

ARIZONA DEPARTMENT OF TRANSPORTATION



ADVERTISEMENT FOR BIDS SPECIAL PROVISIONS BIDDERS DOCUMENTS

SUBMITTED BY:

(Company or Firm Name)

(Mailing Address)

(City)

(State)

(Zip Code)

(Street Address - If Different From Above)

(City)

(State)

(Zip Code)

Arizona Commercial License No. _____

License Classifications(s) _____

TRACS/Proj. No.:

060 MA 144 H887401C 060-B-NFA
WICKENBURG-PHOENIX HIGHWAY (US 60)
(Greenway Road to Thompson Ranch Road/Thunderbird Road)

Contracts and Specifications Section
1651 West Jackson, Room 121F
Phoenix, Arizona 85007-3217

ARIZONA DEPARTMENT OF TRANSPORTATION

ADVERTISEMENT FOR BIDS

BID OPENING: FRIDAY, APRIL 27, 2018, AT 11:00 A.M. (M.S.T.)

TRACS NO. 060 MA 144 H887401C
PROJ NO 060-B-NFA
TERMINI WICKENBURG-PHOENIX HIGHWAY (US 60)
LOCATION GREENWAY ROAD TO THOMPSON RANCH
ROAD/THUNDERBIRD ROAD

ROUTE NO.	MILEPOST	DISTRICT	ITEM NO.
US60	144	CENTRAL	6334

The amount programmed for this contract is \$5,700,000. The location and description of the proposed work are as follows:

The proposed work is located in Maricopa County within the City of El Mirage along US 60 (Grand Avenue) between MP 144.29 and MP 145.60 along the frontage road between Greenway Road and Thompson Ranch Road/Thunderbird Road. The approximate total length of the work is 1.31 miles. The proposed work consists of performing roadway improvements to the frontage road within the City of El Mirage City limits as well as constructing a new access with Grand Avenue at the Acoma Drive alignment. The work includes removing asphaltic concrete, furnishing and placing new aggregate base, asphaltic concrete, sidewalk, sidewalk ramps, concrete curb and gutter, drainage facilities, pavement marking, signing, roadway lighting, landscape and irrigation, and other related work.

The time allowed for the completion of the work included in the Construction Phase of the contract will be **300** calendar days.

The time allowed for the completion of the work included in the Landscape Establishment Phase of the contract will be **180** calendar days.

The Arizona Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252.42 U.S.C. §§ 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, Disadvantaged Business Enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

Contract documents and other project documents are available as electronic files, at no charge, from the Contracts and Specifications website, pursuant to Subsection 102.02 of the specifications. The Contracts and Specifications Current Advertisements website is located at:

<http://www.azdot.gov/business/ContractsandSpecifications/CurrentAdvertisements>.

Documents should be available within one week following the advertisement for bids.

To submit a valid bid, the bidder must (1) have prequalification from the Department as necessary for the project, and (2) be included on the project Plansholder List as a Prime. The Application for Contractor Prequalification may be obtained from the Contracts and Specifications website.

This project requires electronic bidding. If a request for approval to bid as a Prime Contractor is received less than 48 hours prior to bid opening, the Department cannot guarantee the request will be acted on.

This contract is subject to the provisions of Arizona Revised Statutes Section 42-5075 -- Prime contracting classification; exemptions; definitions.

No proposal will be accepted from any contractor who is not a duly licensed contractor in accordance with Arizona Revised Statutes 32-1101 through 32-1170.03.

A proposal guaranty in the form of either a certified or a cashier's check made payable to the State Treasurer of Arizona for not less than 10 percent of the amount of the bid or in the form of a surety (bid) bond for 10 percent of the amount of the bid shall accompany the proposal.

Surety (bid) bonds will be accepted only on the form provided by the Department and only from corporate sureties authorized to do business in Arizona.

Bids will be received until the hour indicated and then publicly opened and read. No bids will be received after the time specified.

Questions and comments concerning the bid package for this project shall be directed to the individuals noted below:

Engineering Specialist:
Construction Supervisor:

Mahfuz Anwar
Anthony Brozich

Manwar@azdot.gov
ABrozich@azdot.gov


STEVE BEASLEY,
Manager
Contracts & Specifications

PROJECT ADVERTISED ON: 03/13/18

SPECIAL PROVISIONS

FOR

ARIZONA PROJECT

060 MA 144 H8874 01C

060-B-NFA

WICKENBURG-PHOENIX HIGHWAY (US 60)

GREENWAY ROAD TO THOMPSON RANCH ROAD / THUNDERBIRD ROAD

FRONTAGE ROAD IMPROVEMENTS

PROPOSED WORK:

The proposed work is located in Maricopa County within the City of El Mirage along US 60 (Grand Avenue) between MP 144.29 and MP 145.60 along the frontage road between Greenway Road and Thompson Ranch Road/Thunderbird Road. The approximate total length of the work is 1.31 miles. The proposed work consists of performing roadway improvements to the frontage road within the City of El Mirage City limits as well as constructing a new access with Grand Avenue at the Acoma Drive alignment. The work includes removing asphaltic concrete, furnishing and placing new aggregate base, asphaltic concrete, sidewalk, sidewalk ramps, concrete curb and gutter, drainage facilities, pavement marking, signing, roadway lighting, landscape and irrigation, and other related work.

PROFESSIONAL ENGINEER SEALS:

This book of specifications and related contract documents represent the combined efforts of the following disciplines/firms:

Burgess & Niple, Inc.
J2 Engineering and Environmental Design
RA Alcala and Associates

A representative of each entity has affixed his/her seal below, which attests that those portions of these specifications which relate to the plans were prepared under his/her direction.



EXPIRES: 9/30/2019

Burgess & Niple, Inc.
(Civil & Traffic)



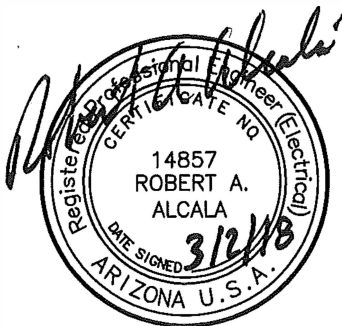
Expires: 12/31/2018

J2 Engineering and
Environmental Design
(Landscape & Erosion
Control)



Expires: 3/31/2021

J2 Engineering and
Environmental Design
(Drainage)



EXPIRES 3/31/2020

RA Alcala & Associates
(Roadway Lighting)

SPECIFICATIONS:

The work embraced herein shall be performed in accordance with the requirements of the following separate documents:

Arizona Department of Transportation, Standard Specifications for Road and Bridge Construction, Edition of 2008 (Pub. # 31-066),

Arizona Department of Transportation, Roadway Engineering Group, Construction Standard Drawings, listed in the project plans, and available on the Department's website,

Arizona Department of Transportation, Traffic Group, Manual of Approved Signs, available on the Department's website,

Arizona Department of Transportation, Traffic Group, Traffic Control Design Guidelines, Edition of 2010, available on the Department's website,

Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 edition and Arizona Supplement to the 2009 edition, dated January, 2012,

The Proposal Pamphlet which includes the following documents:

These Special Provisions,

Appendix A – Subgrade Acceptance Chart,

Appendix B – Sample Temporary Occupancy Permit (TOP) for roadway surfacing/resurfacing,

Appendix C – Western Burrowing Owl Awareness Flyer,

Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246), July 1, 1978, Revised November 3, 1980 and Revised April 15, 1981,

Title VI / Non-Discrimination Assurances,
Appendix A
Appendix E,

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246), July 1, 1978, Revised November 3, 1980 and Revised April 15, 1981,

Executive Order 2009-09, November 13, 2009,

Bidding Schedule,

Proposal,

Surety (Bid) Bond, 12-1303,

Certification With Regard to the Performance of Previous Contracts or Subcontracts,
Subject to the Equal Opportunity Clause of Executive Order No. 99-4 and the Filing of
Required Reports, Non-Federal Aid Projects, August 1, 2000,

Certification With Respect to the Receipt of Addenda,

Participation in Boycott of Israel Certification Form,

BID SUBMISSION:

In submitting a bid, the bidder shall completely execute the following documents:

Proposal,

Bidding Schedule,

Surety (Bid) Bond, 12-1303,

Certification With Regard to the Performance of Previous Contracts or Subcontracts,
Subject to the Equal Opportunity Clause of Executive Order No. 99-4 and the Filing of
Required Reports, Non-Federal Aid Projects, August 1, 2000,

Certification With Respect to the Receipt of Addenda, and

Participation in Boycott of Israel Certification Form.

PROPOSAL GUARANTY:

Each bidder is advised to satisfy itself as to the character and the amount of the proposal guaranty required in the Advertisement for Bids.

CONTRACT DOCUMENTS:

The bidder to whom an award is made will be required to execute a Performance Bond and a Payment Bond, each in 100 percent of the amount of the bid, an Insurance Certificate and the Contract Agreement.

A copy of these documents is not included in the Proposal Pamphlet; however, each bidder shall satisfy itself as to the requirements of each document.

The documents, approved by the Department of Transportation, Highways Division, are identified as follows:

Statutory Performance Bond, 12-1301, September, 1992

Statutory Payment Bond, 12-1302, September, 1992

Contract Agreement, 12-0912, August, 2000

Certificate of Insurance, 12-0100, June, 1998

COPIES OF PROJECT DOCUMENTS:

Distribution of a limited number of plans and Special Provisions will be made to the successful low bidder, at no charge, following confirmation of bid prices and DBE submittal, if applicable. The distribution will be made on the following basis:

Contract Size (Dollars)	Full Size Plans	1/2 Size Plans	Bound Bid Books	Unbound Bid Books
\$0 - \$20,000,000	2	10	5	10
over \$20,000,000	5	20	5	20

These plans and Special Provisions will be set aside and designated for use by the low bidder along with an equal number held in reserve for the responsible District Office.

Any additional plans or Special Provisions that the low bidder may require beyond the above distribution will be available at the invoice cost of printing by ordering through the Engineer.

MATERIAL AND SITE INFORMATION:

Projects requiring materials, excavation, or site investigation may have additional information available concerning the material investigations of the project site and adjacent projects. This information, when available and applicable, may be examined in the Office of the Bridge Group-Geotechnical Section, located at 1221 N. 21st Avenue, Phoenix, Arizona 85009-3740. The contractor may contact Bridge Group at (602) 712-7481 to schedule an appointment to examine the information. This information will not be attached to the contract documents. Copies of available information may be purchased by prospective bidders.

(NOGOAL, 06/09/16)

NONDISCRIMINATION:

Policy:

The contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract and the award of subcontracts and supply contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

(LSCAPE, 10/12/01)

Construction and Landscape Establishment Phases:

The work on this project will be considered as being divided into two phases: the Construction Phase and the Landscape Establishment Phase. The Construction Phase shall be defined as all work not included in Landscape Establishment Phase. The Landscape Establishment Phase shall be as described and specified under Section 807.

When the terms "Phase I" and "Phase II" appear in Sections 806 or 808 of the Standard Specifications, the term "Phase I" shall refer to the Construction Phase, and "Phase II" shall refer to the Landscape Establishment Phase, both as specified above.

Prior to the beginning of the Landscape Establishment Phase, the contractor shall be responsible for maintaining and protecting all planting areas, as specified in Subsections 806-3.06 and 807-3.02. No measurement or payment will be made for such work during the Construction Phase, the costs being considered as included in the cost of contract items.

The provisions of Subsection 108.09, Failure to Complete the Work on Time, will apply only to the work under the Construction Phase. The original contract amount, as used in Subsection 108.09 of the Standard Specifications, will mean the original contract amount of all items of work.

At the satisfactory completion of work under the Construction Phase, and when all quantities have been checked and verified, the monies which have been retained by the Department each month will be paid the contractor in accordance with the provisions of Subsection 109.06, Partial Payments and Retention.

GENERAL REQUIREMENTS:

Bidders/Proposers List and AZ UTRACS Registration Requirements:

Prime contractors and all subcontractors, including DBEs, must be registered in AZ UTRACS.

Bidders shall create the Bidders/Proposers List in the AZ UTRACS by selecting all subcontractors, service providers, manufacturers and suppliers that expressed interest or submitted bids, proposals or quotes for this contract.

All bidders must complete the Bidders/Proposers List online at AZ UTRACS whether they are the apparent low bidder or not. A confirmation email will be generated by the system. The bidders shall submit a copy of the email confirmation to BECO no later than 4:00 p.m. on the fifth calendar day following the bid opening. Faxed copies are acceptable.

FAILURE TO SUBMIT THE REQUIRED BIDDERS/PROPOSERS LIST CONFIRMATION EMAIL TO BECO BY THE STATED TIME AND IN THE MANNER HEREIN SPECIFIED SHALL BE CAUSE FOR THE BIDDER BEING DEEMED INELIGIBLE FOR AWARD OF THE CONTRACT.

Additional information regarding the Bidders List and AZ UTRACS Registration can be found in the Disadvantaged Business Enterprises Specification herein and by contacting the Business Engagement Compliance Office (BECO).

Cargo Preference Act:

1.0 Description

The Federal Highway Administration (FHWA) in partnership with the Federal Maritime Administration has mandated the implementation of 46 CFR 381 making the requirements of the Cargo Preference Act (CPA) applicable to the Federal Aid Highway Program.

The requirements apply to items transported by ocean vessel.

The requirements of 46 CFR 381 apply to materials or equipment acquired for a specific federal-aid highway project. In general, the requirements are not applicable to goods or materials that come from inventories independent of FHWA-funded contracts.

Information related to the CPA is presented in "Cargo Preference Requirements – Questions and Answers" available from the FHWA at <https://www.fhwa.dot.gov/construction/cqit/cargo/qa.cfm>.

2.0 Contract Requirements

The contractor shall comply with the requirements of the Cargo Preference Act 46 CFR 381.7(a)-(b). By executing a construction contract for this project, the contractor agrees:

- (1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
- (2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in the paragraph above to both the Engineer and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
- (3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

Availability of Documents:

The following project documents, if applicable, will be available in electronic format on the Contracts and Specifications website:

- Project Plans
- Special Provisions
- Proposal Pamphlet
- Cross Sections
- Earthwork Quantity Sheets
- Reports (if available)
- Existing Ground Digital Terrain Model (DTM)
- Design Ground Digital Terrain Model (DTM)

The project plans, special provisions, proposal pamphlet, cross sections, earthwork quantity sheets, and any applicable reports are provided in PDF format. The Department makes no representation or warranties as to the compatibility, usability, or readability of the PDF documents with any system, software, hardware, or application package other than that on which the files were originally saved. The contractor bears the sole risk of any modifications, manipulations, or alterations to the plans, special provisions, proposal pamphlet, and any applicable reports.

The existing ground DTM and the design DTM, if applicable, are provided as DGN files. They are provided for information purposes and contractor convenience only. The DTMs are not part of the contract documents. The contractor's use of the information in the DTMs is at the contractor's sole risk. The Department makes no representation or warranties as to the compatibility, usability, or readability of the DTMs with any system, software,

hardware, or application package other than that on which the files were originally prepared. The version of Microstation used to save the DTMs is indicated at <http://www.azdot.gov/business/engineering-and-construction/CADD>.

The Department is providing the electronic project files to bidders for informational purposes in conjunction with work or services to be provided to the Department under this project. Any use of the electronic files for any purposes other than for this project is prohibited.

Maricopa Association of Governments (MAG) Standards:

The plans and these Special Provisions reference certain Standard Specifications and Standard Details promulgated by the Maricopa Association of Governments (MAG).

When MAG Standard Specifications and Standard Details are specified for certain items of work, the description, materials, and construction requirements those items shall conform to the requirements of the MAG Standards in parts 200 through 700, except as may be superseded or supplemented by these Special Provisions. All MAG 100 sections, except 107.11, and all Sample Forms in the MAG Standard Specifications are not applicable. All concrete shall be in compliance with ADOT specifications, not MAG specifications. The table below shows the ADOT Concrete equivalent to be used for MAG concrete specified on plans and standard MAG details on this project.

MAG Concrete	ADOT Equivalent Concrete
AA	P
A	S (3,000 psi)
B	B

MAG Uniform Standard Specifications and Details for Public Works Construction with revisions through 2015 are available from:

Maricopa Association of Governments
302 North 1st Avenue, Suite 300
Phoenix, Arizona 85003

Copies are also available on the Internet at:
<http://azmag.gov/Committees/Technical-Committees/Standard-Specifications-Details-Committee>.

References to Sections of MAG in these special provisions will be so designated. All other sections and subsections specifications referenced shall be construed to be ADOT Standard Specifications unless otherwise stated in the Special Provisions.

Additional Applicable Documents Utilized in the Design of the Plans and Special Provisions:

Arizona Public Service Company (APS) Electrical Service Requirements Manual – Latest Edition

(<https://www.aps.com/library/esp%20services/ESRM.pdf>)

City of El Mirage Supplement to Maricopa Association of Governments Uniform Standard Details – Latest Edition

(<http://www.cityofelmirage.org/index.aspx?nid=1161>)

City of Peoria Supplement to Maricopa Association of Governments Uniform Standard Details – Latest Edition

(<https://www.peoriaaz.gov/home/showdocument?id=1928>)

City of Phoenix Supplemental Details – Latest Edition

(<https://www.phoenix.gov/streets/reference-material/2015maguniformstd>)

Contract Obligations:

All new construction shall be completed within the public right-of-way as shown on the Project Plans.

