to the structural thickness identified on the structure plan detail sheets.

Concrete shall be deposited and consolidated to minimize air and water pockets.

Ties shall be removed immediately after form removal. Do not remove tie cones until concrete has reached full strength.

It shall be the Contractor's responsibility to field verify that all form liners are aligned per the approved shop drawings.

The form liner layout may need to be adjusted to adapt to wall features such as blockouts, etc. If such a condition will impact the alignment of the pattern, the Contractor shall immediately notify the Engineer.

All patterns shall extend a minimum of six (6) inches below finished grade.

Concrete surfaces shall be finished in accordance with the requirements of Subsection 505.7 Finishing Concrete.

SUBSECTION 460.3 – COLORED CONCRETE

Provide and install colored treatments of exposed concrete structures as identified in the plans and specifications.

Concrete colorant to be used shall be "Yosemite Brown 641" distributed by Davis Colors, 3700 East Olympic Boulevard, Los Angeles, California 90023, or approved equal.

Colored concrete shall be furnished and used for the following five (5) structures:

1. Structure No. 1 (Headwall, forty-eight [48] inch pipe outlet)
2. Structure No. 2 (Impact Energy Dissipator)
3. Structure No. 13 (Inlet, Thunder Mountain)
4. Structure No. 14 (Headwall, forty-eight [48] inch pipe inlet)
5. Structure No. 15 (Headwall, triple forty-two [42] inch pipe outlet)

SUBSECTION 460.4 – LANDSCAPE BOULDERS

Provide and place landscape boulders as shown on the storm drain plans and landscape plans and details. Landscape boulders shall be of the size and placed/installed as shown on the plans.

SUBSECTION 460.5 – PROPRIETARY BRANDS

For the purpose of this specification, proprietary brands of concrete colorant shall be construed to mean concrete colorant materials conforming to the requirements of this specification and produced for distribution and consumption through regular wholesale and retail outlets. Whenever concrete colorant materials are designated on the Plans or Special Provisions by a manufacturer's name or catalog reference, any proprietary brand of equal quality will be permitted, subject to the approval of the Engineer. Information required by the Engineer as proof of the comparative quality shall be furnished by the Contractor.

SUBSECTION 460.6 – MEASUREMENT

No measurement for payment of aesthetic concrete forms and/or form liners is required for this section. The cost shall be included in the cost of the concrete structures.

No measurement for payment of concrete colorant is required for this section. The cost shall be included in the cost of the concrete structures.

Measurement for payment of landscape boulders shall be conducted on the basis of each size of boulder required.

Measurement for payment of the energy dissipating landscape boulders shall be conducted on a per each basis for complete installation of each boulder associated with the energy dissipating structure (Structure No. 2 – Impact Energy Dissipater) and the basin inlet structure (Structure No. 14 – Headwall, forty-eight [48] inch pipe inlet) as identified in the plans and specifications.

SUBSECTION 460.7 – PAYMENT

No payment will be made separately for provision or installation of aesthetic concrete forms and/or form liners. Costs associated with provision and installation of aesthetic concrete forms and/or form liners are considered incidental to the work in Section 505. The Contractor shall receive payment in accordance with Section 505.

No payment will be made separately for concrete colorant. Costs associated with provision or installation of concrete colorant are considered incidental to the work in Section 505. The Contractor shall receive payment in accordance with Section 505.

Payment for landscape boulders shall be made in conformity with the terms of the contract and will be based on unit prices as set forth in the proposal for each size of landscape boulder. Such payment shall include full compensation for furnishing all labor, materials, tools and equipment, delivery, placing of landscape boulder, and doing all work required to install landscape boulders in conformity with the Plans and Specifications.

Payment for the erosion blanket shall be made on a lump sum basis. This includes the installation of rock boulders associated with Structure No. 15 (triple forty-two [42] inch RGRCF)

headwall) as identified in the plans and specifications. Such payment shall include full compensation for furnishing all labor, materials, tools and equipment, delivery, placing of landscape boulder, and doing all work required to install the erosion blanket in conformity with the Plans and Specifications.

ITEM 460-1 – 3.5 FOOT X 2.5 FOOT X 2 FOOT LANDSCAPE BOULDER

ITEM 460-2 – 4 FOOT X 3 FOOT X 2.5 FOOT LANDSCAPE BOULDER

ITEM 460-3 – 5 FOOT X 3.5 FOOT X 3 FOOT LANDSCAPE BOULDER

ITEM 460-4 – EROSION BLANKET STRUCTURE NO. 15 (DT2)

ITEM 460-5 – NOT USED

SECTION 505 – CONCRETE STRUCTURES

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

SUBSECTION 501.1 – DESCRIPTION

Add the following to this section:

The work under this section shall consist of furnishing all labor, materials and equipment for the construction of all cast-in-place and other concrete. This includes, but is not limited to the reinforced concrete box culvert constructed to ADOT Standard Details; impact energy dissipater, junction structures, headwalls, catch basins, inlet and outlet structures, and splitter structure.

The single and double concrete catch basin, MAG Standard Detail 537 – modified bid items refer to the MAG Standard Detail 537 Single Grate (two [2] feet by two [2] feet) and Double Grate (two [2] feet by four [4] feet) catch basins, as modified per the detail in the plans.

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

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

Class "A" Concrete, $f'c = 3000$ psi, shall be used for the concrete structures, including but not limited to retaining walls, reinforced concrete box culverts, inlet and outlet transitions to the box culverts, headwalls, outlet structures, catch basins, and pedestrian trails.

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

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

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

Colored concrete shall be furnished per Section 460.3.

Form liners shall be furnished and installed per Section 460.

SUBSECTION 505.6 – PLACING CONCRETE

No concrete shall be placed until all formwork, installation of items to be embedded, and preparation of surfaces involved in the placement has been approved by the Engineer.

All surfaces of forms, and embedded materials shall be free from curing compound, dried mortar from previous placements, and other foreign substances before the adjacent or surrounding concrete placement is begun.

SUBSECTION 505.6.1 – JOINTS

Add the following to this section:

Box culvert joint spacing shall conform to ADOT requirements; however, plywood shall not be used and left in place in the joints.

Construction joints shall be located at the end of a day's pour or when concrete placement stops for more than forty-five (45) minutes. Reinforcing steel shall be continuous through construction joints for a minimum of two (2) feet beyond the end of pour unless noted otherwise on the plans. The end of the pour shall be a roughened surface.

SUBSECTION 505.8 – CURING

Add the following to this section:

All concrete in top and bottom slabs of box culverts shall be water cured, utilizing the wet burlap method, unless otherwise permitted by the Engineer, and shall be kept continuously wet for ten (10) days. All concrete to be painted shall be water cured, utilizing the wet burlap method, unless otherwise directed by manufacturer recommendations.

SUBSECTION 505.9 – FINISHING CONCRETE

Add the following to this section:

The use of wood trowels will not be permitted in any finishing operations for concrete slabs. Pneumatically placed mortar shall have a shot finish.

SUBSECTION 505.9 – PAYMENT

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

ITEM 505-1 – SINGLE BARREL 7 FOOT X 4 FOOT REINFORCED BOX CULVERT

Payment for 50-inch by 31-inch arch pipe concrete headwall shall be made on the basis of the price bid per each including all concrete, reinforcing steel, water stops, and other materials, all structure excavation and backfill, and all labor, equipment and appurtenances necessary for construction complete in place as shown on the plans.

ITEM 505-2 – HEADWALL 50-INCH BY 31-INCH ARCH PIPE MAG STD DTL 501-3

Payment for concrete catch basins at the down drain inlets shall be made on the basis of the price bid per each, including but not limited to all excavation, concrete, rebar, modified grates, and other materials, labor and equipment necessary to construct the catch basin complete in place.

ITEM 505-3 – SINGLE CONCRETE CATCH BASIN MAG STD DETAIL 537 – MODIFIED

ITEM 505-4 – DOUBLE CONCRETE CATCH BASIN MAG STD DETAIL 537 – MODIFIED

Payment for concrete catch basin/curb inlet shall be made on the basis of the price bid per each, including but not limited to all excavation, concrete, rebar, and other materials, labor, and equipment necessary to construct the catch basin complete in place.

ITEM 505-4A – CURB OPENING CATCH BASIN TYPE B MAG STD DETAIL 531

Payment for concrete structures shall be made on the basis of the price bid per each, including but not limited to all excavation, backfill, cost of labor, bedding, compaction, shoring, bracing, testing, pavement removal, concrete, concrete colorant, formliner, rebar, manhole shafts, manhole covers, grates, and other materials, labor and equipment necessary to construct the concrete structure complete in place

ITEM 505-5 – STRUCTURE NO. 1 – HEADWALL, 48-INCH PIPE, WITH FORMLINER AND COLOR, MAG STD DETAIL 501-3

ITEM 505-6 – STRUCTURE NO. 2 – IMPACT ENERGY DISSIPATOR W/FORMLINER AND COLOR, DETAIL ST3

ITEM 505-7 – STRUCTURE NO. 3 – JUNCTION STRUCTURE (7-FT BY 4-FT BOX TO TWIN 54-IN PIPES), DETAIL ST4

ITEM 505-8 – STRUCTURE NO. 4 – SPLITTER STRUCTURE, DETAIL ST5

ITEM 505-9 – NOT USED

ITEM 505-10 – STRUCTURE NO. 5 – JUNCTION STRUCTURE, DETAIL ST6, STATION 20+00

ITEM 505-11 – STRUCTURE NO. 6 – JUNCTION STRUCTURE, DETAIL ST6, STATION 25+47

ITEM 505-12 – STRUCTURE NO. 7 – JUNCTION STRUCTURE, DETAIL ST6, STATION 33+78

- ITEM 505-13 – STRUCTURE NO. 8- JUNCTION STRUCTURE, DETAIL ST6, STATION 36+98
- ITEM 505-14 – STRUCTURE NO. 9 – JUNCTION STRUCTURE, DETAIL ST6, STATION 52+61
- ITEM 505-15 – STRUCTURE NO. 10 – JUNCTION STRUCTURE, DETAIL ST6, STATION 57+00
- ITEM 505-16 – STRUCTURE NO. 11 – JUNCTION STRUCTURE (72-IN TO 72-IN BEND, DETAIL ST7)
- ITEM 505-17 – STRUCTURE NO. 12 – JUNCTION STRUCTURE (72-IN TO TWIN 54-IN BEND, DETAIL ST8)
- ITEM 505-18 – STRUCTURE NO. 13 – INLET STRUCTURE (THUNDER MOUNTAIN, DETAIL ST9)
- ITEM 505-19 – STRUCTURE NO. 14 – HEADWALL, 48-IN PIPE W/FORMLINER, COLOR, AND TRASHRACK MAG STD DETAIL 501-3
- ITEM 505-20 – STRUCTURE NO. 15 – HEADWALL, TRIPLE 42-IN PIPE W/FORMLINER AND COLOR (MAG STD DETAIL 501-3)
- ITEM 505-21 – STRUCTURE NO. 16 – EMERGENCY SPILLWAY CONTROL SILL W/COLOR (DETAIL DT1)
- ITEM 505-22 – CONNECT TO EXISTING STORM DRAIN (MAG STD DETAIL 505)
- ITEM 505-22A – PIPE COLLAR TWIN 54-IN PIPE (MAG STD DETAIL 505)
- ITEM 505-22B – CONNECT TO EXISTING STORM DRAIN 24-IN (MAG STD DETAIL 505)

SECTION 510 – CONCRETE BLOCK MASONRY AND ACCESS GATE

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

SUBSECTION 510.1 – DESCRIPTION

Add the following to this section:

The work under this section shall consist of removing as necessary and constructing a masonry wall to replace in kind the portion of wall to the limits shown on the plans required to be removed at Thunder Mountain Estates in order to complete the construction of the storm drain and the installation of a maintenance access gate.

The work under this section also includes the fabrication, construction, preparation and submittal of shop drawings, and complete installation of a new eight (8) foot wide double leaf wrought iron access gate, at the location shown on the plans, at the concrete masonry block wall.

SUBSECTION 510.2 – CONSTRUCTION

Add the following to this section:

The fabrication of the wrought iron access gate shall be modeled after the existing wrought iron access gate located at the entrance of the Thunder Mountain Estates located off of McDowell

Road. The Contractor shall use the same dimensions, bar spacing, bar sizes, clearances, and hinge types. The contractor will submit shop drawings to the Engineer for review. The new wrought iron access gate shall include latch and cane bolts. The gate shall be finished to match the paint and color of the existing Thunder Mountain Estates access gate.

SUBSECTION 510.6 – PAYMENT

Replace this section with the following:

Payment for concrete block masonry wall shall be made at the basis of the price bid per linear foot. Price shall include all labor, materials, replacing in kind the block wall back at its original location at the storm drain location, constructing the block wall in preparation for the maintenance access gate, stuccoing to match existing pattern, painting to match existing color, constructing wall footer and equipment to construct the fence including all incidental wall installation costs.

ITEM 510-1 – CONCRETE BLOCK MASONRY WALL

Payment for the wrought iron access gate shall be made at the basis of the price bid per lump sum. Price shall include all labor, materials, painting to match the color of the existing access gate and equipment to construct the access gate.

ITEM 510-2 – WROUGHT IRON ACCESS GATE

SECTION 515 – STEEL STRUCTURES

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

SUBSECTION 515.1 – DESCRIPTION

Add the following to this section:

The work under this section shall consist of supplying and installing access barriers and catch basin grates according to the plans, and these Special Provisions.

All materials for the access barriers and grates shall be A36 steel. The access barriers and grates and associated embedments shall be galvanized in accordance with MAG Section 771.

SUBSECTION 515.7 – PAYMENT

Replace this section with the following:

No payment shall be made for catch basin grates, the cost thereof shall be considered incidental to the item that the catch basin that the grate is attached. Payment for access barriers shall be made per Section 618.

SECTION 520 – STEEL HANDRAIL CONSTRUCTION

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

SUBSECTION 520.1 – DESCRIPTION

Steel handrail shall be installed along the top of the concrete inlet and outlet headwalls and wingwalls as shown on the plans. Steel handrails, per this section are to be constructed on the following structures, as identified on the plans:

1. Structure No. 1 (Headwall, forty-eight [48] inch pipe outlet)
2. Structure No. 2 (Impact Energy Dissipator)
3. Structure No. 14 (Headwall, forty-eight [48] inch pipe inlet)
4. Structure No. 15 (Headwall, triple forty-two [42] inch pipe outlet)

Handrails shall be given one shop coat of No. 1 paint as per MAG Section 790.

Tubular ornamental steel fencing and access gate shall be installed on Structure No. 13 (Inlet, Thunder Mountain) as shown on the plan sheet ST10.

The handrails on the above items 1-4 shall be painted Dunn-Edwards Mesa Tan DEC 718 per MAG Section 530. The cost of all work relating to painting the handrails shall be included in Item 520-1 – Steel Handrail and no separate payment shall be made.

The tubular steel fencing shall be coated in accordance with MAG 750 using paint color matte black.

SUBSECTION 520.5 – PAYMENT

Payment for handrail complete, in place including powder coating shall be made on the basis of the price bid per linear foot for construction complete in place as shown on the plans. The steel handrail access gate is incidental to the handrail construction for Structure No. 13.

ITEM 520-1 – STEEL HANDRAIL (MAG STD DETAIL 145)

Payment for the Tubular Steel Ornamental Fencing shall be made on the basis of the price per lump sum including full compensation for furnishing labor, materials, tools, and equipment to construct the fence complete in place as shown on the plans, including posts and painting. The access gate shall be considered included in the lump sum price bid.

ITEM 520-2 – TUBULAR STEEL ORNAMENTAL FENCING (THUNDER MOUNTAIN INLET) (DWG ST9)

SECTION 601 – TRENCH EXCAVATION, BACKFILLING AND COMPACTION

The work under this section shall be completed according to Section 601 of the MAG Uniform Standard Specifications except as modified herein.

SUBSECTION 601.1 – DESCRIPTION

Add the following to this section:

This work shall include the placement of one-half (½) sack controlled low strength material (CLSM per Section 728 of the MAG Uniform Standard Specifications) as specified on the plans and in these Special Provisions.

This work also includes placement of one (1) sack controlled low strength material (CLSM per Section 728 of the MAG Uniform Standard Specifications) as specified on the plans and in these Special Provisions. One (1) sack CLSM is required under transverse pavement cuts per City of Mesa M-19.4 and City of Mesa Standard Specification HH.

SUBSECTION 601.2 – EXCAVATION

Add the following to this section:

The soil borings logs and geotechnical report and addendum, are attached as an **Appendix** to the Special Provisions. Existing moisture conditions shall be no basis for claim for additional monies or time extensions. The Contractor shall manipulate the existing soil as required to achieve stable soil conditions and the required compaction densities, as well as safe and stable side slopes during construction activities. The soil boring logs show hard caliche soils; the Contractor shall analyze the soil borings and evaluate the existing soil conditions.

Existing caliche conditions shall be no basis for claim for additional money and/or time extensions.

SUBSECTION 601.2.3 – TRENCH GRADE

The Contractor shall excavate for and provide for an initial granular bedding at least four (4) inches thick or one twelfth (1/12) the O.D. of the pipe, whichever is greater. This bedding material shall be placed at a uniform density to the required compaction and fine graded as specified below.

Bell or coupling holes shall be dug after the trench bottom has been graded. Such holes shall be of sufficient width to provide ample room for caulking, banding, or bolting. Holes shall be excavated only as necessary to permit accurate work in the making of the joints and to insure that the pipe will rest upon the prepared bottom of the trench and not be supported by any portion of the joint.

Depressions for joints, other than bell-and-spigot, shall be made in accordance with the recommendations of the joint manufacturer for the particular joint used.

SUBSECTION 601.3 – PROTECTION OF EXISTING UTILITIES

Power Pole Bracing

The Contractor shall be responsible for bracing all power poles located within ten (10) feet of the top of the trench. The Contractor is to contact Jim Rea (SRP) at 602-236-8643, five (5) days prior to requiring power pole bracing. This work also includes protection of power pole down-guy wires.

SUBSECTION 601.4 – FOUNDATION, BEDDING, BACKFILLING, AND COMPACTION

SUBSECTION 601.4.1 – FOUNDATION

Add the following to this section:

Storm Drain

The material upon which the conduit or structure is to be placed shall be accurately finished to the grade or dimensions shown on the plans or as directed by the Engineer. The bottom portion of the trench shall be shaped so as to conform to the bottom of the conduit or structure, in order to provide continuous contact between the conduit and the material upon which it is being placed. In rock trench, the Contractor is to excavate at least six (6) inches below bottom of bell.

SUBSECTION 601.4.2 – BEDDING

Replace this section with the following:

Bedding material from the trench bottom to the bottom of the pipe or concrete box shall consist of granular material containing no pieces larger than one and one-half (1 ½) inches and free of broken concrete, broken pavement, wood, or other deleterious material. Bedding material from the bottom of the pipe to the springline of the pipe, outside paved areas, shall be one-half (½) sack controlled low strength material (CLSM) and shall conform to the gradation specified for bedding material and to the requirements set forth in MAG Section 728. CLSM material shall have a slump of seven (7) inches ± one (1) inch and have a minimum of 50 psi compressive strength and a maximum of 120 psi based on a twenty-eight (28) day test. Bedding material as described above is not subject to a VECP proposal.

Bedding material from the bottom of the pipe to subgrade, within paved areas east of Sossaman Road (76th Street), shall conform to the above described CLSM specifications. The project plan typical section provides station limits for bedding material to subgrade for the mainline storm drain. Connector pipes bedding material, if under pavement, shall conform to these specifications for CLSM bedding material. Bedding material from the bottom of the pipe, to the pipe springline within paved areas west of Sossaman Road (76th Street) longitudinal for pipe trenches, shall conform to the above described CLSM specifications. This includes portions of the detention basin forty-eight (48) inch outlet pipe and the twin fifty-four (54) inch storm drain as noted on the plans.

Bedding material from the bottom of the pipe, to subgrade within paved areas west of Sossaman Road (76th Street) for transverse pipe trenches shall conform to the above described CLSM specifications except 1 (one) sack CLSM shall be used. This includes portions of the detention basin forty-eight (48) inch outlet pipe and the twin fifty-four (54) inch storm drain as noted on the plans.

CLSM material shall be placed in a uniform manner that will prevent voids in, or segregation of, the bedding material, and will not float or shift the pipe. CLSM material shall be placed from bottom of pipe to pipe springline.

Bedding material above the springline of the pipe for RGRCP, for areas outside of pavement west of Sossaman Road, shall be granular material containing no pieces larger than one and one-half (1½) inches and free of broken concrete, broken pavement, wood, or other deleterious material. No backfilling above the CLSM material shall be commenced until twenty-four (24) hours after the CLSM has been placed.

No water consolidation will be permitted.

Where mechanical compaction is used, the moisture content (plus or minus two [2] percent of optimum moisture) shall be such that the specified compaction can be obtained. Bedding lifts shall not exceed twelve (12) inches loose and extreme care will be taken to prevent damage to or movement of the conduit by the compaction equipment.

The Contractor may opt to use CLSM from the bottom of the pipe to one (1) foot above the top of the pipe for RGRCP for mainline pipe along McDowell Road east of Sossaman Road at no additional cost.

SUBSECTION 601.4.3 – BACKFILL

Add the following to this section:

Backfill material shall be clean sound earthen material free from broken concrete, broken pavement, wood or other deleterious material. Unless otherwise specified, backfill may be screened native material with no piece larger than three (3) inches, select material or aggregate base course, or a slurry mixture consisting of aggregate base course and not more than one-half (½) sack of cement per cubic yard.