Time restrictions and haul permit requirements for the transportation of materials is dependent upon the local jurisdiction. No transportation of materials shall be allowed on city streets without a local jurisdiction approved haul permit. To minimize this impact to the contractor's operations they are encouraged to phase their construction and to look for material waste sites that maximize freeway haul routes as part of the total haul length.

The contractor shall not remove or damage any existing private improvements outside the ADOT right-of-way. Private improvements cannot be removed by the contractor unless otherwise shown on the Project Plans.

ADOT Approved Products List:

A list of approved manufactures and distributors for materials that may be used on this project are shown on the Department's Approved Products List. The Approved Products List (APL) is available from the Engineering Records Office, 1655 West Jackson, Phoenix, Arizona, 85007, Phone (602) 712-8216. Copies of the most recent versions are available on the Internet at <http://www.azdot.gov/TPD/ATRC/pride/index.asp>.

Restoration of Staging Areas:

The contractor shall be responsible for restoring all staging areas for all construction phases to their existing conditions unless noted otherwise in the contract documents. Restoration of staging areas may include but shall not be limited to landscape irrigation, plants, ground cover (decomposed granite) and removal of temporary utilities. No measurement or direct payment will be made for the restoration of staging areas and the like; the cost being considered as included in the price of other contract items.

Existing Storm Drains:

The contractor shall be responsible for keeping all existing storm drains open, clean and operational during the construction period. No measurement or direct payment will be made for this maintenance, the cost being considered as included in the price of other contract items.

Protection of Existing Pavement:

All existing pavement not identified to be removed in the project plans shall be protected in place by the contractor. The protection includes all Portland cement concrete pavement and bituminous pavement including the AR-ACFC overlay. If the contractor damages any existing pavement not identified to be removed it shall be repaired or replaced to match the existing pavement structure by the contractor at no additional cost to the Department.

ADA Compliance:

Sidewalks and sidewalk ramps shown on the project plans shall be constructed to meet the Americans with Disabilities Act (ADA) Title III requirements to accommodate individuals with disabilities.

Disposal of Existing Asphaltic Concrete:

Upon removal, disposal of the existing asphaltic concrete off the project site shall be the responsibility of the contractor. Materials not used for construction shall be removed from the project site and disposed of per local ordinances.

Temporary Shoring:

Temporary shoring or underpinning of existing structures may be required for pipe culvert and box culvert installations. If excavations extend into soils which are within imaginary lines extending downward and outward from the edges of existing footings at a 45-degree angle, the existing foundation shall either be underpinned or shoring shall be designed and installed to prevent loss of support and/or settlement of the existing structure. Existing structures shall be surveyed and monitored for movement during construction. When temporary shoring or underpinnings are no longer required, they shall be removed and disposed of by the contractor. No additional measurement or payment will be made for the design and installation of temporary shoring or underpinning, including surveying and monitoring, and removal and disposal of shoring or underpinning, the cost being considered as included in the price of contract items.

Clearing and Grubbing and Removal and Disposal Of Trash Debris, Litter And Existing Vegetation:

Upon removal, legal disposal of all trash, debris, litter and vegetation off the project site, including rubber tires, shall be the responsibility of the contractor. Removal and disposal of trash, debris, litter and existing landscaping and vegetation as necessary shall be in

accordance with these Special Provisions and Section 201 - Clearing and Grubbing, of the Standard Specifications. No measurement or direct payment will be made for general project clearing and grubbing, the cost shall be considered as included in the price of other contract items. Trash Debris, litter and existing vegetation shall be considered an existing condition of the project site and the Contractor shall be responsible for familiarizing himself with the project site prior to bidding.

BLM Material Sources:

If the contractor elects to pursue the use of material sources on BLM land under Title 30 Code of Federal Regulations, it is at the contractor's sole risk, and the Department bears no responsibility for any delays or costs associated with the request to use material sources on BLM Land.

The Department will not request or pursue any "free-use permit" under Title 23 Code of Federal Regulations or any other arrangement with BLM on this project.

No extension in contract time or compensation will be granted for any attempt by the contractor to utilize BLM land.

Materials Source:

There is no Department-Furnished Materials Source set up for this project. Materials sources shall be as specified in Section 1001 of the Standard Specifications.

Subgrade:

The Subgrade Acceptance Chart as shown in Appendix A shall be used during construction for determining whether subgrade materials are suitable as outlined in Subsection 203-3.03 of the Standard Specifications.

Haul Routes:

Haul routes and hauling hours shall be in accordance with local ordinances and approved by the City of El Mirage and the Engineer. The contractor is responsible for any permits and noise mitigation measures to meet the local noise ordinances.

Verification of Existing Features:

The locations and dimensions of existing roadway features shown on the plans are based on as-built plans, aerial photographs, and field surveys. It shall be the contractor's responsibility to field-verify the information given on the plans wherever that information affects the new work. Significant differences between the measured and plan information shall be submitted to the Engineer prior to proceeding with the work. Minor adjustments to curb staking, catch basin locations, and other elements, to the extent they are required to match existing construction and do not affect the disposition of other project features, will not require review or approval by the Engineer.

Upon award of the contract, the contractor shall find an acceptable location for a construction yard area, or areas, for the duration of the project, and shall make the Engineer aware of the proposed location or locations. If the construction yard is located on private property or City-owned property, the contractor shall obtain the appropriate agency approvals and permits for site access. There will be no separate measurement or direct payment for the cost(s) associated with obtaining a location for a construction yard, the cost being considered as included in the cost of the contract items.

The construction yard shall be located such that it does not interfere with any current, planned, or scheduled construction work, nor shall it interrupt or degrade the surrounding area or any services provided to the motoring public, businesses, or residences.

The contractor shall identify and secure a site(s) for material stockpiling and equipment staging areas.

The contractor shall be responsible for restoring all staging areas for all construction phases to their existing conditions unless noted otherwise in the contract documents. Restoration of staging areas may include but shall not be limited to landscape irrigation, plants, ground cover (decomposed granite) and removal of temporary utilities. No measurement or direct payment will be made for the restoration of staging areas and the like; the cost being considered as included in the price of other contract items.

After the pre-construction meeting, the Contractor and City staff shall walk the project with plans-in-hand. The Contractor shall document existing property conditions prior to construction. Items or concerns from all parties shall be recorded in writing.

Prior to the Notice to Proceed date, the Contractor shall document existing property conditions. Acceptable forms of documentation shall be video-recorded media files on a thumb drive, supplemented with digital photographs transferred to DVD. The video recording shall not be made from a moving vehicle. One (1) copy of the documentation package shall be given to the City prior to the start of construction. No measurement or direct payment will be made for the documentation of existing property conditions; the cost being considered as included in the price of other contract items.

Contract Time:

The contract time specified herein includes holidays, special events and roadway restriction moratoriums. The contractor shall schedule work to allow for these and will not be allowed compensation or an extension of contract time for any delays to the work because of special events, holiday moratoriums, and roadway closure restrictions.

Special Events:

The contractor shall schedule the project work in such a manner as to avoid traffic restrictions during special events. Special events accommodations will be coordinated with ADOT Communications Division, the Phoenix Construction District, the City of El Mirage, and other stakeholders on the project. The contractor shall coordinate with the municipalities to determine when these events may occur.

Special events shall be defined as activities which draw in a sizable number of community members and whose attendance/enjoyment may be negatively impacted because of ongoing transportation projects. Special events are defined as events which attract more than 30,000 people per day.

Erosion / Sediment Control and Stormwater Quality:

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

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

Fine particles including minor miscellaneous dirt, dust, rock fragments or construction debris that may be associated with stormwater discharges into catch basins shall be prevented/ controlled to maximum extent practicable (MEP) at no additional cost to the Department. Such compliance measures may include frequent dry vacuuming and/or pavement sweeping during construction to ensure no debris, dirt, dust, and material fragments will be built up within 25 feet from catch basins. On-site staging, material storage and stockpiling shall not be allowed within 50 feet from catch basins.

When needed, the contractor shall apply perimeter control Best Management Practices (BMPs) (Wattles/Silt Fences) on the down-slope perimeter of construction disturbed areas, unpaved on-site staging, and stockpiling at no additional cost to the Department. To prevent sediment from bypassing the wattle/silt fences ends, the end of the wattles/silt fences shall be turned up the slopes for a minimum of 3 feet to form an "L" shape. No portion of the wattle/silt fences shall be installed within 6 feet from the edge of the pavement. Wattles/silt fences shall not be placed over any driveways or access roads that intersect with the roadway mainline. Additionally, wattles/silt fences shall **not** be placed on the flow path of inlets and outlets of drainage facilities. Perimeter control BMPs (wattles/silt fences) shall be installed in accordance with the manufacturer's instructions. The contractor shall adjust the field layout of erosion control and sediment prevention elements as approved by the Engineer. The contractor shall also observe ADOT traffic safety standards when installing perimeter control BMPs in the traffic clear zone/recovery area.

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

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

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

Erosion/Sediment Control beyond the Project Limits:

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

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

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

Design - Aesthetic Changes, Alterations or Substitutions:

The contractor shall obtain approval from the Landscape Architect prior to implementation of a proposed change, alteration, or substitution that may affect the original design or design intent of the project, as determined by the ADOT Roadside Development Section.

The contractor shall direct all requests for any change, alteration, or substitution to the Landscape Architect, and will receive approval or denial for any such request, directly from the Landscape Architect.

The contractor shall be held accountable and liable for any change, alteration, or substitution made or implemented without obtaining prior approval.

Examples of design-aesthetic changes, alterations, or substitutions shall include, but not be limited to the following:

- Granite mulch, decomposed granite, and rock mulch - color, size and shape.
- Plants - variety, species, type, structure, size, location, quality, and quantity.
- Irrigation components - specified type, size, layout, location, and quantity.

Landscape Plating Materials (Decomposed Granite):

No measurement or payment will be made for Decomposed Granite areas disturbed by the contractor's construction activities as these areas are considered included in the contract items.

Prevention of Proliferation of Noxious Weeds and Invasive Species:

Heavy equipment shall be steam cleaned or pressure washed to remove noxious weeds before it is brought onto the project site and steam cleaned/pressure washed again prior to release from the construction site. The contractor shall sufficiently contain the equipment wash down area so that all materials washed or connected with the washed materials can be either hauled off the project site and properly disposed of, or satisfactorily treated as approved by the Engineer. The contractor shall provide certifications to the Engineer that the equipment has been cleaned or washed as described herein.

No measurement or direct payment for the work described above, the cost is considered as included in the price of other contract items.

Item 9240129 Miscellaneous Work (Control of Noxious Weeds) (Manual/Mechanical Methods) and Item 9240182 Miscellaneous Work (Control of Noxious Weeds) (Herbicide) also have requirements to minimize the proliferation of noxious weeds during the construction activities.

Environmental Mitigation Measures:

- The project mitigation measures are not subject to change without written approval from ADOT Environmental Planning.
- If vegetation clearing will occur during the migratory bird breeding season (March 1 - August 31), the contractor shall avoid any active bird nests. If the active nests cannot be avoided, the contractor shall notify the Engineer to evaluate the situation. During the non-breeding season (September 1 - February 28) vegetation removal is not subject to this restriction.
- Prior to the start of ground-disturbing activities, the contractor shall arrange for and perform the control of noxious and invasive species in the project area.
- Prior to construction, all personnel who will be on-site, including, but not limited to, contractors, contractors' employees, supervisors, inspectors, and subcontractors shall review the attached Arizona Department of Transportation Environmental Planning Group "Western Burrowing Owl Awareness" flyer.
- If any burrowing owls or active burrows are identified the contractor shall notify the Engineer immediately. No construction activities shall take place within 100 feet of any active burrow.

- To prevent the introduction of invasive species seeds, the contractor shall inspect all earthmoving and hauling equipment at the storage facility. All vehicles and equipment shall be washed and free of all attached plant/vegetation and soil/mud debris prior to entering the construction site.
- To prevent invasive species seeds from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris prior to leaving the construction site.
- All disturbed soils not paved that will not be landscaped or otherwise permanently stabilized by construction will be seeded using species native to the project vicinity.
- The contractor shall develop a Noxious and Invasive Plant Species Treatment and Control Plan in accordance with the requirements in the contract documents. Plants to be controlled shall include those listed in the State and Federal Noxious Weed and the State Invasive Species list in accordance with State and Federal Laws and Executive Orders. The plan and associated treatments shall include all areas within the project right of way and easements as shown on the project plans. The treatment and control plan shall be submitted to the Engineer for the Arizona Department of Transportation Construction Professional Landscape Architect for review and approval prior to implementation by the contractor.
- If previously unidentified cultural resources are encountered during activity related to the construction of the project, the contractor shall stop work immediately at that location notify the Engineer and shall take all reasonable steps to secure the preservation of those resources. The Engineer will contact the Arizona Department of Transportation Environmental Planning Historic Preservation Team, (602.712.8636 or 602.712.7767) immediately, and make arrangements for proper treatment of those resources.
- If suspected hazardous materials are encountered during construction, work shall cease at that location and the Engineer will be notified. The Engineer will contact the Arizona Department of Transportation Environmental Planning hazardous materials coordinator (602.920.3882 or 602.712.7767) immediately, and make arrangements for assessment, treatment and disposal of those materials.
- Lead-based paint is found in the yellow and white striping paint; therefore the contractor shall notify their employees prior to any disturbance where lead is present in the paint below the 0.5 percent US Department of Housing and Urban Development/US Environmental Protection Agency action levels, but above the US Department of Labor Occupational Safety and Health Administration detection level. As part of the notification, the contractor shall make the US Department of Labor Occupational Safety and Health Administration publication_number_3142-12R_2004_Lead_in_Construction (<http://www.osha.gov/Publications/osha3142.pdf>) available to workers.

(101ABRV, 02/04/16)

SECTION 101 DEFINITIONS AND TERMS:

101.01 Abbreviations: of the Standard Specifications is modified to add:

ARPA	Arizona Rock Products Association
IFI	International Fasteners Institute
ISO	International Organization for Standardization
ISSA	International Slurry Surfacing Association
NICET	National Institute for Certification in Engineering Technologies
NEC	National Electrical Code
NRMCA	National Ready Mixed Concrete Association
NSPS	National Society of Professional Surveyors
PPI	Plastic Pipe Institute
SSPC	Society for Protective Coatings

(101DEFN, 02/22/16)

SECTION 101 DEFINITIONS AND TERMS:

101.02 Definitions:

Bidding Schedule: of the Standard Specifications is revised to read:

The prepared schedule containing the estimated quantities of the pay items for which unit bid prices are invited.

Working Day: of the Standard Specifications is revised to read:

A day, exclusive of Saturdays, Sundays and State-recognized holidays, beginning at midnight, extending for a twenty-four hour period, and ending at midnight. Any Saturday, Sunday, or State-recognized holiday on which the contractor has been approved to work will also be counted as a working day. Working days on which weather conditions do not permit work on the project to proceed, as determined by the Engineer, will not be charged.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS

102.02 Prequalification of Bidders: the title and text of the Standard Specifications is revised to read:

102.02 Prerequisites for Bidding:

(A) General:

To submit a valid bid, the bidder must:

- (1) have prequalification from the Department as necessary for the project, in accordance with paragraph (B) of this Subsection, and
- (2) be included on the project Plansholder List as a Prime in accordance with paragraph (C) of this Subsection.

(B) Prequalification of Bidders:

Prior to submitting a bid, the bidder will (unless waived by the Department) be required to be prequalified with the Department to bid on the project. The submission of Prequalification information and determination of Prequalification shall be in accordance with the requirements of the Rules for Prequalification of Contractors as approved and adopted by the Department.

(C) Plansholder List:

It is the bidder's responsibility to ensure that it is on the Plansholder List as a Prime prior to submitting a bid.

Firms can register electronically requesting placement on the project Plansholder List as either a Prime or Subcontractor/Vendor as follows:

- (a) Go to the C&S Website.
- (b) Select "Current Advertisements".
- (c) Identify the project of interest.
- (d) Click on the "Register" icon.
- (e) Select the "Bidder" or "Subcontractor/Vendor" radio button.
- (f) Complete all required fields.
- (g) Click "Save". This submits the request to the Department.

- (h) If all required information is provided, the “ADOT C&S Advertisement Registration Confirmation Screen” will appear. An email will also be sent to the email address provided acknowledging the request.

Requests to be included on the Plansholder List as a Prime will be evaluated by the Department to determine whether the bidder is prequalified for the project. The Department cannot guarantee that requests to be on the Plansholder List will be considered if the request is submitted less than five working days prior to the bid opening. The Department will send an email to the email address provided notifying the contractor of the results of their request.

The Department’s email will state whether the request was approved or denied. More information regarding the Department’s decision may be obtained by contacting the Contracts and Specifications Section.