Water consolidation shall not be permitted under any circumstance. Mechanical compaction shall be required except with CLSM is chosen as the backfill material. The maximum uncompacted lift thickness for mechanically compacted backfill shall be one (1) foot for any trench width. Nothing contained in these specifications shall be construed to violate or reduce any trench shoring requirements normally required by O.S.H.A.

The moisture content of backfill materials shall be carefully maintained between the limits of +2 and -4 percent of optimum moisture content as determined by AASHTO T-180 or ASTM D-1557.

The Contractor may opt to use CLSM aggregate base course in place of native backfill. If used, this backfill will begin from one (1) foot above the top of the pipe to one (1) foot below the top of the trench at no extra cost to the Owner.

CLSM material shall conform to Section 728 of MAG. CLSM shall have a slump of seven (7) inches ± one (1) inch and have a minimum of 50 psi comprehensive strength and a maximum of 120 psi based on a twenty-eight (28) day test.

CLSM pipe backfill shall be placed in a uniform manner that will prevent voids in or segregation of the backfill. No backfilling above the CLSM pipe backfill shall be commenced until twenty-four (24) hours after the CLSM has been placed.

CLSM shall be used as backfill under pavement areas to one (1) foot above crown of pipe as noted on the plans, to roadway base, or as directed by the Engineer. The CLSM shall extend as noted beyond edge of pavement in both directions on cross-streets for CLSM under pavement sections.

SUBSECTION 601.4.4 – COMPACTION DENSITIES

Replace this section with the following:

Except where noted, the backfill compaction densities listed below shall be determined using the Modified AASHTO.

From Surface to 2 Feet Below Surface	From 2 Feet Below Surface to 1 Foot Above Top of Pipe	From 1 Foot Above Top of Pipe to CLSM
100%	95%	95%

SUBSECTION 601.4.5 – COMPACTION METHODS

Replace this section with the following:

Water consolidation for backfill will not be permitted. The backfill compaction shall be accomplished by mechanical methods using equipment such as rollers, pneumatic tamps, hydro hammers, or other approved devices which secure uniform and required density without injury to the pipe or related structures.

The moisture content of backfill materials shall be placed +2 and -4 percent of optimum moisture content as determined by AASHTO T-180 or ASTM D-1557. All materials outside these moisture content limits shall be considered unsuitable and subject to removal.

SUBSECTION 601.6 – PAYMENT

Replace this section with the following:

No separate measurement or payment shall be made for excavation, falsework, backfilling, shoring, compacting of the storm drain and connector pipes, power pole bracing, and protecting utilities in place. The cost thereof shall be included in the price bid for construction or installation of the storm drain and connector pipes to which such work is incidental or appurtenant.

SECTION 604 – PLACEMENT OF CONTROLLED LOW STRENGTH MATERIAL

The work under this section shall be completed according to MAG Uniform Standard Specifications 604.

SECTION 610 – WATERLINE RELOCATIONS

Waterline relocation shall conform to Section 610 of the MAG Uniform Standard Specifications except as modified herein.

SUBSECTION 610.2 – GENERAL

Add the following to this section:

The City of Mesa requires a minimum of seventy-two (72) hours written notice prior to shut downs on waterlines. City fire departments must be notified at least twenty-four (24) hours in advance of any shut downs for waterlines serving as hydrants.

The Contractor is responsible for maintaining access to water valves within the construction area. Failure to do so may result in delays to a scheduled water shut down. Only personnel from the City of Mesa are permitted to operate water valves. The Contractor shall coordinate all waterline activities with Bill Haney of the City of Mesa Utility Department Operations at (480) 644-2480.

The Contractor shall provide all materials and labor necessary to complete all waterline work. The City of Mesa will not provide materials, labor, or equipment for work related to this project.

The Contractor shall be responsible for all waterline testing, disinfection, and flushing, including the cost of the water needed for flushing.

In accordance with A.A.C. R18-4-119, all materials which may come into contact with drinking water shall comply with National Sanitation Foundation Standards 60 and 61.

Water System Shut Down

Except where noted otherwise, the Contractor is responsible for protecting all waterlines in place and for maintaining all waterlines in service for the duration of the project. The waterline may be shut down and the pressure relieved in segments for short periods during construction. The waterline may not be shut down before 8:30 AM and must be back in service by 3:00 PM. If a fire emergency develops that will require the waterline to be placed back in service, the Contractor shall be responsible for backfilling or shoring the trench as necessary to allow re-pressurizing the waterline.

If the contractor elects to temporarily shut down a water main for a period of time which exceeds eight (8) hours, the Contractor shall provide a temporary bypass waterline at no additional cost which is approved by the City of Mesa, depending upon the location.

When a shut down is necessary that will take a water user out of service, those residents and businesses must be notified by door hanger a minimum of seventy-two (72) hours prior to shut down. The hanger should state the hours that the water will be turned off.

Water Line Replacement

In the event of ACP water lines crossing over the mainline storm drain construction or laterals, the Contractor shall replace the water line with DIP in accordance with the plans and Section 610 of the Uniform Standard Specifications as modified herein.

The Contractor shall arrange to have the line shut down in order to perform this work. The Contractor shall notify the City at least seventy-two (72) hours prior to the need to shut down any water lines.

The Contractor shall bear the cost of flushing the lines.

Materials for waterline replacement shall be ductile iron, in accordance with Subsection 610.3 of the MAG Uniform Standard Specifications.

Removal and capping of the two (2) inch water service line shall be considered incidental to related storm drain feature construction.

The replaced water lines shall be visually inspected for leaks under line pressure prior to backfilling.

The water line replacement shall include, but not be limited to, excavation, backfill, compaction, pipe, fittings, offsets, couplings, sleeves, blocking, joint restraints, disinfection, flushing, and hardware. The replaced water line shall be tested per Subsection 610.14 and disinfected per Subsection 610.15 of the MAG Uniform Standard Specifications prior to backfilling.

Waterline Vertical Realignment

The Contractor shall vertically realign waterlines as noted on the plans, in accordance with MAG Section 370, and these Special Provisions.

The waterline realignment shall include, but not be limited to excavation, backfill, compaction, pipe, fittings, offsets, couplings, sleeves, blocking, joint restraints, disinfection, flushing, and hardware. The realigned waterline shall be tested per Subsection 610.14 of the MAG Uniform Standard Specifications and City of Mesa Engineering and Design Standard (September 2004) prior to backfilling.

The Contractor shall coordinate with the City of Mesa to obtain permission to have the lines shut down in order to perform this work. The Contractor shall notify the City and adjacent residential properties/homeowners at least seventy-two (72) hours in advance of the need for shutdown.

Materials for waterline realignment shall be ductile iron, cement mortar-lined wrapped in blue polywrap, in accordance with Section 750 of the MAG Uniform Standard Specifications.

Connection to the existing waterline and the new DIP shall be made using MAG Standard Detail joint restraint per plans.

SUBSECTION 610.13 – BLOCKING

Add the following to this section:

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

SUBSECTION 610.18 – MEASUREMENT AND PAVEMENT

Replace this section with the following:

Payment for waterline realignment, replacements and supports shall be made at the contract unit price bid per linear foot and size of pipe. Such payment shall be full compensation for furnishing and installing the item complete and in place including the cost of all materials, labor and equipment. Payment will include all utility location, potholing, surveying, bends, fittings, trenching, bedding, backfill, pavement removal and replacement, curb and gutter removal and replacement, thrust blocks, and other items incidental to the relocation, realignment or support of the waterlines.

**ITEM 610-1 – 8 INCH ACP WATERLINE VERTICAL REALIGNMENT (MAG STD
DETAIL 370)**

**ITEM 610-2 – 8 INCH ACP WATERLINE SECTION REPLACEMENT (MAG STD
DETAIL 403-3)**

**ITEM 610-2A – 6 INCH ACP WATERLINE SECTION REPLACEMENT (MAG STD
DETAIL 403-3)**

**ITEM 610-3 – 12 INCH ACP WATERLINE VERTICAL REALIGNMENT (MAG STD
DETAIL 370)**

**ITEM 610-4 – 12 INCH ACP WATERLINE SECTION REPLACEMENT (MAG STD
DETAIL 403-3)**

ITEM 610-5 – 16 INCH ACP WATERLINE VERTICAL REALIGNMENT (DTL UT1)

ITEM 610-6 – 20 INCH DIP WATERLINE VERTICAL REALIGNMENT (DTL UT1)

SECTION 611 – DISINFECTING WATER MAIN

The work under this section shall be completed according to MAG Standard Specification 611.

SECTION 615 – SEWER LINE CONSTRUCTION

The work under this section shall be completed according to MAG Standard Specification 615 except as modified herein.

SUBSECTION 615.1 – DESCRIPTION

Add the following to this section:

The Contractor is responsible for determining if existing household connections, whether shown on the plans or discovered in the field during construction, are active service or not in service. The Contractor shall notify the Engineer and the City of Mesa of the Contractor's determination.

This activity shall commence prior to disconnection of any existing household connections. Household connections found to be in active service cannot have service disrupted. The Contractor may provide temporary means of providing service for active household connections. The temporary means cannot continue for more than a six (6) hour period. No sewer line construction activities may commence until the household connection service inventory is completed and notification provided by the Engineer.

The Contractor is responsible for making proper application and paying the prevailing fees prior to construction of all services. Construction survey stakes shall be in place and cut sheets shall be provided to the Engineer prior to starting construction. Conflicts with the existing utilities discovered during construction shall be called to the attention of the Engineer and resolved prior to proceeding. All sewer lines shall be staked prior to trenching at a maximum staking interval of fifty (50) feet, except when the Engineer approves the use of laser. The location of all manholes, household connections, and clean outs shall be referenced at all times during construction and made available to the Engineer and the City of Mesa.

Other incidental work includes construction of new household connections, removal of household connection pipe, the plugging of existing sewer pipes to existing manholes, installation of new sewer pipes to existing manholes, plugging of existing household connections, provided temporary service, and other modifications and adjustments to existing manholes that will remain in place, as shown on the plans. Plugs shall be per MAG Standard Detail 427.

SUBSECTION 615.1.1 – CITY OF MESA SEWER LINE CONSTRUCTION – DESCRIPTION

Add the following to this section:

This work includes the removal of existing household connections to an existing twelve (12) inch sanitary sewer located in McDowell Road as shown on the plans, plugging of the connections at the twelve (12) inch existing sewer, removal of sufficient lengths of household connections to clear the storm drain construction zone and trench, construction of a new eight (8) inch PVC sanitary sewer, manholes, and new household connections to the new eight (8) inch sewer as shown on the plans. This work shall be completed prior to trench excavation for the new storm drain and storm drain connectors.

This work also includes construction of the four (4) inch PVC sanitary sewer/ferric chloride line dip section as detailed on the plans. The construction of the four (4) inch PVC sanitary sewer dip section connects to an existing City of Mesa ten (10) inch (inactive) sanitary sewer. The ten (10) inch sewer is being used by the City to route a three-quarter (3/4) inch HDPE ferric chloride pipe. The Contractor shall coordinate all work with the construction of the dip section with the City of Mesa.

The work also includes construction of pipe support for existing waterlines and/or sanitary sewers as detailed on the plans and noted in these Special Provisions. Replacement of sanitary sewer pipe shall be ceramic-lined ductile iron pipe.

The Contractor is responsible for making proper application and paying prevailing fees required by the City of Mesa prior to installation of any of these sewers.

Prior to beginning the construction staking, the Contractor shall conduct their own survey to verify the sewer invert elevations at all locations where proposed sewer facilities will connect to existing sewer facilities. The Contractor shall pothole and verify the location of all sanitary household connections to the existing twelve (12) inch sanitary sewer. Approximate locations of such household connections are shown on the plans which were based on City of Mesa utility maps.

The City of Mesa has indicated that the existing household sanitary connections are currently not in service to adjacent resident properties. It shall be the Contractor's responsibility to verify that the existing household connections are not in service. Documentation of verification shall be provided to the Engineer forty-eight (48) hours prior commencing work on the new sanitary sewer or disconnecting the household connections from the existing McDowell Road sewer. The new household connections must be connected as the new eight (8) inch sewer is constructed.

The new sanitary sewer to which a household connection connects must be televised and pressure tested prior to the household sewer being connected. These connections shall not be backfilled until inspected by City of Mesa inspectors.

The new eight (8) inch PVC sewer must be constructed beginning at its connection to the existing twelve (12) inch sewer in Sossaman Road and proceeding upstream (east). The work shall also include the installation of sewer caps at existing household connections on the existing twelve (12) inch diameter sewer. The work shall also include installing temporary caps in the existing household connection sewers prior to connecting to the new eight (8) inch sewer. Existing household connections found to be in service cannot have service disrupted at any time.

This work also includes installing sanitary sewer caps on existing sanitary sewers that are being removed as part of construction activities.

Contractor will notify the City of Mesa prior to televising the line and pressure testing the line and provide the option for City of Mesa personnel to witness this work. A CD/DVD containing the television record will be provided to the City of Mesa and the Engineer.

SUBSECTION 615.3 – LAYING PIPE

Add the following to this section:

Prior to the construction of any new sewer pipelines or manholes, the Contractor shall survey and pothole the elevations of the existing manholes and/or sewers to which new sewers and manholes will be connected and verify elevations with the plans. Any discrepancies must be brought to the Engineer's and City of Mesa's attention immediately so that adjustment, if necessary, may be made to ensure the new sewer construction is compatible with the existing system.

Connection of the new eight (8) inch PVC sanitary sewer pipe and manhole to existing eighteen (18) inch sewer in Sossaman Road shall be completed according to the alignment and grade

shown on the plans. The Contractor shall exercise caution when making the connection so as not to damage the existing sewer or connected sewer lines. Any damage to these facilities resulting from the Contractor's construction activities shall be repaired to the satisfaction of the Engineer at the Contractor's expense.

PVC pipe shall be installed according to the alignment and grade shown on the plans. The Contractor shall exercise caution when making the connection to the existing pipe so as not to damage the existing sewer line. Note that at approximately Station 34+00, the new eight (8) inch sewer line is located within four (4) feet of an existing residential structure. The depth of the eight (8) inch PVC sewer at this location is approximately nine (9) to ten (10) feet below existing grade. The Contractor shall take every precaution in that the Contractor's trenching and pipe laying construction activities do not cause damage to the residential structure. Damage caused to the structure by any Contractor activities shall be repaired at the expense of the Contractor.

SUBSECTION 615.4 – MEASUREMENT AND PAYMENT

Add the following to this section:

Construction of the new eight (8) inch PVC sewer shall be paid for at the bid unit price per lineal foot. Payment shall include all labor, materials, equipment, excavation, trenching, backfill, fittings, and incidentals necessary to construct the sewer as shown on the drawings.

ITEM 615-1 – 8 INCH PVC SANITARY SEWER PIPE

Installation of caps on existing sanitary sewers, as noted on the plans, shall be paid for at the bid unit price per each. Payment shall include all labor, materials, equipment, excavation, trenching, backfill, fittings, and incidentals necessary to construct sanitary sewer caps as located on the plans.

ITEM 615-2 – CAP EXISTING SANITARY SEWER LINE (MAG STD DETAIL 427)

Construction of the new household sewer connections, as noted on the plans, shall be paid for at the bid unit price per each. Payment shall include all labor, materials, equipment, excavation, trenching, backfill, fittings, and incidentals necessary to construct the new household connections as shown on the drawings.

ITEM 615-3 – NEW HOUSEHOLD SEWER CONNECTION (MAG STD DETAIL 440-1)

Waterline/Sanitary Sewer Pipe Support: Measurement shall be per lineal foot included in the proposal and payment shall be compensation in full for supporting or encasing existing water or sewer pipe, as required on the plans, including excavation, formwork, reinforcing, concrete, handling and controlling flows in existing pipe, supporting, and backfilling and compaction.

ITEM 615-4 – WATERLINE/SANITARY SEWER PIPE SUPPORT (MAG STD DETAIL 403-3)

Construction of the four (4) inch PVC sanitary sewer/ferric chloride dip section shall be paid at the unit price per lump sum. Payment shall include all labor, materials, equipment, excavation, trenching, backfill, pulling the ferric chloride pipe, fittings, and incidents necessary to construct the dip section, complete, as shown on the plans.

**ITEM 615-5 – 4-INCH PVC SANITARY SEWER/FERRIC CHLORIDE DIP SECTION
(DWG SD15)**

SECTION 618 – STORM DRAIN CONSTRUCTION

The work under this section shall be completed according to MAG Standard Specification 618 except as modified herein.

SUBSECTION 618.1 – DESCRIPTION

Add the following to this section:

The work under this section shall consist of furnishing and installing Rubber Gasketed Reinforced Concrete Pipe (RGRCP) at the locations and to the grades and slopes indicated on the plans. The work includes the installation of the eighteen (18) inch, twenty-four (24) inch, forty-two (42) inch, forty-eight (48) inch, fifty-four (54) inch, seventy-two (72) inch, seventy-eight (78) inch, ninety (90) inch RGRCP storm drain pipes, 50-inch by 31-inch reinforced concrete arch pipe, culverts, prefabricated bends, prefabricated tees, concrete end sections, restrictor plate, and CLSM backfill as shown on the plans.

The work under this section also includes furnishing and installing, per these special provisions and noted on the plans, steel access barriers per City of Phoenix Standard Detail P-1563. The City of Phoenix Standard Detail P-1563 is provided as an **Appendix** to these Special Provisions.

The work under this section also includes furnishing and installing, per these special provisions and noted on the plans, object markers per ADOT Standard Details M-23 and M-24. The ADOT Standard Details M-23 and M-24 are provided as an **Appendix** to these Special Provisions.

SUBSECTION 618.2 – MATERIALS

Add the following to this section:

Storm drain concrete pipe, joints, gaskets, and testing shall be according to MAG Section 735 and as specified below. No pipe materials other than what is described on the plans and these Special Provisions will be considered or approved for this project.

SUBSECTION 618.5 – MEASUREMENT

Replace Paragraph A of this section with the following:

- (A) Main Line Pipe: Shall be the number of linear feet of pipe laid as measured along the pipe axis.

Measurement shall begin at the outside face of headwall(s) and/or inlet structures, extend through manholes, and extend to the inside face of junction structures. When a change of pipe size occurs within a manhole, measurement for each size will be taken to the centerline of the manhole.

SUBSECTION 618.6 – PAYMENT

Replace this section with the following:

Payment for storm drain construction shall be made at the unit price bid per linear foot. This shall be full compensation for furnishing and installing the pipe, complete in place as specified including CLSM backfill, pipe collars, tees, excavation, backfilling, compaction, shoring, sheeting and bracing, testing, pipe collars, and all incidental work not specifically covered in other pay items.

ITEM 618-1 – 18 INCH CLASS III RGRCP

ITEM 618-1A – 18 INCH CLASS V RGRCP, CONCRETE ENCASED

ITEM 618-2 – 24 INCH CLASS III RGRCP

ITEM 618-3 – 24 INCH CLASS V RGRCP, CONCRETE ENCASED

ITEM 618-4 – 48 INCH CLASS III RGRCP

ITEM 618-5 – 48 INCH CLASS V RGRCP

ITEM 618-5A – 50-INCH BY 31-INCH REINFORCED CONCRETE ARCH PIPE CLASS III

ITEM 618-6 – 54 INCH CLASS III RGRCP

ITEM 618-7 – 54-INCH CLASS V RGRCP

ITEM 618-8 – 42 INCH CLASS V RGRCP

ITEM 618-9 – 72 INCH CLASS III RGRCP

ITEM 618-10 – 78 INCH CLASS III RGRCP

ITEM 618-11 – 90 INCH CLASS III RGRCP

Payment for eighteen (18) inch safety end section and the fifty (50)-inch by thirty-one (31)-inch end section shall be made at the unit price bid per each complete in-place.

ITEM 618-12 – 18 INCH SAFETY END SECTION (MAG STD DTL 545)

Payment for prefabricated pipe bends, prefabricated tee, restrictor plate, storm drain pipe plug, and access barriers shall be at the unit price per each, complete in place.

ITEM 618-13 – 54-INCH X 54-INCH PREFABRICATED BEND

ITEM 618-14 – 90 INCH X 90 INCH X 18-INCH PREFABRICATED TEE

ITEM 618-15 – 90 INCH X 90 INCH X 18-INCH PREFABRICATED TANGENTIAL TEE

ITEM 618-16 – 78 INCH X 78 INCH X 24 INCH PREFABRICATED TEE

ITEM 618-17 – 78 INCH X 78 INCH X 18 INCH PREFABRICATED TEE

ITEM 618-18 – 72 INCH X 72 INCH X 24 INCH PREFABRICATED TEE

- ITEM 618-19 – 72 INCH X 72 INCH X 18 INCH PREFABRICATED TEE
- ITEM 618-20 – ACCESS BARRIER COP DTL P-1563 (48-INCH)
- ITEM 618-21 – ACCESS BARRIER COP DTL P-1563 (54-INCH)
- ITEM 618-22 – ACCESS BARRIER COP DTL P-1563 (42-INCH)
- ITEM 618-23 – RESTRICTOR PLATE (41 INCH)
- ITEM 618-24 – PLUG EXISTING STORM DRAIN (MAG STD DETAIL 407)

Payment for object markers shall be at the unit price per each, complete in-place.

- ITEM 618-25 – OBJECT MARKER (ADOT DTL M-23 AND M-24, TYPE 3(1)L)
- ITEM 618-26 – OBJECT MARKER (ADOT DTL M-23 AND M-24, TYPE 3(1)R)

SECTION 625 – MANHOLE CONSTRUCTION

Manhole construction shall conform to Section 625 of the MAG Uniform Standard Specifications except as modified herein and City of Mesa Amendment (2006) and City of Phoenix Standard Detail P-1560.

SUBSECTION 625.1 – DESCRIPTION

Add the following to this section:

The work includes the installation of five (5) foot diameter manhole structures for the sanitary sewer and all storm drains as located on the plans.