If an individual from a firm submits a duplicate request to be placed on the Plansholder List, the request will be denied. The Department will register the contact person listed on the duplicate request to receive email notices of updates to the project. The Department will send an email to the email address provided notifying the contractor of the results of their request.

(D) Registration for Notifications:

Firms on the Plansholder List as a Prime or a Subcontractor/Vendor will receive notification of any changes to the project. Other interested parties can register electronically to receive email notification of any changes to the project as follows:

- (a) Go to the C&S Website.
- (b) Select “Current Advertisements”.
- (c) Identify the project of interest.
- (d) Click on the “Register” icon.
- (e) Select the “Other” radio button.
- (f) Select the “Yes” radio button in response to “Are you interested in registering to be notified about any changes made to this advertisement?”
- (g) Complete all required fields.
- (h) Click “Save”. This submits the request to the Department.
- (i) If all required information is provided, the “ADOT C&S Advertisement Registration Confirmation Screen” will appear. An email will also be sent to the email address provided acknowledging the request.

All parties registering to receive notifications will be sent an email when changes are made to the project.

(102SPBD, 09/19/12)

SECTION 102 - BIDDING REQUIREMENTS AND CONDITIONS:

102.03 Suspension from Bidding: of the Standard Specifications is revised to read:

The Department may suspend any person and any subsidiary or affiliate of any person from further bidding to the Department and from being a subcontractor or a supplier or otherwise participating in the work:

- (A) If that person or any officer, director, employee or agent of that person is convicted, in this State, or any other jurisdiction, of a crime involving any of the following elements or actions:
 - (1) Entering into any contract, combination, conspiracy or other unlawful act in restraint of trade or commerce;
 - (2) Knowingly and willfully falsifying, concealing, or covering up a material fact by trick, scheme, or device;
 - (3) Making false, fictitious, or fraudulent statements or representations;
 - (4) Making or using a false writing or document knowing it to contain a false, fictitious, or fraudulent statement or entry;
 - (5) Misrepresentation or false statement on any application for bonding;
 - (6) Misrepresentation or false statement on any application for prequalification; or
- (B) If the Department makes a finding of any of the above or finds that the contractor is not a Responsible Bidder or a Responsible Contractor.
- (C) If the Department determines that a contractor, subcontractor, or supplier has repeatedly or willfully failed to comply with federal or state immigration laws.

Under this subsection, a person means any individual, partnership, joint venture, corporation, association or other entity formed for the purpose of doing business as a contractor, subcontractor or supplier.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS:

102.04 Contents of Proposal Pamphlet: of the Standard Specifications is revised to read:

The proposal pamphlet will state the location and description of the contemplated construction and will show the approximate estimate of the various quantities and kinds of work to be performed or materials to be furnished and will have a schedule of items for which unit bid prices are invited. The proposal pamphlet will state the time in which the work must be completed, the type and amount of the proposal guaranty and the date, time and place of the opening of proposals. The pamphlet will also include any Special Provisions or requirements which vary from or are not included in the Standard Specifications. Additional contract documents applicable to the specific project are listed in the Special Provisions.

All papers bound with or attached to the proposal pamphlet are considered a part thereof. The project plans, specifications, Standard Drawings and other documents designated in the proposal pamphlet, will be considered a part of the proposal whether attached or not.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS:

102.05 Issuance of Proposals: of the Standard Specifications is revised to read:

The Department reserves the right to refuse to accept bids for any of the following reasons:

- (A) Lack of competency or adequate machinery, plant and other equipment, as revealed by the financial statement and experience questionnaires required under Subsection 102.02.
- (B) Incomplete work which, in the judgment of the Department, might hinder or prevent the prompt completion of additional work if awarded.
- (C) Failure to pay or settle satisfactorily all bills due for work on other contracts.
- (D) Failure to comply with any qualification regulations of the Department.
- (E) Default under previous contracts.
- (F) Unsatisfactory performance on previous work.
- (G) Entering into any contract, combination, conspiracy, or other unlawful act in restraint of trade or commerce.
- (H) Knowingly and willfully falsifying, concealing, or covering up a material fact by trick, scheme, or device.
- (I) Making false, fictitious, or fraudulent statements or representations.

- (J) Making or using a false writing or document knowing it to contain a false, fictitious, or fraudulent statement or entry.
- (K) Misrepresentation or false statement on any application for bonding.
- (L) Misrepresentation or false statement on any application for prequalification.
- (M) Lack of sufficient ability or integrity to complete the contract.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS:

102.07 Examination of Plans, Specifications and Site of Work: the second paragraph of the Standard Specifications is revised to read:

Project plans, special provisions, proposal pamphlets, and other project documents, if available, will be provided in electronic format, at no charge, on the Contracts and Specifications website. Any interested party can access the advertised project documents.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS:

102.08 Preparation of Proposal: of the Standard Specifications are revised to read:

(A) General:

The bidder shall prepare and submit its proposal using Department-furnished bid preparation software.

Proposals shall be prepared and submitted in accordance with the requirements of Subsection 102.08(B).

The bidder shall submit its proposal using the electronic bid process described herein.

When an item in the proposal contains a choice to be made by the bidder, the bidder shall indicate a choice in accordance with the specifications for that particular item and after the bid opening no further choice will be permitted.

(B) Electronic Submittal:

(1) General:

In order to submit a bid electronically, a firm must have obtained a bidder identification number from the Department, at the office of Contracts and Specifications, 1651 W. Jackson Street, Room 121F, Phoenix, AZ 85007, phone (602) 712-7221.

In addition, bidders must subscribe to Bid Express, an online bidding service, and obtain a digital signature. Bid Express can be reached at www.bidx.com, phone (352) 381-4888. The bidder shall also download and install a copy of the AASHTO "Trns-Port Expedite" bid software from the internet at the Bid Express website. The version of the software currently used by ADOT can then be located by selecting the "utilities" tab and choosing the "Expedite" utility.

In order to obtain a digital signature, bidders shall be required to name at least one responsible person who shall be authorized to commit the firm to the terms and conditions specified in the Proposal and the contract documents.

The bidder shall download the electronic copy of the project EBS file, listed as an Expedite Data File on the Bid Express website. The file includes a schedule of items folder containing the bid schedule, and a miscellaneous folder containing the proposal and attachments. The bidder shall review the proposal and complete the bidding schedule, as specified herein, and the attachments.

The bidder shall specify a unit price for each pay item for which a quantity is given in the bidding schedule. The software will automatically produce the extended amount, as the product of the quantity given and the specified unit price. Unit prices shall be stated in whole cents.

The bidder shall also download all addenda issued and update the project file accordingly. The bidder shall be responsible to verify that all addenda issued prior to the bid opening have been included in its submittal.

The bidder shall be responsible for the successful submission of its electronic bid prior to the time specified for submission of bids. Bids submitted after the specified time will not be accepted. The bidder agrees that the Department bears no liability resulting from the bidder's failure to successfully submit an electronic bid.

(2) Procedure for Missing Bids:

If a bidder believes that its electronically submitted bid should have been read at the bid opening but was not read, the bidder shall notify the Department of the apparent irregularity and provide its bid receipt for the bid in question no later than three hours after the time specified for submission of bids.

Upon proper notification of a missing bid by a bidder, the Department will notify all bidders that a missing bid has been reported. The Department will begin an investigation to determine the status of the bid, and will review all electronic bids received from Bid Express.

The Department will direct Bid Express to review their records and determine whether the missing bid was submitted. Bid Express will make a determination about receipt of the bidder's missing bid.

If necessary, Bid Express will attempt to retrieve a copy of the encrypted bid from the bidder's computer.

The Department will authorize Bid Express to send the Department a program which will enable the encrypted bid to be opened and processed.

If the Department determines that a bid cannot be recovered, the Department will notify all bidders of its determination.

If a missing bid is recovered, the Department will determine the validity of the bid, and may award the contract to the bidder submitting the missing bid if appropriate. The Department will notify all bidders.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS:

102.09 Non-Collusion Certification: of the Standard Specifications is revised to read:

By submission of its bid electronically, the bidder makes the certification stated in the following paragraph, binding as if it had been signed by the bidder.

The bidder certifies that, pursuant to Subsection 112(c) of Title 23, United States Code and Title 44, Chapter 10, Article 1 of the Arizona Revised Statutes, neither it nor anyone associated with the company, firm, corporation, or individual has, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of full competitive bidding in connection with the above referenced project.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS:

102.10 Irregular Proposals: Item (A) of the Standard Specifications is revised to read:

- (A) Proposals may be considered irregular and may be rejected for any of the following reasons:
 - (1) If there is a submission of any kind which may tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.
 - (2) If the bid is mathematically unbalanced.
 - (3) If the bid is materially unbalanced.

102.10 Irregular Proposals: Item (B) of the Standard Specifications is revised to read:

- (B) Proposals will be considered irregular and will be rejected for any of the following reasons:

- (1) If the bidder is not on the project Plansholder List as a Prime.
- (2) If the bidder or surety fails to provide a proposal guaranty as specified in Subsection 102.12.
- (3) If the bidding schedule does not contain a unit price for each pay item listed except in the case of authorized alternate pay items.
- (4) If the bidder fails to meet the required goal for Disadvantaged Business Enterprises (DBE) established in the Special Provisions or show good faith effort as determined by the Department.

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS:

102.11 Delivery of Proposals: the title and text of the Standard Specifications is revised to read:

102.11 Blank:

102.12 Proposal Guaranty: of the Standard Specifications is revised to read:

The bidder shall provide a proposal guaranty payable to the Arizona Department of Transportation for 10 percent of the amount of the bid.

The surety (bid) bond shall be executed by the bidder and a surety company or companies holding a certificate of authority to transact surety business in this State issued by the Director of the Department of Insurance. The agent for the surety shall be licensed to act as an insurance agent in Arizona.

Bidders shall provide an electronic proposal guaranty as described herein.

Two companies have established web-based surety processing procedures with Bid Express: Surety 2000 (www.surety2000.com) and Sure Path Network (www.insurevision.com). Bidders may contact these companies for additional information and requirements on electronic proposal guaranty.

102.13 Withdrawal of Proposals:

(A) General: of the Standard Specifications is revised to read:

The bidder may withdraw its bid prior to the time scheduled for submission of bids.

A bidder may withdraw its submittal at any time prior to the time specified for submission of bids, provided that the bidder withdraws such bid electronically.

(102BOI, 09/26/16)

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS:

102.17 Boycott of Israel: is hereby added to the Standard Specifications:

All bidders are required to certify in their bid proposal on the "Participation in Boycott of Israel Certification" form either:

- (1) The bidder does not participate in, and agrees not to participate in during the term of the contract, a boycott of Israel in accordance with ARS 35-393.01, or
- (2) The bidder does participate in a boycott of Israel as defined in ARS 35-393.01.

The Department will not award the contract unless the bidder makes the certification described in subparagraph (1) of this Subsection.

Failure to acquire the necessary licensing within the specified period of time shall result in either award to the next lowest responsible bidder, or re-advertisement of the contract, as may be in the best interests of the Department.

Licensing information is available from:

Registrar of Contractors
3838 N. Central
Suite 400
Phoenix, AZ 85012
Phone: (602) 542-1525

(103RSBTY, 02/22/16)

SECTION 103 AWARD AND EXECUTION OF CONTRACT:

103.03 Responsibility: the third paragraph of the Standard Specifications is revised to read:

Non-responsibility may also be found for any of the following reasons:

- (A) Anti-competitive acts;
- (B) Lack of competency and adequate machinery, plant and other equipment, as revealed by the financial statement and experience questionnaires required under Subsection 102.02;
- (C) Incomplete work which, in the judgment of the Department, might hinder or prevent the prompt completion of additional work if awarded;

- (D) Failure to pay or settle satisfactorily all bills due for work on other contracts;
- (E) Failure to comply with any qualification regulations of the Department;
- (F) Default under previous contracts;
- (G) Unsatisfactory performance on previous work;
- (H) Knowingly and willfully falsifying, concealing, or covering up a material fact by trick, scheme, or device;
- (I) Making false, fictitious, or fraudulent statements or representations;
- (J) Making or using a false writing or document knowing it to contain a false, fictitious, or fraudulent statement or entry;
- (K) Lack of a proper contractor's license; or
- (L) Lack of sufficient ability or integrity to complete the contract.

SECTION 103 AWARD AND EXECUTION OF CONTRACT:

103.06 Return of Proposal Guaranty: the title and text of the Standard Specifications is revised to read:

103.06 Blank:

SECTION 104 - SCOPE OF WORK:

Existing Signs and Delineators:

Existing signs, delineators, or posts not included in the project plans that are damaged by the contractor's operations shall be replaced by the contractor at no cost to the Department. Warning, regulatory, guide and route marker signs, delineators, markers and related posts that interfere with construction operations or traffic control shall be covered or removed, except signs critical for controlling, warning or informing the motoring public. Signs that have been covered or removed shall be uncovered or reinstalled at the original locations when directed by the Engineer.

The contractor shall maintain an inventory list of removed signs and delineators, acceptable to the Engineer. The inventory list shall include the type of delineator or sign, existing location (mile post, side and offset from pavement edge), and post type. Removed signs and delineators shall be marked with their original location.

No measurement or direct payment will be made for this work, the cost being considered included in the price of contract items.

Traffic Control:

The construction of the US 60 (Grand Avenue) Frontage Road is divided into two major phases to minimize the impact to traffic along the frontage road. Access to businesses and residents shall be maintained throughout the entire construction period. The contractor shall coordinate construction and traffic control of this project with adjacent project per Subsection 105.09 of the Standard Specifications.

Full Closures:

Full closures of US 60 will not be allowed as part of this project.

The contractor shall obtain permits from the City of El Mirage. The numbers to be called are as follows:

El Mirage Permits:

Jorge Gastelum 623-876-2976
Bryce Christo 623-876-2974

A lane or intersection closure will require the submittal of a Traffic Control Plan 48 hours prior to implementation. A full street closure will require 10 business days' notice for the City of El Mirage and variable message signs will have to be in place 6 business days before the road is closed, warning traffic of the closure. The contractor will also be required to coordinate traffic control with any adjacent agencies that may be affected the construction. All closures must be able to accommodate emergency services.

The contractor shall coordinate with the City of El Mirage to determine if any coordination is required due to conflicts in detouring traffic onto local streets.

Unless otherwise specified, construction hours within the City are defined as:

May 1 through September 30 6:00 am to 7:00 pm
October 1 through April 30 7:00 am to 7:00 pm
Sunday hours are 8:00 am to 7:00 pm year-round

Lane Restrictions:

- Lane restrictions on US 60 are limited to single lane closures. Double lane closure on US 60 will NOT be allowed. Any additional lane restrictions beyond what is described requires review and approval by the Engineer.
- There will be NO lane closures during holidays or weekends which adjoin to and/or following a holiday.
- The contractor shall remove all traffic control for temporary lane closures prior to holidays or weekends which adjoin a holiday.
- There will be no partial or full closures where a special event is occurring.
- The contractor shall provide written notification to the Engineer two weeks in advance of the lane restrictions along US 60.

- Construction within BNSF Railway Right-Of-Way shall be in accordance with Subsection 104.07 of the Standard Specifications and Subsection 107.15 of these Special Provisions.

Holiday Periods:

No contract work will be allowed during the following holidays, unless otherwise approved by the Engineer. Holidays are from 2:00 PM of the last working day prior to the holiday until 8:00 AM of the first working day following the holiday. If the holiday falls on a Saturday, then it is observed on Friday. If the holiday falls on Sunday, then it is observed on Monday.

The recognized holidays are:

Holiday
Labor Day
Columbus Day
Veterans Day
Thanksgiving Day and Following Day
Christmas Eve and Day
New Year's Day
MLK/Civil Rights Day
President's Day
Memorial Day
Independence Day

No contract work will be allowed between November 22, 2018, and January 2, 2019, unless otherwise approved by the Engineer.

Access Requirements:

The contractor shall maintain access to all side streets, access roads, driveways, alleys, parking lots, and adjacent businesses during their hours of operations. Access to adjacent private driveways shall be provided during all non-working hours. Where property has more than one point of access, no more than one access may be restricted or closed at a time.

The contractor shall inform all property and business operators that may be affected by any restrictions at least 72 hours in advance as a result of construction activities of the scope of work, duration of construction activities, and the possible interference with their day to day activities. Any business or residential access restrictions shall be coordinated in writing with the affected businesses or residents at least one week in advance of the restriction.

The contractor shall also make a good faith effort to make personal contact with affected property owners or business operators. If primary access cannot be maintained, the contractor shall provide an alternative that will be pre-determined with the business prior to instituting the closure or restriction. If the property owner or business operator cannot be contacted, then the Engineer shall be the sole judge for the approval of any closures or restrictions.

The contractor shall include "Business Access" signs where required as part of the traffic control plans.