Storm drain manholes on storm drains on forty-eight (48) inch diameter or less shall conform to MAG Standard Detail 520 and 420.

The City of Mesa has supplemental requirements for manholes constructed on their sanitary sewers. These additional requirements are specified hereinafter.

All plugs required for the abandonment of existing sewer lines at new manhole locations shall be considered incidental to the installation of the manholes. Plugs shall be per MAG Standard Detail 427.

SUBSECTION 625.2 – MATERIALS

Add the following to this section:

Sanitary sewer manhole covers shall be water tight covers per MAG Standard Detail 423. Five (5) foot diameter manholes are required and shall use thirty (30) inch diameter frames and covers. All manhole frames and the underside of the accompanying covers shall be coated with 2 – 16 mil coats of corrosion resistant coal tar epoxy. The interior of all manholes shall be coated with Sewer Shield 100, T-Loc, or other corrosion resistant coating or lining approved by the City of Mesa. All costs for such shall be considered incidental to the price of the manhole.

SUBSECTION 625.2.1 – MESA MATERIALS

Storm drain manholes shall conform to MAG Standard Detail 520 and 420 as noted on the plans, MAG Standard Detail 521 and 420 as noted on the plans, and City of Phoenix Standard Detail P-1560 as noted on the plans. Manholes should be five (5) foot diameter manholes and will not have built-in steps.

Sanitary manholes shall conform to MAG Standard Detail 420. Manholes will be five (5) foot diameter and have thirty (30) inch covers. Manholes will not have built-in steps.

All sanitary manhole interiors shall be coated with a one-eighth (1/8) inch thickness of Sewer Shield 100 after the manholes have been constructed. All pre-cast concrete manhole sections, cones, flat tops, and adjusting rings must have been cast at least twenty-eight (28) days prior to delivery to the site to insure the proper bonding of the Sewer Shield 100.

All manhole frames and covers shall be thirty (30) inch, Class 35 and their weights and dimensions shall be in accordance with details shown in MAG Standard Detail 424. All frames and covers shall be coated with 2 – 16 mil coats of coal tar epoxy. All costs for supplying and installed manhole frames and covers as specified here in shall be incidental to the price of the manhole.

Where new sewers are connected to existing manholes, the manholes will be rehabilitated by removing corroded or spalling concrete, patching the concrete, and coating the manhole with a one eighth (1/8) inch thickness of Sewer Shield 100.

Sewer Shield 100

Sewer-Shield 100 is manufactured by Environmental Coatings, 1845 N. Crimson Road, Mesa, Arizona 85207-3505. Sewer-Shield 100 shall be applied to the interior of all new sewer manholes and to existing manholes to which new sewers are being connected. The applicator shall be trained and licensed by the coating manufacturer and shall have successfully completed at least two hundred (200) successful coating applications to manholes.

Submittals shall include cut sheets, product specifications, MSDS sheets, mixing instructions, primer requirements, concrete patching requirements, surface preparation methods, method of patching and filling installation instructions, allowable application times for temperature and humidity ranges likely to be encountered during the performance of the work, method of ensuring that a minimum coating thickness of one eighth (1/8) inch is attained, and five (5) year warranty provided by the licensed applicator made out in the name of the City of Mesa.

SUBSECTION 625.3 – CONSTRUCTION METHODS

Add the following to this section:

Where new sewers are connected to existing manholes, the existing sanitary sewer manhole floors shall be reshaped in order to accommodate the connection of the new sewer pipe. The invert channels shall be smooth and semicircular in shape, conforming to the inside of the adjacent sewer pipe connections. The cost for the reshaping of existing manhole floors will be considered incidental to the cost for the sewer pipe in Section 615 for which the manhole floor

reshaping is required. The Contractor shall exercise caution when reshaping the manhole floor so as not to damage the existing manhole structure or connected sewer lines. Any damage to these facilities resulting from the Contractors construction activities shall be repaired to the satisfaction of the Engineer at the Contractors expense.

Where new manholes are constructed in the same locations as existing manholes with completely new invert elevations, the manholes are considered new construction and will be paid for at the unit price bid for a new manhole complete in place.

SUBSECTION 625.3.1.1 – ADDITIONAL METHODS FOR MESA MANHOLES

The requirements below are in addition to those of Subsection 625.3.

Installing New Manholes on Existing Sewers:

The following general procedure shall be followed when constructing manholes over existing sewers where flow must be maintained through sewer while the manhole is constructed.

Expose the top of the sewer so the pipe joints are visible and determine the best location for the center of the manhole.

Carefully excavate the pipe as necessary to install the cast-in-place manhole base. The pipe must be supported so it will not fail and joints do not move, be displaced, and leak. Concrete bricks may be used to support the pipe and can be left in place when the manhole base is cast. See the Plans for the base detail.

After the base has reached its necessary strength the manhole will be constructed upon the base and around the pipe. The space between the outside of the pipe and cut-out in the manhole wall shall be grouted the full depth of the manhole wall.

The top of the pipe within the manhole will be removed by saw cutting longitudinally along and just above the springline and then at right angles across the pipe near the manhole wall. The fillet will then be constructed in the manhole.

Installing Sewer-Shield 100

Application: Trowel apply to benches, inverts, and any exposed concrete piping with the manhole. The remainder of the manhole interior may be spray coated.

Testing: The completed installation shall be spark tested (Tinker Raser) at fourteen thousand (14,000) volts in the presence of Engineer. The coating installer shall submit the proposed procedure for spark testing along with a description of the safety precautions to be employed. Holidays revealed by the spark testing shall be filled to the satisfaction of the Engineer.

SUBSECTION 625.4 – MEASUREMENT

Add the following to this section:

Measurement for manholes shall be for each bid item completed in place within the limits shown on the plans.

SUBSECTION 625.5 – PAYMENT

Payment for sanitary manholes installed on City of Mesa sewers shall be made at the bid unit price per each for the specified diameter, and shall also include the cost of coating the manhole interiors and furnishing and installing frames and lids.

ITEM 625-1 – SANITARY SEWER MANHOLE 5 FOOT DIAMETER MAG STD DETAIL 420 AND 424

Payment for storm drain manholes shall be made at the unit price bid per each complete in place. Such payment shall be full compensation for furnishing and installing the item complete in place, including the cost of all labor, excavation, removal of obstructions, shoring, bracing, bedding, and backfilling. City of Phoenix Standard Detail P-1560 is provided in the **Appendix** to these Special Provisions.

ITEM 625-2 – STORM DRAIN MANHOLE 5 FOOT DIAMETER MAG STD DETAIL 520 AND 420

ITEM 625-3 – STORM DRAIN MANHOLE 5 FOOT DIAMETER MAG STD DETAIL 521 AND 420

ITEM 625-4 – STORM DRAIN MANHOLE, COP DTL P-1560 AND MAG STD DETAIL 420

ITEM 625-5 – STORM DRAIN SHAFT, 5-FT DIAMETER, MAG STD DETAIL 420-2

SECTION 702 – BASE MATERIALS

The work under this section shall be completed according to MAG Standard Specification 702.

SECTION 703 – RIPRAP

The work under this section shall be completed according to MAG Standard Specification 703.

SUBSECTION 703.1 – STONE

Add the following to this section:

The riprap material shall be naturally occurring bank run material, crushed to create angular faces.

Neither waste concrete nor sacked concrete riprap may be used as riprap.

SUBSECTION 703.2 – SIZE OF STONE

Subsection 703.2 of the MAG Uniform Standard Specifications is replaced with the following requirements:

Riprap Type	Dmax (inch)	D50 (inch)	Dmin (inch)	Thickness (inch)
I	12	6	2	18
II	24	12	4	36
III	32	16	6	48

SUBSECTION 703.4 – SACKS

Delete this section.

SECTION 710 – ASPHALT CONCRETE

The work under this section shall be completed according to MAG Standard Specification 710 except as modified herein.

SUBSECTION 710.1 – GENERAL

Unless otherwise noted, all hot asphalt pavement shall meet the latest edition of the “Hot Asphalt Mix Criteria” dated April 1, 1996 as established by the East Valley Asphalt Committee.

Copies of the “Hot Asphalt Mix Criteria” can be obtained at no cost from the Building Safety Desk at 55 North Center Street, Mesa, Arizona.

SECTION 725 – PORTLAND CEMENT CONCRETE

The work under this section shall be completed according to MAG Standard Specification 725.

SECTION 728 – CONTROLLED LOW STRENGTH MATERIAL

The work under this section shall be completed according to MAG Standard Specification 728.

SECTION 729 – EXPANSION JOINT FILLER

The work under this section shall be completed according to MAG Standard Specification 729.

SECTION 735 – REINFORCED CONCRETE PIPE

The work under this section shall be completed according to MAG Standard Specification 735.

SECTION 745 – PVC SEWER PIPE AND FITTINGS

The work under this section shall be completed according to MAG Standard Specification 745.

SECTION 757 – IRRIGATION SYSTEM

Irrigation System shall conform to Section 757 of the MAG Uniform Standards Specifications except as modified herein.

SUBSECTION 757.1 – GENERAL

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

SUBSECTION 757.2 – PIPE AND FITTINGS

The type of pipe material and fittings shall be as designated on the plans or in the special provisions. The type utilized shall comply with one of the following:

SUBSECTION 757.2.1 – STEEL PIPE

All steel pipes shall be newly galvanized, standard weight, Schedule 40 conforming with Section 753.

SUBSECTION 757.2.2 – PLASTIC PIPE

Plastic pipe shall be rigid, unplasticized polyvinyl chloride, PVC 1120 or 1220, with an SDR of 26 or less, complying with ASTM D-1785. Schedule 40 or 315 psi pipe shall be used for the continuously pressurized run on the supplyside of Control Valves. PVC 1120 to 1220, SDR 26, pressure rated at not less than 125 psi shall be used on the discharge side of all control valves.

SUBSECTION 757.2.3 – PIPE FITTINGS AND COUPLINGS

- A. Steel Pipe Fitting and Couplings – Steel pipe fittings and couplings shall be galvanized, malleable iron, screwed fittings or couplings, conforming with Section 753.
- B. Plastic Pipe Fittings and Couplings – Plastic pipe fittings and couplings shall be either threaded type or slip fitting tapered socket solvent weld type. Schedule 80 pipe only will be used for threaded joints. Tapered solvent weld fittings may be either Schedule 80 or Schedule 40, but in any case, will be equal to or greater than the Schedule and Pressure Rating of the plastic pipe being joined. Tapered fittings shall be sized so that a dry,

unsoftened taper cannot be inserted more than halfway into the socket. Plastic saddles and flange fittings are not permitted.

- C. Copper Pipe Fittings and Couplings – Copper pipe fittings and couplings shall conform with Section 754.

SUBSECTION 757.2.4 – SOLVENT CEMENT

The solvent cement shall be a solution of Type 1, Grade 1, unplasticized, polyvinyl chloride molding or extrusion compound as specified in ASTM D-1784, or an equivalent PVC resin. The cement shall be free flowing and shall not contain lumps, microscopic undissolved particles or any foreign matter that will adversely affect the ultimate joint strength. It shall show no stratification or separation that cannot be removed by stirring. Container labeling shall be in accordance with ASTM D-2564. Solvent Cement shall be of type and manufacturer as recommended by the approved pipe manufacturer.

SUBSECTION 757.3 – VALVES AND VALVE BOXES

SUBSECTION 757.3.1 – GENERAL

Add the following to this section:

Valves shall be of the size, type, and capacity designated on the plans or in the special provisions and shall comply with the requirements specified herein.

All valves except garden valves shall be capable of satisfactory performance at a working pressure of 200 psi. Valves shall be designed to permit disassembly to replace sealing components without removal of the valve body from the pipeline.

SUBSECTION 757.3.2 – GATE VALVES

Gate valves in size two (2) inches and smaller shall be all bronze double disc wedge type with integral taper seats and non-rising stem. Sizes two and one-half (2 ½) inches and larger shall be iron body, brass trimmed, with the other features the same as for the two (2) inch. Section 753 applies.

SUBSECTION 757.3.3 – MANUAL CONTROL VALVES

Manual control valves shall be brass or bronze, and shall be straight or angle pattern glove valves, full opening, key operated with replaceable compression disc and ground joint union on the discharge end.

SUBSECTION 757.3.4 – ELECTRICAL REMOTE CONTROL VALVES

Remote control valves shall be electrically operated, designed for a 24 volt, 60-cycle system. They shall be brass, bronze or plastic with accurately machined valve seat surfaces, equipped for flow control adjustment, and with the capability for manual operation. They shall be readily disassembled for repair and the internal parts shall be easily accessible for service even when installed in the line.

The internal valve shall be a normally closed, diaphragm type with slow opening and closing action as protection against surge pressures. Actuation shall be by an encapsulated type solenoid with the solenoid shunt band, tube, and plunger of stainless steel for corrosion protection. A removable and cleanable strainer shall be provided at the control chamber inlet to prevent debris from entering the solenoid operating section.

SUBSECTION 757.3.6 – QUICK-COUPLING VALVES AND ASSEMBLIES

Quick-coupling valves shall be brass or bronze with built-in flow control and self-closing valve and supplied in three-quarter ($\frac{3}{4}$) inch size unless otherwise required. When a quick-coupler assembly is specified, it shall consist of the valve, quick-coupler connection and hose swivel. Keys and hose swivel ells shall be furnished as specified on the plans.

SUBSECTION 757.3.7 – VALVE BOXES

Valve boxes with locking bolt down covers shall be molded, non-corrosive plastic. Applicable ASTM references: D-638. Integral color plastic of box and lid to be tan.

SUBSECTION 757.4 – BACKFLOW PREVENTER ASSEMBLY

The backflow preventer assembly shall consist of pressure type or reduced pressure type backflow preventer unit and associated components conforming to the governing code requirements and as shown on the plans. It shall be equal in quality and performance to a "Foundation for Cross-Connection Control and Hydraulic Research."

Backflow preventer shall include a lockable hinged enclosure cage per manufacturer indicated on the drawings or approved equal. Backflow preventer enclosure shall be sized as necessary to completely enclose the backflow unit and allow unrestricted hinged access. Include: concrete pad and Lock as manufactured by Master, Best or approved equal, keyed to Flood Control District system. Finish color of all cage surfaces to be tan.

SECTION 765 – RUBBER GASKETS FOR CONCRETE PIPE

The work under this section shall be completed according to MAG Standard Specification 765.

SECTION 787 – GRAY IRON CASTINGS

The work under this section shall be completed accordingly to MAG Standard Specification 787.

SUBSECTION 787.3 – MANHOLE FRAME AND COVER SETS

Replace this section with the following:

Castings shall conform to ASTM A-48, Class 35. The bearing surfaces of the frames and covers shall be machined and the cover shall seat firmly onto the frame without rocking.

SECTION 795 – LANDSCAPE MATERIAL

Landscape Material shall conform to Section 795 of the MAG Uniform Standard Specifications except as modified herein.

SUBSECTION 795.8 – MISCELLANEOUS MATERIAL

SUBSECTION 795.8.5 – BIODEGRADABLE TREE SHELTER AND SUPPORT STAKE

Add the following section to the MAG Uniform Standard Specifications:

Biodegradable tree shelters shall be Forestry Suppliers, Inc. Item 17017, Rigid Seedling Protector Tubes supported with Forestry Suppliers, Inc. Item 17010 three-eighths (3/8) inch by four (4) foot Bamboo Stake supplied to the Contractor by the Flood Control District of Maricopa County.

SUBSECTION 795.9 – TALL POT TREES

Add the following section to the MAG Uniform Standard Specifications:

Tall Pot Trees shall be as grown and supplied to the Contractor by the Flood Control District of Maricopa County. Height, spread and caliper shall be as provided. Each plant shall be capable of standing erect, after planting, without support. Tall pots shall be grown in PVC tubes up to four (4) feet in length, with an equal length root zone. Tall pots shall be planted in accordance with the plans and details in planting pits of depth equal to the length of the PVC tube in which it has been grown.

SUBSECTION 795.10 – DRiWATER QUART (OR EQUIVALENT)

SUBSECTION 795.10.1 – GENERAL

DRiWATER (or equivalent) is time-release water bound in the form of a solid gel used for the watering and establishment of plant materials. Each DRiWATER (or equivalent) unit will be packaged in a biodegradable paper carton labeled clearly with an expiration date. Quarts will be packed in cases of twenty (20) and sufficiently identified for inventory and quality control purposes.

SUBSECTION 795.10.2 – PRODUCT

DRiWATER (or equivalent): Furnish Time-Released Watering Packages (TRWP), water bound in the form of a solid gel that slowly converts to liquid when placed in the microbiological environment of natural soils. TRWP unit should consist of a one (1) quart 205# paper carton stock container measuring 2.765 by 2.764 by 7.625, biodegradable and printed with non-toxic vegetable ink. Ingredients are to consist of 97.85 percent potable water, two (2) percent cellulose gum and .15 percent aluminum sulfate. Installation of product should be in accordance with manufacturer recommendations. Known manufacturer is DRiWATER, Inc., Santa Rosa, CA (800) 255-8458.

Additional applications of TRWP shall be applied when directed by the project Engineer.

SUBSECTION 795.10.3 – EXECUTION

Step 1 – Dig a planting hole to the proper depth for the plant. Carefully cut the bottom off the carton where indicated and install the Quart as shown in the carton diagram. The bottom of the Quart (exposed DRiWATER [or equivalent]) should be directly against the root mass. When using multiple Quarts arrange at equidistance around the root mass.

Step 2 – Water the plant thoroughly before backfilling. If the plant is stressed from lack of water, DRiWATER (or equivalent) will not liquefy fast enough to bring it out of its stressed state. Backfill the wet planting hole with soil being careful not to press the DRiWATER (or equivalent) out of the carton. The top of the carton may be above or below the soil level. Water the plant again.

SUBSECTION 795.10.4 – USAGE

Several factors will govern the amount of DRiWATER (or equivalent) required.

Plant species: Each species has its' own water requirement.

Plant size: Larger plants require more water.

Soil type: Clay/loam soils retain more moisture than sand and gravel soils and will require less DRiWATER (or equivalent).

Sun and wind exposure: High temperatures and wind velocity affects evapo-transpiration and will cause the plant to need more DRiWATER (or equivalent).

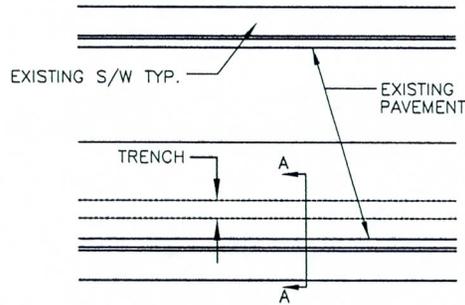
Tall pot plants: Place DRiWATER (or equivalent) six (6) to eight (8) inches deep. Four (4) quarts (minimum) will be required, dependent on factors previously mentioned at the time of the planting.

An additional application (four [4] quarts minimum) is required during the maintenance/ establishment period. Dependent on annual rainfall and duration of the wet season, more than one application may be needed.

APPENDIX

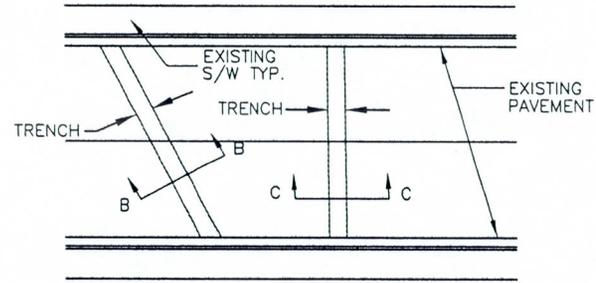
LONGITUDINAL TRENCHES

(PARALLEL TO CL OF STREET)

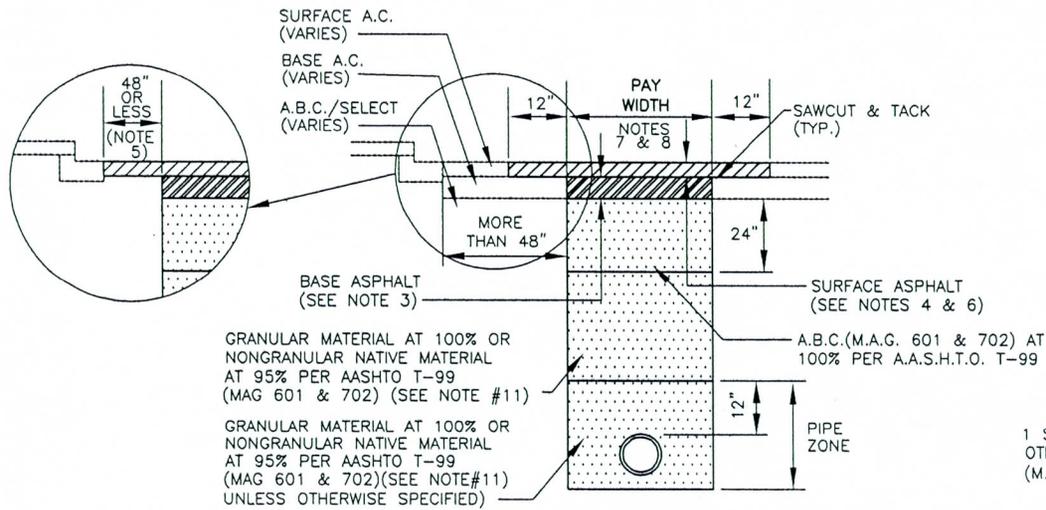


TRANSVERSE TRENCHES

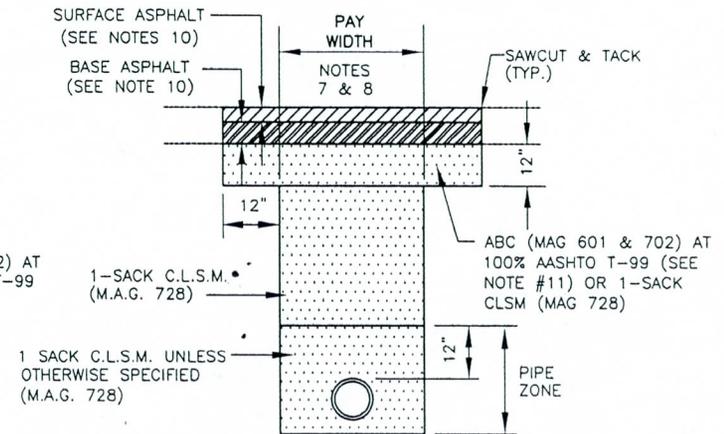
(NON PARALLEL TO CL OF STREET, SEE NOTE 9)