Access For and Protection of Pedestrians:

At all times the contractor shall conduct his work to safeguard pedestrians within the vicinity of the project. Any holes or trenches left open overnight shall be protected with six-foot temporary chain link fence. If required or approved by the Engineer, the contractor shall provide Type II barricades and Type A flashing lights connected by warning tape, ribbon rope, a plywood covering or other protection over the holes. No measurement or direct payment for work site protection measures (e.g., temporary chain link fence, plywood or other protection over holes, warning tape, Type II barricades, Type A flashing lights, ribbon rope, etc.) the cost is considered included in price of other contract items.

(104APA, 02/26/99)

SECTION 104 - SCOPE OF WORK:

104.04 Maintenance of traffic: of the Standard Specifications is modified to add:

In order to eliminate the possibility of causing or exacerbating air quality violations resulting from construction activities, any traffic control plans which include temporary traffic detours involving local adjacent streets or alternate routes must be approved by the Engineer.

104.08 Prevention to Air and Noise Pollution: of the Standard Specifications is modified to add:

In the event that the Governor declares an air pollution emergency, pursuant to ARS § 49-465.B., which restricts work schedules for all employees of the state and its political subdivisions, the Engineer will direct the contractor suspend all work activities until further notice. The contractor shall discontinue all current work activities as soon as possible, but not later than four hours after notification by the Engineer. The contractor will be compensated for labor costs incurred through the end of the work shift in which the notification occurs. No payment adjustments will be made for equipment or overhead costs resulting from the suspension of work. An extension of the time allowable under the contract will be granted in accordance with Subsection 108.08 of these specifications. In the event that any local air quality authority declares an air pollution advisory, the cooperation of the contractor is requested in complying with the actions recommended by the local authority to the maximum extent possible.

SECTION 104-SCOPE OF WORK:

104.07 Railway-Highway Provisions: of the Standard Specifications is modified to add:

BNSF Railway Company (BNSF)

The contractor is hereby informed that part of the work will be within the right-of-way (ROW) of the BNSF Railway Company (BNSF). The contractor shall contact the BNSF Manager Industry and Public Projects (MIPP) at the phone number listed below, making reference to DOT number and RRMP number listed below, and request a Temporary Occupancy Permit (TOP) for roadway surfacing/resurfacing for the project and provides any essential information so that she is made aware of key stages of the contractor's progress. Samples of these documents are included in the **Appendix B**. The contractor shall obtain an executed Contractor's TOP with BNSF.

When approved by BNSF, the executed Contractor's TOP forms will become the contractor's Temporary Occupancy Permit (TOP). The contractor shall not enter into, or commence work within, the railroad's ROW, or within the existing ADOT easement from BNSF, until the contractor has provided a copy of the executed Contractor's TOP to the ADOT project Engineer. The Contractor shall also provide at least thirty (30) days prior written notice to BNSF Manager Industry and Public Projects about the time when the operations for construction shall commence on BNSF right of way, making a reference of BNSF File Number referenced below.

BNSF owns and operates trains over tracks in the project, and the project will impact its operations. The project will involve access to the junction box attached to the underside of the bridge deck to remove cable and install cable through the conduits entering the box. replacement of the bridge deck, lighting and the bridge barrier.

Unless approved otherwise in writing by the BNSF, BNSF will not allow any work within their right of way during the 4th quarter of the Calendar Year (October 1 thru December 31). BNSF may require portions of the contractor's work that may affect railroad operations to be performed during designated specific hours.

Per Form TOP, the contractor shall take full responsibility for their subcontractors through such TOP forms and naming such subcontractors as insured under the Railroad Protective Policy. However, at BNSF's request, a subcontractor may be required to execute their own TOP forms to include the purchase of their own Railroad Protective Policy.

The contractor is advised that several weeks are required for review and approval of the Contractor's TOP forms. The contractor shall anticipate the required time necessary to obtain the TOP and schedule his work accordingly. No adjustment to the contract time will be allowed for delays in obtaining a fully executed TOP. The contractor is directed to samples of the Railroad TOP documents included within these Special Provisions that contain specific BNSF requirements associated with being on its property. The application fee for the TOP forms is currently \$800 per information provided by the BNSF. The

contractor shall submit the application for TOP and make payment of the fee as provided under subsection 107.02 of the Standard Specifications.

The contractor shall comply with all requirements of the railroad concerning access, insurance, inspection, flagging requirements, and protection of its property, including, when required, a plan for erosion control. Following award of the contract, the contractor must contact Ms. Tiera J. Adams, BNSF Manager Public Projects to begin the Temporary Occupancy application process. All communications with BNSF shall respect its requirements for lead time to respond. All correspondence and formal communications must be directed to Ms. Tiera J. Adams, with copy to the State's Engineer, and daily coordination and communications established with Justin Satterlund, BNSF Road Master:

Ms. Tiera J. Adams
Manager Public Projects
BNSF Railway Co
740 East Carnegie
San Bernardino, CA 92408
Phone: (909) 386-4472
Fax: (909) 386-4479 fax
tiera.adams@bnsf.com

Mr. Satterlund
Roadmaster
BNSF Railway Co.
7120 N. 60th Avenue
Glendale, AZ 85301
(928) 245-3786
justin.satterlund@bnsf.com

When communicating with the BNSF, please reference the following information:

I-10/ 19th Ave Bridge
DOT 025620K
Rail Mile 191.26 LS 7208

The contractor is advised that the daily coordination necessary to comply with the requirements of the TOP and these Special Provisions may be extensive and that prior to beginning their construction activities it is in his best interest to meet with the Railroad Representative and the Roadmaster in order to establish the command hierarchy and the necessary approval protocols for their day-to-day activities.

Pursuant to FRA Regulation 49 CFR Part 214, flagging protection is required in accordance with the railroad's standard safety procedures. The necessity for flagging protection is determined by the railroad and, when necessary, the railroad may require one, or more, flaggers to be present when the contractor is on the railroad ROW. The contractor is required to communicate to BNSF his activities that may affect safety or railroad operations.

Any work to be performed by the contractor that requires flagging protection shall be deferred until flagging protection is available at the job site. The contractor is required to coordinate with BNSF with respect to the construction schedule and work-related items for the safe and effective progress of the work.

ADOT contractor will directly reimburse the BNSF for all railroad flagging costs. ADOT has estimated a total of **2** day of railroad flagging and **0** days of inspection will be required for this project. The Contractor is not to exceed this amount without written permission of the State's Engineer.

Railroad-provided flagging service will be required during construction of any element of the project, either temporary or permanent, that occurs when contractor personnel or

equipment will be within 25-feet of the track centerline, when cranes or similar equipment are positioned outside of 25-feet horizontally from track centerline but could tip and foul the track, or as specified in the TOP. There is a minimum 12-foot horizontal clearance requirement for any temporary construction. Temporary vertical clearances as measured from the top of the highest rail shall not be less than 21-feet. Examples of activities which could trigger railroad notification include (but are not limited to) crane boom violations, The contractor shall identify those elements of work anticipated to require flagging as part of the Bridge Protection Plan as discussed in the General Requirements Section of these Special Provisions.

The contractor shall notify BNSF's Manager of Track Maintenance, or Designated Representative, at least thirty (30) calendar days in advance of commencing work on BNSF property or near BNSF's tracks, when requesting a BNSF flagger in accordance with the requirements of the Temporary Occupancy documents in order to protect BNSF from damage or interference to BNSF's trains and property. No excavation within BNSF ROW is permitted without the approval of the railroad. The Contractor shall provide written notice to BNSF Manager Industry and Public Projects, BNSF Road Master and to the State's Engineer when flagging services are no longer needed.

The contractor is required to communicate those of his or his subcontractor's activities to the Road Master that may affect safety or railroad operations. Any work to be performed by the contractor, which requires flagging protection, shall be deferred until flagging protection is available at the job site.

The contractor is required to procure Railroad Protective Liability Insurance (RPLI) for the duration of the project. In addition to the Certificate of Insurance form, the contractor must provide an Insurance Binder, or a copy of the policy, that designates the specific RPLI coverage. The contractor is not required to purchase this coverage from the BNSF and is encouraged to shop the market for the best available rate.

The Contractor shall conduct the work in a safe and orderly manner and according to the plans and specifications. The Contractor shall at no times hinder the safe and timely operation of BNSF facilities, nor shall it allow the BNSF- required insurance to lapse at any time. If the Contractor shall prosecute the project work in a manner that BNSF deems to be hazardous to its property, facilities or the safe and expeditious movement of its traffic, or the insurance described in the C & C-1 documents shall be canceled during the course of the project, then BNSF shall have the right to stop the work, within BNSF right of way, until the acts or omissions of the Contractor have been fully rectified to the satisfaction of BNSF's Manager – Industry & Public Projects, or additional insurance has been delivered to and accepted by BNSF. Such work stoppage shall not give rise to or impose upon BNSF any liability to the Contractor.

When the contractor receives the executed TOP from BNSF, the contractor shall begin a dialog with the BNSF Roadmaster to mutually schedule and coordinate their respective work. BNSF may require portions of the contractor's work that may affect railroad operations to be performed during designated hours. Contractor shall coordinate with BNSF each day's construction activities that may affect BNSF operations. The contractor's construction schedule shall identify the time frames for the completion of the contractor's

and BNSF's activities, always recognizing that the contractor's activities shall be scheduled around train movements. Construction activities within twenty five (25) feet of the operational tracks, or activities (such crane operations) that may foul the tracks will occur only with the approval of BNSF's Roadmaster, or his designated representative. All essential communications between the contractor and BNSF are to be communicated promptly to the State's Engineer.

All existing BNSF maintenance roadways shall remain open at all times during construction. The contractor shall not deposit any material or debris onto railroad property that, in the opinion of BNSF, would hinder railroad operation, or be unsafe to railroad operations. Contractor will not store material within BNSF's right of way. When Contractor personnel and equipment are not working, they shall be at least twenty-five (25) feet from the centerline of the nearest track. The contractor shall maintain all ditches and drainage structures free of silt or other obstructions which may result from the contractor's operations and to repair promptly eroded areas within BNSF property. The construction site shall be restored as indicated in the Contractor's Temporary Occupancy Agreement and cleaned during the progress of the work to the satisfaction of BNSF. Any ballast material contaminated by the contractor's operations will be replaced by BNSF at the contractor's expense.

All workers, including those employed by subcontractors, will be required to complete the BNSF Contractor Safety Orientation Program prior to entering the property and to complete and submit a photo for the photo identification card. All workers will be required to have in their possession the photo identification card indicating that the worker has taken and passed the course. The course may be taken via the Internet at www.contractororientation.com. There is a \$11 fee for the course and an additional \$15 for each photo card per person.

BNSF requires protection of fiber optic cable systems which may cross or run parallel to the BNSF corridor. The Contractor shall be responsible to contact BNSF and/or the telecommunications companies to determine whether there is any fiber optic cable systems located within the PROJECT boundaries that could be damaged, or their service disrupted, due to the construction of the PROJECT. The contractor shall also pothole all lines either shown on the PLANS or marked in the field in order to verify their locations. The contractor shall also use all reasonable methods when working in the BNSF rail corridor to determine if any other fiber optic lines may exist. Failure to notify, pothole or identify these lines shall be sufficient cause for the State's Engineer to stop construction at no cost to ADOT or BNSF until these items are completed. Costs for repairs and loss of revenues and profits due to damage to these facilities through negligent acts by the Contractor shall be the sole responsibility of the Contractor. The Contractor shall indemnify and hold the State and BNSF harmless against and from all cost, liability and expense arising out of or in any way contributed to these negligent acts of the Contractor. The telecommunication companies, at ADOT's expense if prior rights are demonstrated, shall be responsible for the rearrangement of any facilities determined to interfere with the construction. The contractor shall cooperate fully with any company performing these rearrangements. The contractor shall make any and all arrangements to secure the location or relocation of wire lines, pipe lines and other facilities owned by private persons, companies, corporations, political subdivisions or public utilities other than BNSF which may be found necessary to locate or

relocate in any manner whatsoever due to the construction of the PROJECT. BNSF “call before you dig” **1-800-336-9193**.

NOTE: It is the contractor’s responsibility to coordinate effectively his operations to minimize, if not eliminate, any impact of the project upon BNSF operations. Any loss of service, or revenue, to BNSF beyond that covered by these specifications that is in any way caused by the contractor’s actions shall be the sole responsibility of the contractor, at no cost to the project.

BNSF prohibits crossing of railroad tracks. If the contractor desires a temporary or permanent BNSF track crossing for hauling equipment and material across the tracks, a separate agreement must be concluded with BNSF, and such agreement with BNSF must be concurred in by the Engineer. The contractor is hereby advised that ADOT has not and will not negotiate with BNSF for any temporary or permanent crossing of the tracks. A track crossing permit is required and a blank form with instructions is available at <http://www.BNSF.com/reus/roadxing/roadform.pdf>. Assuming a road crossing permit would be granted it would then be constructed by BNSF forces. The Department assumes no responsibility for railroad crossings and they are considered initiatives of the contractor. No additional payment will be made for the construction of railroad crossings.

(104DUST, 11/01/95)

SECTION 104 - SCOPE OF WORK:

104.08 Prevention of Air and Noise Pollution: of the Standard Specifications is modified to add:

For work performed within Maricopa County, the contractor will be required to prepare a comprehensive fugitive dust control plan, in accordance with the guidelines established in Rule 310 of Maricopa County Regulation III, Control of Air Contaminants. The contractor may contact Maricopa County, Division of Air Pollution Control, to purchase a copy of the guidelines. The contractor shall complete and submit the control plan with the permit application, and obtain approval prior to construction or any other activities which may produce dust pollutants.

Some of the measures which the contractor may use to control or minimize fugitive dust include: increased use of water or chemical dust suppressants, cease work temporarily during high winds, reducing vehicle speeds and number of trips, maintaining freeboard of three inches or more in hauling, and covering or stabilizing stockpiles. The contractor shall be required to cover haul trucks with tarps or other suitable enclosures.

No separate payment will be made for preparation and implementation of the fugitive dust control plan, the costs being considered as included in the price of contract items.

(104MTBRN, 06/04/96)

SECTION 104 - SCOPE OF WORK:

104.08 Prevention of Air and Noise Pollution: the first paragraph of the Standard Specifications is modified to add:

Burning of trash, debris, plant material, wood, or any other waste materials will not be allowed. The contractor shall dispose of such materials in accordance with the requirements of Subsection 107.11.

(104SWDEQ, 3/11/13)

SECTION 104 - SCOPE OF WORK:

104.09 Prevention of Landscape Defacement; Protection of Streams, Lakes and Reservoirs: of the Standard Specifications is revised to read:

(A) General:

The contractor shall give attention to the effect of the contractor's operations upon the landscape, and shall take care to maintain natural surroundings undamaged.

The contractor shall be responsible to implement the requirements of the Arizona Pollutant Discharge Elimination System (AZPDES) for erosion and sediment control as specified in the "General Permit For Discharge From Construction Activities To the Waters Of The United States," issued by the Arizona Department of Environmental Quality (ADEQ). That document is hereinafter referred to as the AZPDES general permit.

Useful information related to stormwater controls and erosion and sediment control measures is presented in the "Fact Sheet For The Issuance Of An AZPDES Construction General Permit," available from ADEQ, and ADOT's "Erosion and Pollution Control Manual," available on the Department's website at http://www.azdot.gov/inside_adot/OES/Water_Quality/Stormwater/Erosion_Pollution_Contr ol_Manual.asp.

The work shall include providing, installing, maintaining, removing and disposing of erosion and sediment control measures such as gravel filter berms, dikes, catch basin inlet protection, end-of-pipe filtering devices, silt fences, dams, sediment basins, earth berms, netting, geotextile fabrics, slope drains, seeding, stream stabilization, and other erosion and sediment control devices or methods. Erosion control, as hereinafter referenced, shall be deemed to include control of erosion and the mitigation of any resulting sediment. Erosion control measures may be temporary or permanent. The contractor shall also be responsible for the preparation and processing of all documents required in the AZPDES general permit.

The plans will include preliminary erosion control measures and additional information to be included in the project's Storm Water Pollution Prevention Plan (SWPPP), as specified in Subsection 104.09(B). The contractor, with input from the Engineer, shall finalize the SWPPP, file a Notice of Intent (NOI), implement the SWPPP, and file a Notice of Termination (NOT), all as described herein.

Except for the NOI, all signatures required of the contractor by the AZPDES general permit, including those required for the NOT, SWPPP, and inspection reports, shall be provided by a duly authorized representative of the contractor, as defined in Part VIII.J.2 of said permit. Signature of the NOI shall be by a responsible corporate officer, as defined in Part VIII.J.1 of the AZPDES general permit.

No clearing, grubbing, earthwork, or other work elements affected by the erosion control requirements in the SWPPP, shall be started until the SWPPP has been approved, the NOI completed and filed in accordance with Subsection 104.09(C), and the SWPPP implemented.

Submission of the contractor's NOI shall certify that the contractor and its subcontractors have read and will comply with all provisions of the AZPDES general permit.

(B) Stormwater Pollution Prevention Plan (SWPPP):

The plans will include descriptions of temporary and permanent erosion control measures; a project description; percent impervious area, including paved areas, rooftops, and other similar surfaces, for both pre-construction and post-construction conditions; inspection schedule; and site-specific diagrams indicating proposed locations where erosion and sediment control devices or pollution control measures may be required during successive construction stages. The plans may also include an initial schedule detailing the proposed sequence of construction and related erosion control measures.