SEE M-19.4 SHT.2 FOR NOTES



LONGITUDINAL TYP. BACKFILL SEC. A-A
(TYPE "A")



TRANSVERSE TYP. BACKFILL SEC. B-B & C-C
(TYPE "B")

STANDARD TRENCH BACKFILL DETAIL
ARTERIAL, COLLECTOR, & LOCAL

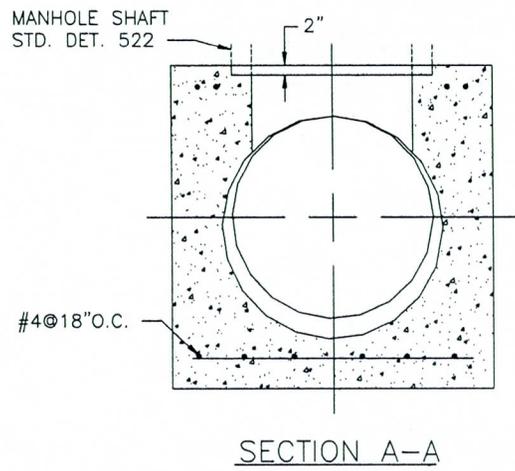
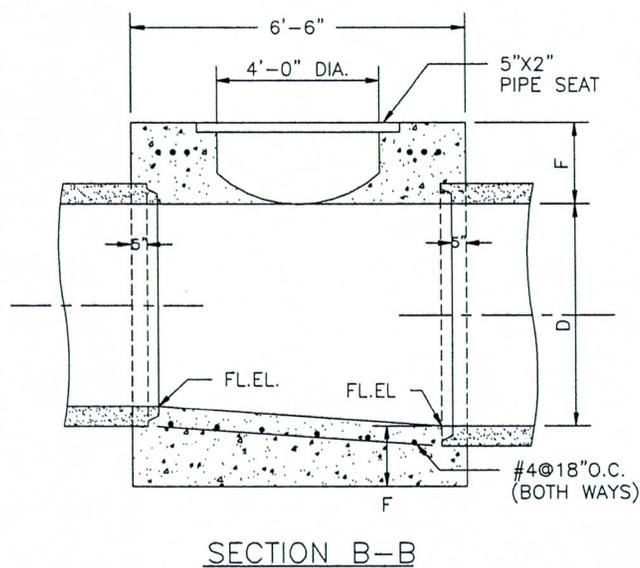
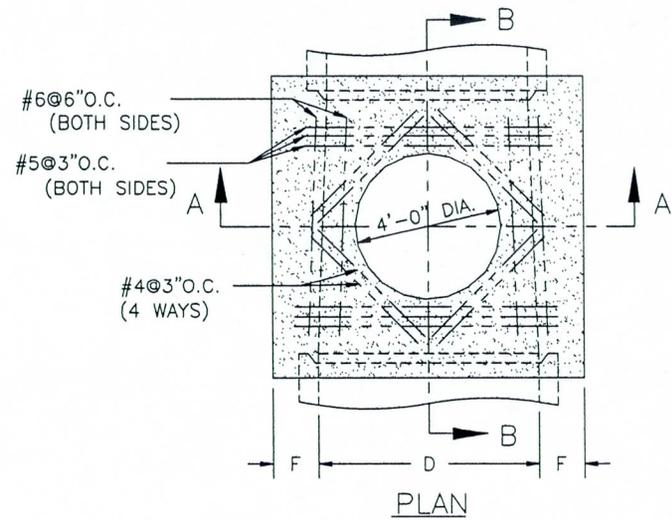
DETAIL NO.
M-19.4
SHT. 1 OF 2

NOTES

1. SEE LATEST POLICY STATEMENT FOR STREET TRENCH BACKFILLING AND REPLACEMENT.
2. FLOODING IS ACCEPTABLE AS A WATER CONSOLIDATION METHOD AS LONG AS THE COMPACTION REQUIREMENTS ARE MET AND NOT DISALLOWED IN PLANS AND/OR SPECIAL PROVISIONS.
3. BASE ASPHALT SHALL BE INSTALLED TO SURFACE OF EXISTING PAVEMENT. THE THICKNESS OF THE ASPHALT SHALL BE EQUAL TO THE ADJACENT EXISTING ASPHALT HOWEVER, NOT LESS THAN THE SUM OF BOTH BASE & SURFACE COURSE ASPHALTS AS NOTED IN DETAIL M-19.1. THE TYPE OF ASPHALT CONCRETE MIX SHALL BE PER DETAIL M-19.1 OR M-19.3 EXCEPT WHEN AN A-19 ASPHALT MIX IS REQUIRED FOR A SURFACE COURSE, A 12.5 ASPHALT MIX WILL BE INSTALLED. IF THE DEPTH OF THE ASPHALT IS MORE THAN 4-INCHES, PLACEMENT SHALL BE IN TWO LIFTS.
4. AFTER THE BASE ASPHALT PATCH HAS BEEN SUBJECTED TO TRAFFIC FOR AT LEAST TWO (2) WEEKS BUT NOT MORE THAN THREE (3) WEEKS, MILL 1 1/2 INCHES AND REPLACE WITH SURFACE ASPHALT CONCRETE MIX. MINIMUM MILL WIDTH SHALL BE EQUAL TO THE WIDTH OF THE BASE ASPHALT PATCH PLUS 12-INCHES EACH SIDE (12" INTO EXISTING A.C.) EXCEPT FOR TYPE A-1 (ONE SIDE). SURFACE ASPHALT CONCRETE MIX SHALL BE R-12.5 OR A-12.5 AS NOTED IN DETAIL M-19.1 UNLESS OTHERWISE STATED IN THE PLANS AND/OR SPECIAL PROVISIONS. WHEN LONGITUDINAL PATCHES ARE 6' OR WIDER, THE ASPHALT SHALL BE PLACED BY A SELF PROPELLED MECHANICAL SPREADING AND FINISHING EQUIPMENT IN ACCORDANCE WITH MAG 321.5.2(A).
5. WHEN THIS DIMENSION IS 48-INCHES OR LESS, REMOVE AND REPLACE ALL ASPHALT CONCRETE, BOTH BASE COURSE AND SURFACE COURSE, BETWEEN THE TRENCH AND THE LIP OF GUTTER.
6. AFTER SURFACE ASPHALT CONCRETE HAS BEEN PLACED, ALL MANHOLES, VALVES, STRUCTURES, ETC, SHALL BE ADJUSTED TO GRADE. TRAFFIC SIGNAL DETECTOR LOOPS SHALL BE INSTALLED BEFORE SURFACE A.C. IS PLACED.
7. MEASUREMENT FOR PAYMENT SHALL BE PER MAG SECTION 336.4 EXCEPT FOR THE PAY WIDTH. ALL PAY WIDTHS SHALL BE COMPUTED PER SECTION 336.4 (A) AND AS SHOWN ON THIS DETAIL, UNLESS OTHERWISE NOTED ON THE PLANS OR SPECIAL PROVISIONS. NOTE: NO PAYMENT WILL BE MADE FOR ADDITIONAL PAVEMENT REPLACEMENT AS A RESULT OF A WIDER TRENCH EXCAVATION.
8. THE COST OF THE TOP 12-INCHES OF A.B.C. OR CONTROLLED LOW STRENGTH MATERIAL FOR TYPE "B" AND THE TOP 24-INCHES OF A.B.C. FOR TYPE "A" AND "A-1" SHALL BE INCLUDED IN THE PAVEMENT REPLACEMENT COST. ALSO, NO ADDITIONAL PAYMENT WILL BE MADE FOR PAVEMENT REMOVAL, MILLING AND INSTALLATION OF BOTH BASE COURSE AND SURFACE COURSE PAVEMENT BEYOND THE PAY WIDTH SHOWN IN THIS DETAIL.
9. SEE M.A.G. DETAIL 211 FOR REQUIREMENTS REGARDING THE USE OF PLATING OF TRANSVERSE TRENCHES.
10. THE TOTAL THICKNESS OF THE ASPHALT SHALL BE EQUAL TO THE ADJACENT EXISTING ASPHALT HOWEVER, NOT LESS THAN THAT SPECIFIED IN DETAILS M-19.1 OR M-19.3. THE THICKNESS OF THE SURFACE ASPHALT SHALL BE AS SHOWN ON DETAIL M-19.1 OR M-19.3. THE THICKNESS OF THE BASE ASPHALT SHALL BE THE TOTAL ASPHALT THICKNESS MINUS THE THICKNESS OF THE SURFACE ASPHALT. THE TYPE OF ASPHALT MIXES SHALL BE PER DETAILS M-19.1 OR M-19.3, EXCEPT WHEN AN A-19 ASPHALT MIX IS REQUIRED FOR A SURFACE COURSE, A 12.5 ASPHALT MIX WILL BE INSTALLED.
11. WHEN MECHANICALLY COMPACTING BACKFILL MATERIAL, THE BACKFILL MATERIAL SHALL BE WITHIN TWO (2) PERCENTAGE POINTS OF OPTIMUM AS DETERMINED BY AASHTO T-99 (STANDARD PROCTOR) AT THE TIME OF COMPACTION.

STANDARD TRENCH BACKFILL DETAIL - NOTES

DETAIL NO.
M-19.4
SHT.2 OF 2



NOTES:

1. THICKNESS OF DECK SHALL VARY WHEN NECESSARY TO PROVIDE LEVEL PIPE SEAT BUT SHALL NOT BE LESS THAN 'F'.
2. FLOOR OF MANHOLE SHALL BE STEEL TROWELLED TO SPRING LINE.
3. BODY OF MANHOLE SHALL BE POURED IN ONE CONTINUOUS OPERATION, EXCEPT THAT A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY MAY BE PLACED AT THE SPRING LINE.
4. ALL REINFORCED STEEL SHALL CLEAR FACE OF CONCRETE BY 1-1/2" UNLESS SHOWN OTHERWISE.
5. CONCRETE SHALL BE CLASS 'A'.

"F" DIMENSION TABLE

D	51"	54"	57"	60"	63"	66"
F	13-3/4"	14-1/2"	15"	15-1/2"	16-1/4"	16-3/4"
D	69"	72"	78"	84"	90"	96"
F	17-1/2"	18"	19-1/4"	20-1/2"	21-3/4"	23"

DETAIL NO.
P1560



City of Phoenix
STANDARD DETAIL

STORM SEWER MANHOLE BASE TRANSITION
51" & LARGER

APPROVED
FOR CITY ENGINEER
AcDbRasterImage (ISM)

8-6-99
DATE

DETAIL NO.
P1560

SIZE OF OUTFALL CONDUIT	FRAME ANGLES	SHEAR PIN CLIP ANGLES	SHEAR PINS	ANCHOR BOLTS	HINGE PINS	HINGE ANGLES	HINGE STD. PIPE	HINGE TO FRAME WELDS	ANGLE TO FRAME WELDS	BARRIER BARS PLAIN	NO. OF EQUAL BARRIER BAR SPACES (HORIZ.)	NO. OF EQUAL BARRIER BAR SPACES (VERT.)	H (OUT TO OUT FRAME ANGLES)	W (OUT TO OUT FRAME ANGLES)	A	B
15"	2X2X1/4	4X4X1/4	1-1/8 ϕ	5/8 ϕ	1/2" ϕ	2X2X1/4	3/4"	1/8	1/8	1/2" ϕ	3	5	34"	20"	SINGLE HINGE CENTERED	
18"	2X2X1/4	4X4X1/4	1-1/8 ϕ	5/8 ϕ	1/2" ϕ	2X2X1/4	3/4"	1/8	1/8	1/2" ϕ	3	5	34"	20"	SINGLE HINGE CENTERED	
24"	2X2X1/4	4X4X1/4	1-1/8 ϕ	5/8 ϕ	1/2" ϕ	2X2X1/4	3/4"	1/8	1/8	1/2" ϕ	3	5	34"	20"	SINGLE HINGE CENTERED	
30"	2X2X1/4	4X4X1/4	1-1/8 ϕ	5/8 ϕ	1/2" ϕ	2X2X1/4	3/4"	1/8	1/8	1/2" ϕ	3	5	34"	20"	SINGLE HINGE CENTERED	
36"	2X2X1/4	4X4X1/4	2-1/8 ϕ	5/8 ϕ	1/2" ϕ	2X2X1/4	3/4"	1/8	1/8	1/2" ϕ	5	5	42"	32"	SINGLE HINGE CENTERED	
42"	2X2X1/4	4X4X1/4	2-1/8 ϕ	5/8 ϕ	1/2" ϕ	2X2X1/4	3/4"	1/8	1/8	1/2" ϕ	5	6	42"	32"	2 HINGES 0 0	
48"	3X3X7/16	5X3X1/4	2-1/8 ϕ	5/8 ϕ	3/4" ϕ	2-1/2X 2-2X1/4	1"	1/8	1/8	1/2" ϕ	5	7	47"	38"	3"	1"
54"	3X3X7/16	5X3X1/4	2-1/8 ϕ	5/8 ϕ	3/4" ϕ	2-1/2X 2-2X1/4	1"	1/8	1/8	1/2" ϕ	6	8	54"	44"	5"	3"
60"	3X3X7/16	5X3X1/4	2-1/8 ϕ	5/8 ϕ	3/4" ϕ	2-1/2X 2-2X1/4	1"	1/8	1/8	1/2" ϕ	7	9	60"	50"	9"	4"
66"	3X3X7/16	5X3X1/4	2-1/8 ϕ	5/8 ϕ	3/4" ϕ	2-1/2X 2-2X1/4	1"	1/8	1/8	1/2" ϕ	8	10	66"	56"	11"	6"
72"	4X4X5/8	5X3X1/4	2-3/16 ϕ	5/8 ϕ	1" ϕ	3X3X3/8	1-1/4"	1/8	1/8	1/2" ϕ	9	11	73"	62"	15"	7"
78"	4X4X5/8	5X3X1/4	2-3/16 ϕ	5/8 ϕ	1" ϕ	3X3X3/8	1-1/4"	1/8	1/8	1/2" ϕ	10	11	79"	68"	17"	9"
84"	4X4X5/8	5X3X1/4	2-3/16 ϕ	5/8 ϕ	1" ϕ	3X3X3/8	1-1/4"	1/8	1/8	1/2" ϕ	11	13	86"	74"	21"	10"
90"	4X4X5/8	5X3X1/4	2-3/16 ϕ	5/8 ϕ	1" ϕ	3X3X3/8	1-1/4"	1/8	1/8	1/2" ϕ	12	13	92"	80"	23"	12"
96"	4X4X5/8	5X3X1/4	2-3/16 ϕ	5/8 ϕ	1" ϕ	3X3X3/8	1-1/4"	1/8	1/8	1/2" ϕ	12	14	98"	86"	29"	12"
108"																
120"																

DETAIL NO.
P1562



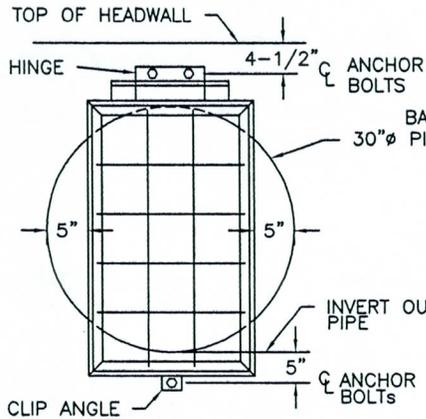
City of Phoenix
STANDARD DETAIL

BARRIER SPECIFICATION SCHEDULE

APPROVED
Mano Saldamando
CITY ENGINEER

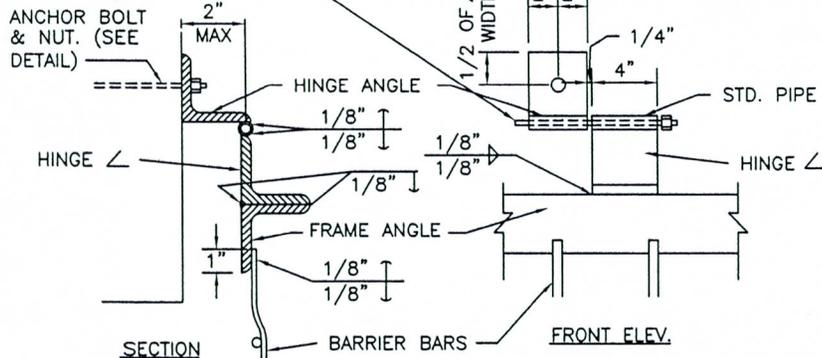
08-08-03
DATE

DETAIL NO.
P1562

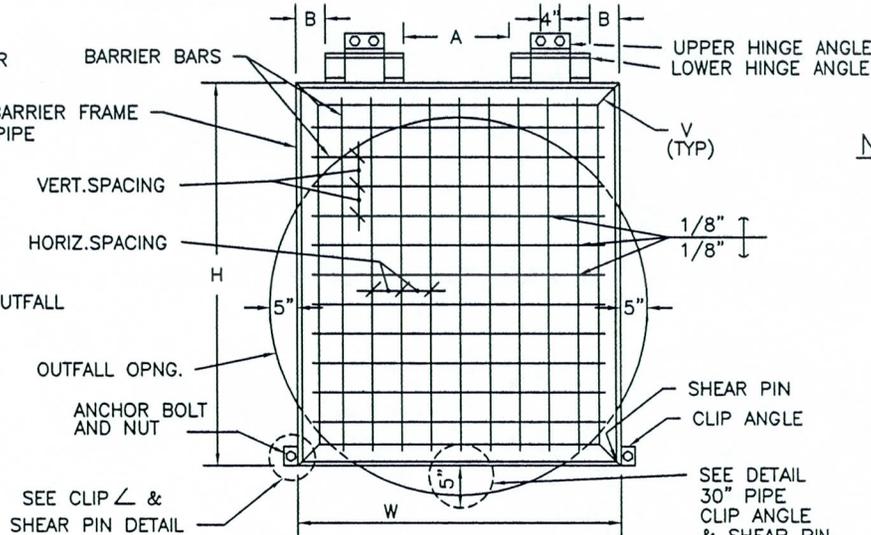


30"Ø PIPE ONLY, SINGLE HINGE & CLIP ANGLE DETAIL

HINGE PIN
BOLT STOCK, THREAD BOTH ENDS SO NUT & LOCK WASHER ARE FLUSH WITH LOWER ∟, UPSET OR DAMAGE EXPOSED THREADS. COAT PIN WITH WATERPROOF GREASE BEFORE INSTALLATION.

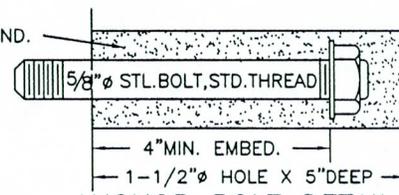


HINGE INSTALLATION DETAIL

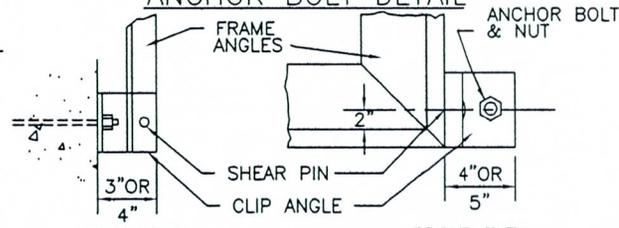


TYPICAL BARRIER DETAIL

FILL WITH EPOXY GROUT ALL AROUND.



ANCHOR BOLT DETAIL



SIDE ELEV. FRONT ELEV. CLIP ANGLE & SHEAR PIN DETAIL

NOTES:

1. ALL SHEAR PIN ANGLES SHALL FIT SNUGLY AND TRULY FACE TO FACE. COVER WITH WATERPROOF GREASE PRIOR TO INSTALLATION OF PIN.
2. GALVANIZE ALL FERROUS PARTS AFTER FABRICATION.
3. THE SHEAR PIN HOLES IN THE ANGLE SHALL BE DRILLED FOR A TIGHT FIT OF THE SHEAR PINS.
4. FRAME AND HINGE ANGLES SHALL HAVE THE OUTSTANDING LEGS OUT FOR OUTLETS.
5. ALL ANCHOR BOLTS SHALL BE 5/8"Ø ANCHOR BOLTS EMBEDDED 4"(MIN.) INTO EPOXY GROUT.
6. ALL SHEAR PINS ARE TO BE PEENED BOTH ENDS AFTER INSTALLATION.
7. SHEAR PIN MATERIAL SHALL BE COMMERCIAL PURE ALUMINUM WIRE, ALLOY 1100, TEMPER 0, FEDERAL SPEC. QQ-A-411.
8. SEE BARRIER SCHEDULE, DET. P1562 FOR VARIABLE DIMENSIONS.
9. COVER ALL MOVABLE CONTACT SURFACE WITH A COAT OF WATERPROOF GREASE PRIOR TO INSTALLATION.