The contractor shall review the preliminary information, including the erosion control features and phasing, evaluate all SWPPP requirements for adequacy in addressing pollution prevention during construction, and prepare a draft SWPPP for review by the Engineer.

The contractor shall designate an erosion control coordinator, in accordance with Subsection 104.09(D), to be responsible for finalization and implementation of the SWPPP, as well as all other applicable requirements of the AZPDES general permit. The contractor's erosion control coordinator shall be approved as specified in Subsection 104.09(D) before the draft SWPPP can be finalized and submitted to the Engineer. After approval, the contractor shall designate the erosion control coordinator as an authorized representative of the contractor in accordance with Part VIII.J.2 of the AZPDES General Permit.

The draft SWPPP shall include all information required in the AZPDES general permit, including a site map; identification of receiving waters and wetlands impacted by the project; a list of potential pollutant sources; inspection schedule; any onsite or off-site material storage sites; additional or modified stormwater, erosion, and sediment controls; procedures for maintaining temporary and permanent erosion control measures; a list of the

contractor's pollution prevention practices; and other permit requirements stipulated in the AZPDES program as well as other applicable state or local programs. The contractor shall coordinate with the Engineer on all such additional information.

The draft SWPPP shall also identify any potential for discharge into a municipal separate storm sewer system (MS4), including the name of the owner/operator of the system.

Unless otherwise approved by the Engineer, the contractor shall not expose a surface area of greater than 750,000 square feet to erosion through clearing and grubbing, or excavation and filling operations within the project limits until temporary or permanent erosion control devices for that portion of the project have been installed and accepted by the Engineer.

The contractor shall indicate each 750,000 square-foot sub-area in the draft SWPPP, along with proposed erosion control measures for each sub-area. The draft SWPPP shall also include the sequence of construction for each sub-area, and installation of the required temporary or permanent erosion control measures.

The contractor shall give installation of permanent erosion control measures priority over reliance on temporary measures. Permanent erosion control measures and drainage structures shall be installed as soon as possible in the construction sequencing of the project, preferably concurrent with construction of the related sub-area or drainage device. However, except as specified in Part IV, Section B.2 of the AZPDES general permit and approved by the Engineer, erosion control measures shall be installed no later than 14 calendar days after construction activity has temporarily or permanently ceased for the affected sub-area.

Temporary or permanent sedimentation basins may be required for reducing or eliminating sediment from stormwater runoff. When required, such basins shall be completed before any clearing and grubbing of the site is initiated. The contractor shall evaluate the need and attainability of installing sediment basins as described in the AZPDES permit and, if approved by the Engineer, include the basins into the SWPPP as appropriate. When sedimentation basins are determined to be necessary and feasible, such work will be paid in accordance with Subsection 109.04(D). The plans may also include sediment basins as part of the preliminary information. No additional payment will be made for such basins, the cost being considered as included in contract items.

The draft SWPPP shall also identify and address erosion control at on-site fueling operations, waste piles, material storage sites, and off-site dedicated asphalt and concrete plants, contractor-use areas, storage areas, and support activity locations which are used solely for the project and are covered by the AZPDES general permit. The draft SWPPP shall also accommodate all requirements for the contractor's pollution prevention practices specified in Subsection 104.09(E). In addition, the SWPPP shall specifically identify the erosion control measures proposed by the contractor during any vegetation removal and salvaging phases of the project (such as during timber harvesting or native plant salvaging).

The draft SWPPP shall specify the mechanism whereby revisions may be proposed by the contractor or the Engineer throughout the project and incorporated into the plan, including review and approval procedure. The Engineer and contractor shall jointly approve and sign

each revision to the SWPPP before implementation. Any subsequent submittals required by the contractor to revise or update the SWPPP will require at least 48 hours for review.

Contractors and subcontractors responsible for implementing all or portions of the SWPPP shall be listed in the draft SWPPP, along with the measures for which they are responsible.

The contractor shall submit two copies of the draft SWPPP, including all information specified herein, to the Engineer at the preconstruction conference if possible, but not later than 14 calendar days from the Department's approval of the contractor's Erosion Control Coordinator.

The Engineer will provide the contractor with the following forms at the preconstruction conference:

- Maintenance, inspection, and site-monitoring report forms;
- Other record keeping forms and procedures, as needed; and
- Notice of Intent (NOI) and Notice of Termination (NOT) forms.

Notice of Intent and Notice of Termination blank forms are also available on the internet at <http://azdeq.gov/function/forms/appswater.html#cgp>.

Within 10 calendar days from the SWPPP submittal, the Engineer and contractor will jointly review the contractor's draft SWPPP, and include any additional revisions directed by the Engineer. The finalized SWPPP shall meet the terms and conditions of the AZDPES general permit, and be compatible with construction sequencing and maintenance of traffic plans.

When agreement has been reached, the Engineer and contractor's authorized representative will sign the finalized SWPPP. The Engineer's signature will constitute approval of the SWPPP. Upon approval of the SWPPP, the contractor shall file a Notice of Intent (NOI) as specified in Subsection 104.09(C).

After the time period specified in Subsection 104.09(C), the contractor shall implement the requirements of the SWPPP. No clearing, grubbing, earthwork, or other work elements affected by the erosion control requirements in the SWPPP, shall be started until the SWPPP has been approved, the NOIs completed and filed in accordance with Subsection 104.09(C), and the SWPPP implemented.

The contractor shall maintain all related erosion control elements in proper working order throughout the project. Work under this section also includes inspections, record-keeping, and implementation of pollution prevention practices as described in Subsection 104.09(E).

The approved SWPPP shall be updated whenever a change in design, construction method, operation, maintenance procedure, or other activity may cause a significant effect on the discharge of pollutants to surface waters, or when a change is proposed to the personnel responsible for implementing any portion of the SWPPP. The SWPPP shall also be amended if inspections indicate that the SWPPP is ineffective in eliminating or significantly reducing pollutants in the discharges from the construction site. All necessary

modifications to the SWPPP shall be made within seven calendar days following the inspection that revealed the deficiency.

ADEQ may notify the contractor at any time that the SWPPP does not comply with the permit requirements. The notification will identify the provisions of the permit that are not being met and parts of the SWPPP that require modification. Within 15 business days of receipt of the notification from ADEQ the contractor shall make the required changes to the SWPPP and submit a written certification to ADEQ that the requested changes have been made.

The contractor's erosion control coordinator shall maintain the SWPPP along with completed inspection forms and other AZPDES records in a three-ring binder. The erosion control coordinator shall maintain a current copy of the SWPPP, including all associated records and forms, at the job site from the time construction begins until completion of the project. The SWPPP shall be available for inspection by ADEQ, FHWA, and other entities identified in the AZPDES general permit, and for use by the Engineer. The erosion control coordinator shall provide copies of any or all of such documents to the Engineer upon request. When requested, such copies shall be provided within three working days of the request.

The SWPPP (including inspection forms) and all data used to complete the NOI and NOT shall be provided to the Department at the completion of the project. The contractor shall retain its own records for a period of at least three years from the filing of the contractor's NOT.

No condition of the AZPDES general permit or the SWPPP shall release the contractor from any responsibilities or requirements under other environmental statutes or regulations.

(C) Notice of Intent (NOI):

After the project Storm Water Pollution Prevention Plan (SWPPP) has been approved, the contractor will complete a Notice-of-Intent (NOI) form for the project. The NOI includes a certification statement which must be signed and dated by a responsible corporate officer of the contractor, as defined in Part VIII.J.1 of the AZPDES General Permit, and include the name and title of that officer.

The NOIs shall be submitted to the Arizona Department of Environmental Quality (ADEQ) at the following address:

Arizona Department of Environmental Quality
Surface Water Section/Permits Unit/Stormwater NOIs
(5415A-1)
1110 W. Washington Street
Phoenix, Arizona 85007
or fax to (602) 771-4528

The submittals shall be made to allow for the seven calendar-day review period required by ADEQ before the anticipated start of construction. The contractor shall also allow sufficient

time, depending on the manner of submittal, for the NOIs to be received by ADEQ before commencement of the seven-day review period. An Authorization Certificate will be issued by ADEQ and, unless otherwise notified, the construction activities that are covered by the terms and conditions of the AZPDES permit may begin after the submittal period plus the seven calendar-day review period, or upon receipt of the Authorization Certificate, whichever occurs first. The contractor shall provide a copy of the authorization certificate to the Engineer, and keep a copy with the NOI.

The NOI may also be submitted electronically, through ADEQ's Smart NOI website at <http://az.gov/webapp/noi/main.do>. Regardless of the method of submittal, the contractor shall provide a copy to the Engineer.

At any time after authorization, ADEQ may determine that the contractor's stormwater discharges may cause or contribute to non-attainment of any applicable water quality standards. If ADEQ makes that determination, the contractor will be notified in writing. The contractor shall develop a supplemental erosion control action plan describing SWPPP modifications to address the identified water quality concerns. If the written notice from ADEQ requires a response, failure to respond in a timely manner constitutes a permit violation. All responses shall be in accordance with the AZPDES general permit.

If there is a potential to discharge into a municipal separate storm sewer system (MS4), a copy of the Authorization Certificate shall be submitted to the owner/operator of the system. Also, contractor's operating under an approved local sediment and erosion plan, grading plan, or stormwater management plan shall submit a copy of the Authorization Certificate to the local authority upon their request.

The contractor shall post its NOI and the information required in the AZPDES general permit on the construction-site bulletin board throughout the duration of the project. A copy of the AZPDES general permit shall also be kept at the construction site at all times.

(D) Contractor's Erosion and Pollution Control Coordinator:

(1) General Requirements:

The contractor shall designate a competent person as the contractor's erosion and pollution control coordinator (referred to elsewhere herein as erosion control coordinator) responsible for finalizing the draft SWPPP from the preliminary information included with the plans. The erosion control coordinator shall also be responsible for implementing, monitoring, and revising the approved SWPPP throughout the project, for making the required inspections, and for implementing any other permit requirements stipulated in the AZPDES general permit. The person shall be knowledgeable in the principles and practice of erosion and sediment controls, and possess the skills to assess conditions at the site that could impact stormwater quality and the effectiveness of the contractor's erosion control measures used to control the quality of the stormwater discharges.

Stormwater runoff from construction activities may contaminate adjacent bodies of water, or otherwise exceed water quality standards, and result in possible major civil and/or criminal penalties. Therefore the Engineer will closely consider the qualifications of the contractor's

erosion control coordinator. The contractor shall not assume that the person proposed as erosion control coordinator will be acceptable to the Department merely because the experience and education requirements listed herein have been met.

The contractor bears all risks and liabilities for the failure of its erosion control coordinator to properly implement the requirements of the AZPDES general permit.

The person shall be capable of identifying existing and predictable effects of the contractor's operations, and shall have complete authority to direct the contractor's personnel and equipment to implement the requirements described herein, including prompt placement of corrective measures to minimize or eliminate pollution and damage to downstream watercourses. The erosion control coordinator shall also be familiar with procedures and practices identified in the SWPPP, and shall ensure that emergency procedures are up to date and available at project sites.

The erosion control coordinator shall at all times be aware of the contractor's work activities, schedule, and effect of the work on the environment, and shall, at any time, be accessible to direct the contractor's personnel to replace or repair erosion control measures as necessary. Should the erosion control coordinator not be present at the project site on a full-time basis, the contractor shall establish procedures to ensure that its erosion control coordinator is promptly notified of any damage or displacement of the required erosion control measures, whether from construction, vandalism, or other causes. In addition, the contractor shall provide the Engineer with a phone number through which the erosion control coordinator can be contacted at any time, 24 hours a day, seven days a week, including holidays. The erosion control coordinator must be present at the jobsite within 24 hours of such call being placed.

The erosion control coordinator shall also be aware of and comply with all requirements of the AZPDES general permit to address discharges at the site associated with the contractor's activities other than construction, including contractor staging areas, and other potential pollutant and off-site material storage and borrow areas.

The contractor shall be responsible to provide appropriate training to the contractor's personnel, including employees of any subcontractors, to ensure that all personnel understand requirements of the AZPDES general permit and SWPPP that are applicable to their job functions.

Failure of the contractor to properly maintain the erosion control measures required in the approved SWPPP will be cause for the Engineer to reject the erosion control coordinator and issue a stop work order, as specified in Subsection 104.09(G).

(2) Certification Requirements:

The proposed erosion control coordinator shall have successfully completed the two-day (16 hour) "Erosion Control Coordinator" training class (hereinafter referred to as the training class) provided by the Associated General Contractors (Arizona Chapter), phone (602) 252-3926.

If a current training class certificate is more than three years old, the Erosion Control Coordinator will have until April 30, 2014 to successfully complete either a six-hour "Erosion Control Coordinator Refresher" class (hereinafter referred to as the refresher class), also provided by the Associated General Contractors (Arizona Chapter), or the two-day training class specified above.

In order to maintain the training class certification, the refresher class shall be required every three years thereafter, prior to the expiration date listed on the previous certificate. After April 30, 2014, should more than three years elapse from completion of either the training class or refresher class, the contractor's proposed erosion control coordinator shall be required to successfully complete the two-day training class in order to again be eligible for consideration.

In addition, the proposed erosion control coordinator shall have documented experience equal to a minimum of one year from either of the following two categories:

- (a) Experience in the development and implementation of Stormwater Pollution Prevention Plans (SWPPP's), as specified in the AZPDES general permit referenced herein, or the National Pollutant Discharge Elimination System (NPDES) for highway construction projects. The proposed erosion control coordinator's experience shall demonstrate full-time responsibility for directly supervising construction personnel in the installation, monitoring, and maintenance of erosion control items.
- (b) Experience in re-vegetation or restoration of disturbed areas in environments similar to those on the project. Experience in temporary or permanent stabilization of disturbed areas will also be considered. The proposed erosion control coordinator's experience shall demonstrate full-time responsibility for directly supervising personnel in temporary or permanent re-vegetation or restoration of disturbed areas.

The contractor's documentation shall provide details indicating the types of relevant experience, and shall provide the number of months of each type of experience to be considered for approval.

The contractor's documentation shall also indicate that the proposed erosion control coordinator has completed the training class or refresher class. As specified above, the refresher class shall be required thereafter for each subsequent three-year period.

(3) Acceptance:

The contractor shall submit documentation indicating the qualifications of the proposed erosion control coordinator to the Engineer for approval within seven calendar days of the notice of award of the contract. The Engineer will review the proposed candidate's information within seven calendar days. The contractor may begin development of the draft SWPPP from the preliminary information included with the plans prior to approval of the erosion control coordinator. However no clearing, grubbing, earthwork, or other work elements that, in the opinion of the Engineer, may be subject to the requirements of the

AZPDES general permit shall be started until the erosion control coordinator has been approved, the SWPPP finalized and implemented, and the NOI completed and filed, all as specified herein.

(E) Pollution Prevention Practices and Requirements:

The SWPPP shall also specify the contractor's pollution prevention practices and requirements, including vehicle wash-down areas, onsite and off-site tracking control, protection of equipment storage and maintenance areas, methods to minimize generation of dust, and sweeping of highways and roadways related to hauling activities. The contractor shall show each planned location of service and refueling areas on the SWPPP's site map. Changes to the contractor's pollution prevention practices that are related to construction phasing shall also be shown on the SWPPP.

The contractor shall take aggressive actions, considering all conditions, to prevent pollution of streams, lakes, and reservoirs with fuels, oil, bitumens, calcium chloride, fresh Portland cement, fresh Portland cement concrete, raw sewage, muddy water, chemicals or other harmful materials. None of these materials shall be discharged into any channels leading to streams, lakes or reservoirs. The SWPPP shall include the implementation of spill prevention and material management controls and practices to prevent the release of pollutants into stormwater. The SWPPP shall also provide storage procedures for chemicals and construction materials; disposal procedures; cleanup procedures; the contractor's plans for handling such pollutants; and other pollution prevention measures as required.

Machinery service and refueling areas shall be located away from streambeds or washes, and in a manner which prevents discharges into streams or washes.

Waste materials from blasting, including explosives containers, shall be disposed of off-site in accordance with applicable federal regulations. Other waste materials, such as used cans, oils, machine and equipment parts, paint, hazardous materials, plastic and rubber parts, discarded metals, and building materials, shall be removed from the construction site and disposed of according to applicable state and federal regulations.

Where the contractor's working area encroaches on a running or intermittent stream, barriers shall be constructed and maintained between the working areas and the stream bed adequate to prevent the discharge of any contaminants. The SWPPP shall identify the location of streams that may be affected and the specific types of barriers proposed for protecting these resources.

Unless otherwise approved in writing by the Engineer, fording of running streams with construction equipment will not be permitted; therefore, temporary bridges or other structures shall be used whenever an appreciable number of crossings is necessary.

Temporary bridges or other structures proposed by the contractor shall be designed to accommodate the ten-year storm event if to remain in place for up to a one-year period. If a structure is planned to remain in place for longer than one year, the hydraulic conveyance may be subject to more stringent requirements. The contractor shall be responsible for all

permits, authorizations, and environmental clearances that may be necessary to approve the use of such structures. The contractor shall submit the design and all required documentation to the Engineer for approval. The contractor is advised that the review and approval process for such structures could be lengthy. Unless otherwise provided for in the contract, the contractor shall be responsible for all costs associated with the design and construction of such structures. Also, no extension of contract time will be allowed for any review and approval periods, or for the time required to construct temporary bridges proposed by the contractor.

Mechanical equipment shall not be operated in running streams.

Material which is to be stockpiled or disposed of off-site shall be in accordance with Subsection 107.11.

Streams, lakes and reservoirs shall be cleared of all falsework, piling, debris or other obstructions resulting from the contractor's activities, inadvertently placed thereby or resulting from construction operations, within 24 hours from the time the obstruction was observed.

Spill prevention, containment and counter-measures shall be included in the SWPPP if the volume of project-site fuel in a single container exceeds 660 gallons, or if the total fuel storage volume at any one site exceeds 1,320 gallons.

In the event of a spill of a hazardous material, the contractor shall follow the provisions of Subsection 107.07. In addition, the erosion control coordinator shall modify the SWPPP as necessary within 14 calendar days of the discharge. The SWPPP shall be modified to include a description of the release, the circumstances leading to the release, and the date of the release.

The contractor shall assist in any efforts to clean up hazardous material spills, as directed by the Engineer or other authorities. Soil contaminated from spills shall be disposed of according to applicable state and federal regulations.

(F) Inspections:

(1) General:

The Engineer and the erosion control coordinator shall inspect the project at least every 14 calendar days, and also within 24 hours after any storm event of 0.50 inches or more. The inspections shall include disturbed areas that have been temporarily stabilized, areas used for storage of materials, locations where vehicles enter or exit the site, and all of the erosion and sediment controls included in the SWPPP. The contractor shall monitor rainfall on the site with a commercially manufactured rain gauge accurate to within 0.10 inches of rain. Rainfall records shall be submitted to the Engineer on a weekly basis.

For each inspection, the contractor's erosion control coordinator shall complete and sign a Compliance Evaluation Report as described in the permit. Copies of the completed reports shall be retained on-site in the SWPPP file throughout the construction period. The erosion

control coordinator shall also provide a copy of the report to the Engineer following each inspection.

All inspections shall be made jointly with the Engineer.

(2) Adjustments:

When deficiencies are noted during scheduled inspections, the contractor shall take immediate steps to make the required corrections as soon as practical. Deficiencies shall be fully corrected, to the satisfaction of the Engineer, within four calendar days or by the next anticipated storm event, whichever is sooner. Deficiencies noted between designated inspections shall be corrected within the time period directed by the Engineer, but not later than four calendar days after observation.

Direct inflows of sediment into a watercourse shall be corrected by the end of the same day or work shift in which the inflow was observed.

In accordance with Subsection 104.09(G), failure to implement adjustments within the specified time periods may be cause for the Engineer to reject the contractor's erosion control coordinator and issue a stop work order for the affected portions of the project.

(G) Non-Compliance:

The Engineer may reject the contractor's erosion control coordinator if, in the opinion of the Engineer, the conditions of the AZPDES general permit or the approved SWPPP are not being fulfilled. Rejection of the contractor's erosion control coordinator shall be for failure to complete any of the following:

- (1) Should the Engineer determine that the SWPPP is not being properly implemented; the contractor will be notified in writing of such deficiencies. The contractor's erosion control coordinator shall fully implement, to the satisfaction of the Engineer, the requirements of the approved SWPPP within three working days.
- (2) Should any corrective measures required in Subsection 104.09(F)(2) not be completed within the time periods specified therein, the Engineer will notify the contractor in writing. The contractor's erosion control coordinator shall complete all required corrective measures within two calendar days of such notification, except that direct inflows of sediment into a watercourse shall be corrected within 24 hours.
- (3) Should the Engineer determine that routine maintenance of the project's erosion control measures is not being adequately performed, the contractor will be notified in writing. Within three working days, the contractor's erosion control coordinator shall demonstrate, to the satisfaction of the Engineer that such steps have been taken to correct the problem.

In the event of the erosion control coordinator's failure to comply with any of the above requirements, the Engineer will direct the contractor to stop all affected work and propose a new erosion control coordinator as soon as possible. However, all erosion and pollution control items specified in the SWPPP shall be maintained at all times. No additional work on construction items affected by the SWPPP will be allowed until a new erosion control coordinator has been approved by the Engineer. The contractor will not be allowed compensation or an extension of contract time for any delays to the work because of the failure of the contractor's erosion control coordinator to properly fulfill the requirements of the approved SWPPP.

(H) Record of Major Construction and Erosion Control Measures:

In addition to the compliance evaluation report, the contractor shall keep records of the major construction activities, including the erosion control measures associated with these activities. In particular, the contractor shall keep a record of the following activities:

- The dates when major grading activities (including clearing and grubbing, excavation and embankment construction) occur in a particular area or portion of the site.
- The dates when construction activities cease in an area, temporarily or permanently.
- The dates when an area is stabilized, temporarily or permanently.

Such information shall be noted within two working days of the occurrence of any of the listed activities, and a copy of the report shall be included in the SWPPP. The contractor shall also provide one copy of such records, and any subsequent up-dated information, to the Engineer within three working days of completion or amendment of the report.

(I) Notice of Termination (NOT):

Upon final acceptance by the Engineer in accordance with Subsection 105.20, and as specified herein, the contractor shall complete and mail a Notice-of-Termination (NOT) for the project to the address shown below. The NOT submitted by the contractor includes a certification statement which must be signed and dated by an authorized representative of the contractor, as defined in Part VIII.J.2 of the AZPDES General Permit, and include the name and title of that authorized representative.

Arizona Department of Environmental Quality
Surface Water Section/Stormwater & General Permits (5415A-1)
1110 W. Washington Street
Phoenix, Arizona 85007
or fax to 602 771-4528

The NOT may also be submitted electronically, through ADEQ's Smart NOI website at <http://az.gov/webapp/noi/main.do>. Regardless of the method of submittal, the contractor shall provide a copy to the Engineer.

When the approved SWPPP includes the use of Class II seeding as an erosion control measure, seeded areas shall be maintained for 45 calendar days, as specified in the special provisions, and approved by the Engineer before the contractor's NOT can be submitted. Seeding, when used in the SWPPP as an erosion control measure, will not be considered as part of any Landscape Establishment Phase that may be included with the project.

(J) Measurement and Payment:

Measurement and payment for work specified in the SWPPP will be made in accordance with the requirements of Section 810. Erosion control and pollution prevention work specified in the contract which is to be accomplished under any of the other various contract items will be paid for as specified under those items.

If a force account pay item for erosion control is included in the bidding schedule, the contractor may be reimbursed for such additional erosion control items proposed by the contractor but not included with the plans or specifications. Such additional erosion control items must be approved in writing by the Engineer before use. Erosion control items approved by the Engineer will be paid in accordance with Subsection 109.04(D). No measurement or payment will be made for such additional items not approved by the Engineer.

No measurement or payment will be made to the contractor for time spent in preparing, reviewing, and revising the Storm Water Pollution Prevention Plan (SWPPP), including the monitoring plan, or providing other required documentation, the cost being considered as included in the price of contract items. No measurement or payment will be made for inspections, training of personnel, the contractor's erosion control coordinator, or the contractor's pollution prevention practices and requirements, the costs being considered as included in contract items.

Unless otherwise specified, no measurement or payment will be made for maintenance of temporary and permanent erosion control measures, the cost being considered as included in contract items.

104.10 Contractor's Responsibility for Work: of the Standard Specifications is revised to read:

The contractor shall implement the requirements of the Arizona Pollutant Discharge Elimination System (AZPDES) for erosion control due to storm water runoff during construction, as specified above in Subsection 104.09, Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs.

Until final written acceptance of the project by the Engineer, the contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements, or from any other cause, whether arising from the execution or from the non-execution of the work. The contractor shall rebuild, repair, restore and make good all injuries or damages to any portion of the work occasioned by any

of the above causes before final acceptance. No reimbursement shall be made for work necessary due to the contractor's failure to comply with the requirements of the SWPPP.

Except as specifically provided under Subsection 104.04, in case of suspension of work from any cause whatever, the contractor shall be responsible for the project and shall take such precautions as may be necessary to prevent damage to the project and provide for normal drainage. The contractor shall also erect any necessary temporary structures, signs or other facilities. During such period of suspension of work, the contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings and soddings, furnished under its contract and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

(104ENVIR, 03/17/08)

SECTION 104 - SCOPE OF WORK:

104.12 Environmental Analysis: of the Standard Specifications is revised to read:

The contractor shall prepare an environmental analysis for approval by the Engineer, under any of the following conditions:

- (A) If the contractor elects to provide material, in accordance with Section 1001, from a source that involves excavation.
- (B) If the contractor elects to use any site to set up a plant for the crushing or processing of base, surfacing, or concrete materials. The contractor may request an exemption from this requirement to provide an environmental analysis if all of the following conditions apply:
 - (1) the site is exclusively used for the processing of materials,
 - (2) the site will not be used for excavation of borrow material,
 - (3) the site was developed as a processing area on or before January 1, 1999,
 - (4) the site is currently operating as a processing area, and
 - (5) the plant is located within that portion of the site that was disturbed prior to January 1, 1999.
- (C) If the contractor requests that the Engineer approve access to controlled access highway at points other than legally established access points.

The contractor may incorporate an existing environmental analysis approved after January 1, 1999, provided that the analysis is updated as necessary to be in compliance with current regulations and with the contractor's planned activities.

Regulatory changes, specification changes, or other reasons may preclude the approval of a materials source. The contractor acknowledges that the Department may refuse to approve a material source even if the Department had approved the source for other projects.

The environmental analysis shall include all areas of proposed excavation, crushing, processing, and haul roads. For the purposes of Subsection 104.12, a haul road is defined as any road on material excavation, processing, or crushing sites, and any road between the respective site and a public highway that may be used by the contractor.

The contractor shall promptly advise the Engineer that it is preparing the environmental analysis and shall submit it upon completion. The contractor should anticipate needing a minimum of 30 calendar days to prepare the environmental analysis. The contractor shall allow a minimum of 45 calendar days after submittal, or subsequent resubmittal, to the Department for the Department to review the environmental analysis and to consult with the appropriate jurisdictions and/or agencies. At the end of the review period, the Engineer will notify the contractor whether or not the environmental analysis is acceptable.

If the approval of the environmental analysis causes a delay to a controlling activity of the project, the contractor may seek, and the Engineer may grant, an extension of time in accordance with the terms of Subsection 108.08. The time extension shall not exceed 30 working days for a working-day contract, or 45 calendar days for a calendar-day project. The time extension will not be considered unless the contractor can show evidence of due diligence in pursuing the environmental analysis. No time extension will be granted for a fixed completion date contract.

The Environmental analysis shall address all environmental effects, including, but not limited to, the following:

- (1) The location of the proposed source and haul road, and the distance from the source to either an existing highway or an established alignment of a proposed Federal, State or County highway along with vicinity maps, sketches or aerial photographs.
- (2) The ownership of the land.
- (3) The identity and location of nearby lakes, streams, parks, wildlife refuges or other similar protected areas.
- (4) The former use, if known, of the source, and haul road and their existing condition.
- (5) The identification of present and planned future land use, zoning, etc., and an analysis of the compatibility of the removal of materials with such use.
- (6) The anticipated volume of material to be removed; the width, length and depth of the excavation; the length and width of the haul road, and other

pertinent features and the final condition in which the excavated area and haul road will be left, such as sloped sides, topsoil replaced, the area seeded, etc.

- (7) The archaeological survey of the proposed source prepared by a person who meets the Secretary of the Interior's Professional Qualification Standards (48 FR 44716) and possesses a current permit for archaeological survey issued by the Arizona State Museum (ASM). The survey shall be prepared in a State Historic Preservation Office standardized format. The survey shall identify all historic properties within the area of potential effect (APE), as defined by the National Historic Preservation Act (36 CFR 800.4). This includes the materials source, processing area, and the haul road. Additionally, the survey report shall identify the effects of the proposed source on any historic properties within the APE, and recommend measures to avoid, minimize, or mitigate those effects.
- (8) If the proposed source, or haul road will utilize Prime and Unique Farm land or farm land of statewide importance, a description of such remaining land in the vicinity and an evaluation whether such use will precipitate a land use change.
- (9) A description of the visual surroundings and the impact of the removal of materials on the visual setting.
- (10) The effect on access, public facilities and adjacent properties, and mitigation of such effects.
- (11) The relocation of business or residences.
- (12) Procedures to minimize dust in pits and on haul roads and to mitigate the effects of such dust.
- (13) A description of noise receptors and procedures to minimize impacts on these receptors.
- (14) A description of the impact on the quality and quantity of water resulting from the materials operation shall be provided. The potential to introduce pollutants or turbidity to live streams and/or nearby water bodies shall be addressed. Measures to mitigate potential water quality impacts shall be coordinated through the Environmental Protection Agency (EPA) for sites located on tribal land, and the Arizona Department of Environmental Quality (ADEQ) for sites located on non-tribal land.
- (15) A description of the impact on endangered or threatened wildlife and plants and their habitat. The analysis of potential impact to plants and wildlife shall be coordinated through the Arizona Game and Fish Department and U.S. Fish and Wildlife Service. Compliance with the

Arizona Native Plant Law shall be coordinated through the Arizona Commission of Agriculture and Horticulture.

- (16) A discussion of the effects of hauling activities upon local traffic and mitigating measures planned where problems are expected.
- (17) A description of the permits required, such as zoning, health, mining, land use, flood plains (see Section 404 of the Clean Water Act), etc.
- (18) The effect of removing material and/or stockpiling material on stream flow conditions and the potential for adverse impacts on existing or proposed improvements within the flood plain which could result from these activities. Measures to mitigate potential water quality impacts shall be coordinated through the Environmental Protection Agency (EPA) for sites located on tribal land, and the Arizona Department of Environmental Quality (ADEQ) for sites located on non-tribal land.

Guidance in preparing the environmental analysis is available on the Department's Internet Website through the Environmental Planning Group, or by calling Environmental Planning Group at 602-712-7767.

(104MAGDET, 05/03/16)

SECTION 104 SCOPE OF WORK:

104.15(A) General: the first three paragraphs of the Standard Specifications are revised to read:

All new underground utility facilities, including service connections, placed within ADOT right-of-way by the contractor must be magnetically detectable with standard locating instruments. The contractor shall place continuous detectable tracer wire with all those underground utility facilities that lack a continuous and integral metallic component capable of detection by standard locating instruments.

Tracer wire will not be required for power cables and wires, telephonic or electronic communications (other than fiber optic lines), or for landscape irrigation lines smaller than two inches in diameter. For Salt River Valley Water Users Association (S.R.V.W.U.A.) irrigation facilities, no tracer wire will be required if Salt River Project provides their own tracer system.

Tracer wire will be required for non-metallic pipe such as corrugated high density polyethylene plastic pipe (HDPE), steel reinforced high density thermoplastic ribbed pipe, corrugated polypropylene plastic pipe (PP), vitrified clay pipe (VCP), and for polyvinyl chloride pipe (PVC) two inches in diameter and larger. Tracer wire will be required where the metallic component is encased within the pipe, such as reinforced concrete pipe (RCP), rubber gasket reinforced concrete pipe (RGRCP), and steel cylinder concrete pipe.

104.15(B) Materials: the first sentence of the first paragraph of the Standard Specifications is revised to read:

Tracer wire shall be solid copper wire, American Wire Gauge (AWG) No. 12 or larger.

(105PLNS, 10/18/10)

SECTION 105 CONTROL OF WORK:

105.03 Plans and Working Drawings: the thirteenth paragraph of the Standard Specifications is revised to read:

All working drawings or prints shall be 22 inches in height and 34 inches in length. There shall be 1 1/4-inch margins on the left and right sides, and 3/4-inch margins on the top and bottom. A blank space, four inches wide by three inches high, shall be left inside the margin in the lower right hand corner. All drawings shall be made in such a manner that clear and legible copies can be made from them. When half-size copies are required, they shall be provided on standard 11 by 17 inch sheets.

(106SRP, 05/29/08)

SECTION 106 - CONTROL OF MATERIALS:

106.01 Source of Supply and Quality Requirements: of the Standard Specifications is revised to read:

Unless otherwise specified, the contractor shall be responsible for furnishing all water required for construction. Water obtained from sources within the Salt River or Verde River watersheds and administered by Salt River Project, or obtained from Salt River Valley Water Users Association (S.R.V.W.U.A.) delivery canals within the Phoenix metropolitan areas, shall be subject to the following conditions:

For water obtained from rivers, streams, lakes, or other sources within the watershed, the contractor shall execute a Construction Water Exchange Permit. Water obtained from surface water sources or wells in close proximity to a river, stream, or lake located within the watershed may also require a Construction Water Exchange Permit.

For water obtained from S.R.V.W.U.A. canals, the contractor shall contact Salt River Project to determine the most appropriate delivery method and associated permits and costs. As an example, a Permit for Operation of Mobile Tank Trucks shall be required for water pumped into mobile water trucks.

The contractor shall contact Salt River Project at the address shown below to determine whether its anticipated water sources will be subject to Salt River Project regulations and, if necessary, the appropriate requirements, permits, and fees.

Salt River Project
Water Contract Accounting & Data Services SSW302
PO Box 52149
Phoenix, Arizona 85072-2149
(602) 236-2255
(602) 236-3313
Fax (602) 236-5082

No water shall be obtained from sources as specified herein until the contractor has furnished the Engineer with a completely executed copy of the appropriate permits.

(106QCMAT, 05/03/16)

SECTION 106 CONTROL OF MATERIAL:

106.04(A) General: the fourth and fifth paragraphs of the Standard Specifications are revised to read:

The sampling, testing, and acceptance of materials shall be in accordance with the requirements of the specifications, in conjunction with the following:

- The ADOT Materials Testing Manual.
- The ADOT Materials Practice and Procedure Directives Manual.
- Applicable Federal, AASHTO, or ASTM specifications or test designations.
- Applicable specifications or test designations of other nationally recognized organizations.

Unless otherwise specified, whenever a reference is made to an Arizona Test Method or an ADOT Materials Practice and Procedure Directive, it shall mean the test method or practice and procedure directive in effect on the bid opening date.

Any reference to the ADOT Materials Policy and Procedure Directives elsewhere in the contract documents shall be understood to mean ADOT Materials Practice and Procedure Directives.

106.04(B) Contractor Quality Control: the second paragraph of the Standard Specifications is revised to read:

Certain construction items may require additional quality control measures, as specified in Subsection 106.04(C). When so specified, the contractor shall provide all the personnel, equipment, materials, supplies, and facilities necessary to obtain samples and perform the tests listed in the applicable section and as given in Subsection 106.04(C). Specific contractor quality control requirements will be shown in the applicable construction items.

Payment for such additional work shall be in accordance with the Special Provisions, and will be included in Bidding Schedule Item 9240170.

When the specifications do not require specific contractor quality control measures, the provisions given in Section 106.04(C) do not apply. Bid Item 9240170 will not be included in the Bidding Schedule.

106.04(C)(2) Quality Control Laboratory: the first paragraph is revised to read:

All field and laboratory sampling and testing shall be performed by a laboratory or laboratories approved by the Department. The requirements for approval of laboratories are specified in ADOT Materials Policy and Procedure Directive No. 19, "ADOT System for the Evaluation of Testing Laboratories". Approved laboratories, and the test methods for which they are approved to perform, are listed in the "ADOT Directory of Approved Materials Testing Laboratories". Approved test methods listed in the "ADOT Directory of Approved Materials Testing Laboratories" do not include field sampling and testing procedures. When field sampling and testing procedures are performed, the appropriate valid Arizona Technical Testing Institute (ATTI) and/or American Concrete Institute (ACI) certification(s) are required. ADOT Materials Policy and Procedure Directive No. 19, "ADOT System for the Evaluation of Testing Laboratories" and the "ADOT Directory of Approved Materials Testing Laboratories" may be obtained on the internet from the ADOT Materials Quality Assurance Section website.

106.04(C)(6) Weekly Quality Control Reports: of the Standard Specifications is revised to read:

The contractor shall submit Weekly Quality Control Reports to the Engineer. The weekly reports shall be complete and accurate, and shall state the types of work which have been performed during the report period. The report shall also include the process control measures taken to assure quality. The report shall provide sample identification information for materials tested during the report period, including sample number, date sampled, sample location, first and last name of person obtaining sample, and original source of material. The report shall also provide the results for all required tests and any retests, corrective actions, and other information relevant to quality control. The report shall include daily diaries for each day of testing, a weekly summary, the ADOT TRACS number, and the testing laboratory's project identification number.

Except as stated in the following paragraph, the weekly quality control report shall be prepared using standard forms provided by the Department. The standard forms are available on the Department's website at www.azdot.gov. After accessing the Department's website, select "Business", "Engineering and Construction", "Construction and Materials", "Contractor Information", "Forms and Documents", and then "Weekly Quality Control Forms". Except for the daily diaries, all documentation and information required on the forms shall be typed. Daily diaries may be hand-written if acceptable to the Engineer. The weekly report shall be submitted to the Engineer in paper form with a transmittal letter signed by the contractor's quality control manager.

In lieu of using the standard weekly quality control forms available on the Department's website, the contractor or testing laboratory may prepare the weekly report using proprietary or other software, if acceptable to the Engineer, provided that all required information is included, the format is comparable to the Department's standard format, and the report is submitted in paper form with the required transmittal letter.

The report period shall end at midnight of each Friday, and the report shall be submitted to the Engineer no later than 5:00 p.m. of the following Wednesday. The Engineer will verify that the report is timely, complete, and accurate.

Reports that are not submitted by the above-referenced deadline shall be considered delinquent. Reports that are submitted by the above-referenced deadline, but are not complete and accurate, shall also be considered delinquent. In either case monies shall be deducted from the contractor's monthly estimate in accordance with the requirements for Contractor Quality Control, as specified in these special provisions.

(106CERT, 09/14/12)

SECTION 106 CONTROL OF MATERIAL:

106.05 Certificates: of the Standard Specifications is revised to read:

(A) General:

The contractor shall submit to the Engineer an original or copy of either a Certificate of Compliance or a Certificate of Analysis, as required, prior to the use of any materials or manufactured assemblies for which the specifications require that such a certificate be furnished.

Certificates shall be specifically identified as either a "Certificate of Compliance" or a "Certificate of Analysis".

The Engineer may permit the use of certain materials or manufactured assemblies prior to, or without, sampling and testing if accompanied by a Certificate of Compliance or Certificate of Analysis, as herein specified. Materials or manufactured assemblies for which a certificate is furnished may be sampled and tested at any time, and, if found not in conformity with the requirements of the plans and the specifications, will be subject to rejection, whether in place or not.

Certificates of Compliance and Certificates of Analysis shall comply with the requirements specified herein, the ADOT Materials Testing Manual, and applicable ADOT Materials Policy and Procedure Directives.

(B) Certificate of Compliance:

A Certificate of Compliance shall be submitted on the manufacturer's or supplier's official letterhead, and shall contain the following information:

- (1) The current name, address, and phone number of the manufacturer or supplier of the material.
- (2) A description of the material supplied.
- (3) Quantity of material represented by the certificate.
- (4) Means of material identification, such as label, lot number, or marking.
- (5) A statement that the material complies in all respects with the requirements of the cited specifications. Certificates shall state compliance with the cited specification, such as AASHTO M 320, ASTM C 494; or specific table or subsection of the Arizona Department of Transportation Standard Specifications or Special Provisions. Certificates may cite both, if applicable.
- (6) A statement that the individual identified in item seven below has the legal authority to bind the manufacturer or the supplier of the material.
- (7) The name, title, and signature of the responsible individual. The date of the signature shall also be given.

Each of the first six items specified above shall be completed prior to the signing of the certificate as defined in item seven. No certificate will be accepted that has been altered, added to, or changed in any way after the authorized signature has been affixed to the original certificate. However, notations of a clarifying nature, such as project number, contractor, or quantity shipped are acceptable, provided the basic requirements of the certificate are not affected.

A copy or facsimile reproduction of the original certificate will be acceptable; however, the original certificate shall be made available upon request.

(C) Certificate of Analysis:

A Certificate of Analysis shall include all the information required for a Certificate of Compliance and, in addition, shall include the results of all tests required by the specifications.

(106APL, 02/10/12)

SECTION 106 - CONTROL OF MATERIAL:

106.14 **Approved Products List:** of the Standard Specifications is revised to read:

The Approved Products List is a list of products which have been shown to meet the requirements of these Standard Specifications. The Approved Products List is maintained by the Department and updated monthly. Copies of the most current version are available on the internet from the ADOT Research Center, through its Product Evaluation Program.

The contractor shall verify that any products chosen for use from the Approved Products List are selected from the version which was most current at the time of the bid opening.

Unless otherwise specified in the Special Provisions, products not appearing on the Approved Products List at the time of the bid opening may be used if they meet the requirements of the plans and specifications.

When the Special Provisions limit product selection to only those listed on the Approved Products List, other products will not be evaluated or approved.

(106DMAT, 02/15/11)

SECTION 106 - CONTROL OF MATERIALS: of the Standard Specifications is modified to add:

106.15 **Domestic Materials and Products:**

Steel and iron materials and products used on all projects shall comply with the current "Buy America" requirements of 23 CFR 635.410.

All manufacturing processes to produce steel and iron products used on this project shall occur in the United States. Raw materials used in manufacturing the steel and iron products may be foreign or domestic. Steel or iron not meeting these requirements may be used in products on this project provided that the invoiced cost to the contractor for such steel products incorporated into the work does not exceed either one-tenth of one percent of the total (final) contract cost or \$2,500, whichever is greater.

Any process which involves the application of a coating to iron or steel shall occur in the United States. These processes include epoxy coating, galvanizing, painting, or any other coating which protects or enhances the value of covered material.

The requirements specified herein shall only apply to steel and iron products permanently incorporated into the project. "Buy America" provisions do not apply to temporary steel items, such as sheet piling, temporary bridges, steel scaffolding and falsework, or to materials which remain in place at the contractor's convenience.

The contractor shall furnish the Engineer with Certificates of Compliance, conforming to the requirements of Subsection 106.05, which state that steel or iron products incorporated in the project meet the requirements specified. Certificates of Compliance shall also certify that all manufacturing processes to produce steel or iron products, and any application of a coating to iron or steel, occurred in the United States.

Convict-produced materials may not be used unless the materials were produced prior to July 1, 1991 at a prison facility specifically producing convict-made materials for Federal-aid construction projects.

(107PCS, 02/13/17)

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

107.08 **Public Convenience and Safety:** of the Standard Specifications is revised to read:

(A) General:

The contractor shall at all times conduct its work as to insure the least possible obstruction to traffic.

The safety and convenience of the general public and the residents along the highway and the protection of persons and property shall be provided for by the contractor in accordance with the requirements of Subsection 104.04.

The contractor shall abide by OSHA Regulations, including, but not limited to, 29 CFR, Part 1926, and 29 CFR, Part 1910, as well as all applicable standards of the U.S. Environmental Protection Agency (EPA), the Arizona Department of Environmental Quality (ADEQ), and the U.S. Mine Safety and Health Administration (MSHA). The contractor shall maintain a copy of the specified OSHA Standards on the construction site at all times.

The contractor shall furnish and install 72-inch temporary chain link fencing, or approved equal, satisfactory to the Engineer, around all major structure construction areas (i.e., bridges, pumphouses, drop structures, retaining walls, etc.) and around any unattended excavation deeper than four feet, with slopes steeper than 1:2 (V:H). Temporary fencing shall completely enclose the referenced construction activity and shall be secured after normal working hours to prevent unauthorized access. Where called for in the plans, new permanent fencing shall be installed as soon as practicable.

Temporary fence materials which are no longer needed to restrict access to the work area may be utilized in constructing permanent fence. Fence materials, which in the opinion of the Engineer are unacceptable due to either appearance or structural defects, shall be replaced with new materials. No direct payment will be made for furnishing or installing temporary fencing. Permanent fencing will be measured and paid under the appropriate bid items.

Unless otherwise approved in writing by the Engineer, open utility trenches shall be limited to 50 feet in length, except for cast-in-place pipe installations, during non-working hours and shall be covered with steel plate in a manner satisfactory to the Engineer.

(B) Safety Plan:

The contractor shall submit a Safety Plan at the preconstruction conference. The contractor may submit the Safety Plan prior to the preconstruction conference but not until the contract is executed by both the contractor and the Department. The Safety Plan shall specify the procedures the contractor will implement to satisfy OSHA and any state occupational safety guidelines related to the worker, as well as the public, in the construction of excavations, structures and confined air spaces along with all other activities involved in the project. The plan must also address:

- (1) Site-specific safety rules and procedures to deal with the types of risks expected to be encountered on the site;
- (2) Routine inspection of construction sites to ensure compliance with applicable local, state, and federal safety laws and regulations;
- (3) Training of employees in safe practices and procedures;
- (4) Availability of first-aid, medical, and emergency equipment and services at the construction site, including arrangements for emergency transportation; and
- (5) Security procedures to prevent theft, vandalism, and other losses at the construction site.
- (6) Emergency Vehicle Access Plan (EVAP) as detailed herein.

The Safety Plan shall include a list of emergency procedures, phone numbers, and methods of communication for medical facilities, Police, Fire Department, and other emergency services which may become necessary. The contractor shall be responsible for providing First Aid treatment and medical supplies on the project site, in accordance with OSHA 29 CFR, Part 1910, and for producing and maintaining records of any injury-related incidents. The Safety Plan shall include the requirement that all workers must wear OSHA approved hard hats, reflective safety vests or other approved high visibility warning garments, work shoes, and, when appropriate, safety glasses while in construction areas. The Contractor's Project Superintendent or Safety Supervisor shall ensure that visitors comply with the above requirements as appropriate.

The Safety Plan shall include an Emergency Vehicle Access Plan (EVAP). An emergency event is defined as an incident that requires an emergency vehicle to respond.

When an EVAP is included in the project plans, that plan shall govern unless an alternate plan, acceptable to the Engineer, is submitted by the contractor and accepted in writing by the Engineer. If the contractor uses the EVAP provided by the Department, it shall be

submitted as part of the Safety Plan. If no EVAP is provided or if the contractor desires to deviate from the EVAP provided in the plans, the contractor shall submit it to the Engineer for approval as part of the Safety Plan. The contractor's EVAP shall be prepared by an individual meeting the qualifications described in Subsection 701-1 of the specifications. Regardless of whether an EVAP is provided by the Department or by the contractor, the EVAP shall be included in the Safety Plan and incorporated into the traffic control plans.

The EVAP shall describe those measures to be implemented during construction to ensure that emergency vehicles have access, at all times and for all phases of construction, within and through the construction site until the project is substantially complete. The EVAP shall delineate or describe the manner in which access is available, including traffic control devices or alternate emergency vehicle access routes.

The contractor shall communicate the EVAP, and any updates to the plan, to the Engineer for dissemination to area law enforcement and emergency responders.

The contractor shall implement and maintain the project's EVAP until substantial completion. The contractor shall ensure that all personnel, and those of any subcontractors employed by the contractor, are familiar with the plan and their responsibilities for its use.

In the Safety Plan, the contractor shall designate a competent person as Safety Supervisor to be responsible for implementation of the Safety Plan throughout the contract period. The Safety Supervisor shall be capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and have authority to take prompt corrective measures to mitigate or eliminate them. The Safety Supervisor shall also conduct safety meetings, oversee and maintain safe jobsite conditions, and ensure that emergency procedures, phone numbers, and all applicable OSHA notification posters are conspicuously placed in all work areas.

The Safety Supervisor shall maintain records demonstrating that all workers have sufficient experience to operate their equipment, and have been instructed in the proper operation of the equipment.

The Safety Supervisor shall furnish evidence that crane operators have been instructed in accordance with the requirements of OSHA 29 CFR, Part 1926.550, Subpart N, and 1926.955, Subpart V.

The Safety Plan submitted by the contractor shall include proposed methods to prevent unauthorized persons from gaining access to the work areas.

The Engineer will review the Safety Plan and will either approve the Safety Plan or identify any additional items that need to be included no more than 10 working days after submittal. The contractor shall then modify the Safety Plan, if necessary, for re-submittal to the Engineer within five working days. The contractor shall not commence work until the Safety Plan has been approved, unless authorized by the Engineer.

(107INS, 07/10/12)

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

107.14 Insurance: the first paragraph of the Standard Specifications is revised to read:

Prior to the execution of the contract, the contractor shall file with the Department a certificate or certificates of insurance evidencing insurance as required by this contract has been placed with an insurer authorized to transact insurance in the State of Arizona pursuant to ARS Title 20, Chapter 2, Article 1, or with a surplus lines insurer approved and identified by the Director of the Department of Insurance pursuant to ARS Title 20, Chapter 2, Article 5.

All insurers shall have an "A.M. Best" rating of A- VII or better.

The State of Arizona in no way warrants that the above-required minimum insurer rating is sufficient to protect the contractor from potential insurer insolvency.

The contractor's submission of the required insurance certificates constitutes a representation to the Department that:

1. The contractor has provided a copy of these specifications to every broker who has obtained or filed a certificate of insurance and has communicated the necessity of compliance with these specifications to the broker; and
2. To the best of the contractor's knowledge, each certificate of insurance and each insurance coverage meets the requirements of these specifications.

The contractor shall provide the Department with certificates of insurance (ACORD form or equivalent acceptable to the State of Arizona) as required by the contract. The certificates for each insurance policy shall be signed by a person authorized by that insurer.

(107SWRSP, 01/28/03)

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

107.15 Contractor's Responsibility for Utility Property and Services: of the Standard Specifications is revised to read:

(A) General:

The contractor's attention is directed to the requirements of Arizona Revised Statutes Section 40-360.21 through .29 requiring all parties excavating in public streets, alleys or utility easements to first secure the location of all underground facilities in the vicinity of the excavation.

The contractor shall review copies of existing ADOT permits, subject to availability, prior to start of construction, to assist the contractor in determining the location of any utilities, which the Department may have record of and which are not otherwise shown in the contract documents. Utility locations obtained from the Department are for information only and shall not relieve the contractor of responsibility for identifying, locating and protecting any existing utility lines. Copies of permits may be obtained from the ADOT Area Permit Supervisor in the District in which a project is located.

The contractor shall contact the owners of the various utilities prior to the start of construction and shall obtain from them any information pertaining to existing utilities that will either supplement information shown on the project plans or will correct any such information that may be incorrect. The contractor shall furnish the Engineer with evidence that the contractor has contacted the utility companies. Such evidence shall be submitted at the preconstruction conference, and shall include a copy of the information received from each utility as a result of such contacts.

If the contractor learns from either the owner of the utility or from any other source of the existence and location of properties of railway, telegraph, telephone, fiber optics cable, water, sewer, septic tanks or systems, electric, gas and cable television companies either omitted from or shown incorrectly on the project plans, the contractor shall immediately notify the Engineer and shall not disturb the utilities. Relocation or adjustment of such utilities, if deemed necessary, will be either performed by others or shall be performed by the contractor in accordance with the provisions of Subsection 104.02.

The contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication of rearrangement work may be reduced to a minimum and that services rendered by these parties will not be unnecessarily interrupted.

Temporary or permanent relocation or adjustment of any utility line or service connection desired by the contractor for its convenience shall be its responsibility. The contractor shall obtain the approval of both the Engineer and the utility company and upon approval shall make all necessary arrangements with the utility company and shall bear all costs in connection with such relocation or adjustment. The contractor shall also submit a Sewer Discharge Prevention Plan, as specified in Subsection 107.15(C)(1), describing each anticipated relocation or adjustment involving existing sanitary sewer lines. No work on a particular facility shall begin until all approvals for that facility have been received.

(B) Contractor Qualifications for Water and Sewer Lines:

Breakage of active sanitary sewer lines may result in the potential spread of disease, contamination of the site and any adjacent bodies of water, and other hazards to the public. Substantial cleanup costs may be associated with such breakage, as well as possible major civil and/or criminal penalties. Therefore, the Engineer will closely consider the qualifications of any personnel proposed by the contractor to oversee or perform work involving active sanitary sewer lines. The contractor shall not assume that the personnel assigned to perform such work will be acceptable to the Department merely because they meet the experience requirements listed herein.

The contractor, or the subcontracting firm assigned to perform the water and sewer work, shall have a minimum of five years of experience in the installation and construction of underground large diameter (18-inch or above) water and sewer improvements.

In addition, the key personnel assigned by the contractor to perform any work on water or sewer lines, whether from the prime contractor or a subcontracting firm, shall also have at least five years of experience in the installation and construction of underground large diameter (18-inch or above) water and sewer improvements. A minimum of two such people shall be designated by the contractor. The designated personnel may have the title of foreman or superintendent; however, at least one of these people shall be present at all times at the location of any work being performed at or near an active sanitary sewer line.

For both the firm and the key personnel, the experience shall include working with and around water and sewer utility lines that are in service. The contractor shall submit the following documentation to the Engineer for review and approval:

- (1) A list indicating that the designated key project personnel have at least five years of applicable experience, as specified above. The list shall be accompanied with resumes for each of the key people. The resumes shall include the following information, and demonstrate compliance with the specified requirements:
 - (a) Detailed relevant experience for a minimum of two projects, including project description, date of work, actual work performed by the individual, and references (a minimum of one for each project).
 - (b) Level of applicable formal training.
 - (c) Number of years of relevant experience in performing like construction.
- (2) A list of water and sewer construction projects completed by the firm performing the water or sewer work, as specified above, indicating a minimum of five years of applicable experience. Include the dates of work, type of work, description of the project, amount of work performed by the contractor/subcontractor, and the name and phone number of a contact with the owning company or agency for which the work was completed.
- (3) 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.
- (4) A list of all violations and citations in the past five years of applicable water and wastewater laws and statutes for both the prime contractor and the subcontractor responsible for the utility work.

The contractor shall submit this documentation to the Engineer for approval at least 21 calendar days prior to any anticipated work involving active sanitary sewer lines, whether new or existing.

(C) Protection of Existing Utility Lines:

At points where the contractor's operations are adjacent to right-of-way properties or easements for railway, telegraph, telephone, water, sewer, electric, gas and cable television companies, hereinafter referred to as utilities, or are adjacent to other facilities and property, damage to which might result in considerable expense, loss, inconvenience, injury or death, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

The exact locations and depths of all utilities that are underground or the location of those on or near the surface of the ground which are not readily visible shall be determined. Such locations shall be marked in such a manner so that all workmen or equipment operators will be thoroughly apprised of their existence and location. It will be the contractor's responsibility to see that every effort possible has been made to acquaint those actually involved in working near utilities not only with the type, size, location and depth, but with the consequences that might follow any disturbance. No trenching or similar operation shall be commenced until the Engineer is satisfied that every possible effort has been taken by the contractor to protect utilities.

The contractor shall 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.

(1) Sewage Discharge Prevention Plan (SDPP):

For any work which may impact active sanitary sewer pipes, whether new or existing, the contractor shall prepare a Sewage Discharge Prevention Plan (SDPP) which shall describe the contractor's procedures and work plan for such lines. The Sewage Discharge Prevention Plan shall also describe the precautions that the contractor shall take to prevent unplanned breakage or spills, and the procedure which the contractor shall follow if breakage or a spill occurs.

The contractor's method of work described in the SDPP shall ensure that any work done in or near any active sewer line is performed in a safe and controlled manner resulting in no accidental discharges. As a minimum, the contractor's equipment and procedures shall be appropriate for the intended work, and shall conform to standard industry practices.

The SDPP shall include information, as specified below, for all portions of the project which involve the following work activities, and for any other element of work which may involve contact with an active sanitary sewer line:

- Interrupt, divert, relocate, plug, or abandon a sewer line or service connection, or
- Brace, or tie into a sewer line or service connection.

Construction activities in the vicinity of active sanitary sewer lines or service connections shall also be included in the SDPP if any of the following conditions exist:

- (1) Any work crossing beneath the pipe, at any angle, regardless of vertical separation.
- (2) Any work crossing over the pipe, at any angle, within two feet of the top of pipe.
- (3) Work located parallel to the pipe within the following areas:
 - (a) For the area from the bottom of the pipe to two feet above the top of the pipe, any work within two feet horizontally of the pipe wall.
 - (b) For the area below the bottom of the pipe, any work located below an imaginary line beginning at the pipe springline and progressing downward at a slope of 1.5 feet vertically to 1.0 feet horizontally.

The contractor's Sewage Discharge Prevention Plan shall address each of the items tabulated below, as applicable, for every location where construction activity will involve an active sanitary sewer line.

(2) Required Elements of the Sewage Discharge Prevention Plan:

The following elements shall be addressed in the SDPP:

- (a) Describe the proposed work in general, including the reasons for the work, scope, objectives, locations, dates, and estimated times the work will be conducted. Include project plan sheets detailing the proposed work, and indicating the peak flowrates of active sewer lines, determined as specified.
- (b) For all existing sanitary sewer pipes, determine whether the lines are active or abandoned, and the peak flowrates of lines in service, as provided by the owner of the utility.
- (c) List the key personnel (crew foreman, superintendent, and manager) and field office that are proposed to perform the work (include phone numbers).
- (d) Describe the work in step-by-step detail for each location, including excavation plans and how both the new and existing structures and utilities will be identified and protected.
- (e) Provide a detailed listing of any hardware, fittings, pipe plugs, flex couplings, 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.

- (f) List all 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.
- (g) List all equipment to be used in the event of an unplanned release and specify how the equipment will be used. The locations of standby pumps shall be specified in this item. The plan shall indicate that all standby equipment to be used in the event of an unplanned discharge can be delivered to the site and put into service within two hours of identification of any unplanned flow.
- (h) List the safety equipment to be used, and describe any unique safety procedures. Cite the applicable OSHA standards covering the work.
- (i) Describe any contingency plans the contractor will implement in the event of unplanned releases and/or damage to existing facilities. List all personnel and subcontractors that will be responsible for responding to unplanned releases or damaged lines. Provide qualifications for all such personnel and subcontractors, including education, formal training, and relevant experience.
- (j) Describe how the public will be protected during the work, and include or cite any applicable traffic control plans.
- (k) Describe the quality control procedures that will be used in the field.
- (l) Discuss how temporary plugs or flow control devices will be secured, monitored, and removed.

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

The contractor shall modify the SDPP as necessary throughout the project to include any new or revised information relevant to the items listed above. The contractor shall resubmit the revised SDPP to the Engineer for approval in each case.

(3) Sewage Discharge Prevention Plan Approval:

The SDPP shall be submitted to the Engineer at least 21 calendar days before any work involving an active sewer line is to be done. The Engineer will review the plan, solicit comments from the owner/operator of the sewer line, and return the plan to the contractor within 14 calendar days from original submittal.

No work involving active sanitary sewer lines shall be done until a final SDPP meeting all the requirements specified in Subsection 107.15(C)(2) has been approved by the Engineer.

Approval of the contractor's Sewage Discharge Prevention Plans, personnel, or construction methods and operation shall not relieve the contractor from its responsibility to

safely perform the work included in this contract, nor from its liability for damage resulting, either directly or indirectly, from its work performed under this contract.

(D) Service Connections:

(1) General:

In the event of interruption to water, sewer, or utility services as a result of accidental breakage or as a result of lines being exposed or unsupported, the contractor shall promptly notify the proper authority and shall cooperate with the said authority in the restoration of service. When service is interrupted, repair work shall be continuous until the service is restored. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

(2) Unidentified Water and Sewer Connections:

The contractor shall protect unidentified, undamaged water or sewer service connections encountered during excavation. The contractor shall immediately notify the Engineer when an unidentified service connection is encountered.

The contractor shall immediately repair unidentified water or sewer service connections that are damaged during excavation. Any damaged service connections shall be reported to the Engineer, including all remedial actions taken.

(E) Repairing Damaged Lines:

When the operations of the contractor result in damage to any utility line or service connection, the location of which has been brought to the contractor's attention, the contractor shall assume full responsibility for such damage.

Should an unplanned breakage occur in an active sewer line as a result of the contractor's operations, the contractor shall immediately notify the Engineer, and begin repairs to halt any flows and restore normal service, in accordance with the procedures described in the approved Sewage Discharge Prevention Plan. The contractor shall also immediately notify the affected utility company and the appropriate regulatory agencies. The contractor shall be responsible for repairing the damaged pipe, restoring any interruptions in service, and cleaning up the affected areas within 24 hours of the beginning of the spill. Sewage discharge damage assessments, as specified in Subsection 107.15(F), will be charged to the contractor for any unplanned breakage which results in a discharge.

The contractor shall be responsible to repair any breakage, in accordance with requirements of the broken line's owner/operator, and clean up the site per applicable codes and regulations of the Environmental Protection Agency, OSHA, Arizona Department of Environmental Quality (ADEQ), and all other agencies' specifications, at no additional cost to the Department.

(F) Sewage Discharge Damage Assessments:

The Department will assess liquidated damages in accordance with the Table 1 below for each 24-hour period, or portion thereof, for each unplanned breakage that occurs in an active sanitary sewer line as a result of the contractor's operation. The rate of liquidated damages assessed is based on the type and quantity of effluent discharged as determined by the Engineer.

These liquidated damages do not relieve the contractor from any of its responsibilities under the contract, including any liquidated damages that may be assessed under Subsection 108.09 for late completion of the project.

Liquidated damages assessed by the Department will be independent of any penalties imposed by others.

The contractor acknowledges that Regulatory agencies may assess or impose civil or criminal penalties on the contractor resulting from sewer discharges.

The Department will not be responsible for any civil or criminal penalties, fines, damages, or other charges imposed on the contractor by any regulatory agency or court for sewage discharges that are a result, directly or indirectly, of the contractor's work performed under this contract.

Table 1		
Liquidated Damages		
(each 24 hour period, or portion thereof)		
Volume of Discharge	Raw Sewage or Industrial Wastewater	Treated Effluent
Less than 10,000 gallons	\$5,000.00	\$1,000.00
10,000-99,999 gallons	\$10,000.00	\$2,000.00
100,000-1 million gallons	\$25,000.00	\$3,000.00
Greater than 1 million gallons	\$40,000.00	\$5,000.00

Liquidated damages shall be assessed for each 24 hour period, or portion thereof, until the contractor has completed all of the following tasks:

- (A) Stopped the discharge.
- (B) Repaired the damaged pipe.
- (C) Restored normal service.
- (D) Fully cleaned and disinfected the site to the satisfaction of the Engineer.

REDUCTION OF LIQUIDATED DAMAGES: Upon completion of tasks A, B, and C above, and prior to completion of Task D, the liquidated damages assessed for the current 24-hour period shall be at the rate shown in Table 1. However, for each subsequent 24-hour period, the assessment will be one half of the rate shown in Table 1.

Damages will continue at the reduced rate until the site has been fully cleaned and disinfected to the satisfaction of the Engineer.

As an example, the amounts assessed each 24-hour period for an unplanned discharge of 20,000 gallons of raw sewage, in which the contractor completes tasks A, B, and C within the second 24-hour period but does not complete full cleanup until the third 24-hour period, will be as follows:

First 24-hour period:	\$10,000.00
Second 24-hour period:	\$10,000.00
Third 24-hour period:	\$5,000.00

For this example, the total liquidated damage assessment will be \$25,000.00 (\$10,000 + \$10,000 + \$5,000).

(107UTIL, 11/01/16)

SECTION 107 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

107.15 Contractor's Responsibility for Utility Property and Services: of the Standard Specifications is modified to add:

The contractor shall be ADOT's underground utility field locator, and perform all requirements as prescribed in A.R.S. 40-360.21 through .29, for all underground facilities that have been installed by the contractor on the current project, until the project is accepted by ADOT.

At least two working days prior but no more than 15 working days prior to commencing excavation, the contractor shall contact ARIZONA 811, between the hours of 6:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, for information relative to the location of buried utilities. The contractor can call 811 from anywhere in Arizona or can contact ARIZONA 811 at the number below:

Projects In Maricopa County

(602) 263-1100

Contactors can also create and manage utility locate tickets online by using the Arizona 811 E-Stake tool at www.Arizona811.com.

Copies of existing ADOT permits, subject to availability, may be obtained from the ADOT Area Permit Supervisor as listed below:

CENTRAL DISTRICT

(602) 712-7522 2140 W. Hilton Avenue
(602) 712-6954 Phoenix, AZ 85009

The following agency and utility companies have facilities in the area but are not anticipated to be in conflict:

**City of El Mirage
Bryce Christo
10000 N El Mirage Road
El Mirage, AZ 85335
(623) 876-2974**

The City of El Mirage has existing water lines, water valves, water meters and fire hydrants within the project limits and shall be protected in place.

A 6-inch water line, valves, meters and fire hydrants are located behind the sidewalk adjacent to the right-of-way line along the frontage road between Greenway Road and the Burlington Northern Santa Fe (BNSF) railroad spur.

A 9-inch water line and water valves are in the road pavement adjacent to the west curb from Poppy Street to the end of the project at El Frio Street.

**APS
Bobby Garza
P.O. Box 53933 Mail Sta. 3162
Phoenix, AZ 85072
(602) 371-7989**

APS has underground power lines within the project limits and shall be protected in place.

There are 2½ -inch electrical conduits from Acoma Drive to just north of the railroad spur that is a primary feed to the residential community. The conduits are located under the road pavement adjacent to the west curb.

An overhead power line crosses the frontage road and Grand Avenue just north of the railroad spur. The overhead power line and poles will not be in conflict with the proposed improvements. Between the BNSF railroad spur and Alto Street, the existing street lights are served by overhead power lines from the west which will not be in conflict with the proposed improvements.

A 2½ -inch electrical conduit that serves the existing street lights is located behind the sidewalk between Greenway Road and north of the railroad spur. The existing street lights and conduit will be replaced with new street lights and conduit.

From Alto Street to El Frio Street, the existing 2½-inch conduit for the street lights is located under the sidewalk or under the road pavement adjacent to the west curb. The existing conduit and street lights will be replaced with new street lights and conduit.

**Cox Communications
Alonso Hurtado
1601 South Plaza Way
Flagstaff, AZ 86001
(623) 484-7244**

Cox has underground fiber optic lines between Greenway Road and Acoma Drive and shall be protected in place. The fiber optic lines are located under the road pavement adjacent to the west curb.

**Century Link
Michael Vespucci 5025 N. Black Canyon Hwy,
Phoenix, AZ 85015
(602) 630-1429**

Century Link has underground telephone lines, fiber optic duct bank and above ground pedestals within the project limits and shall be protected in place.

The fiber optic duct bank contains 8 conduits and extends the entire length of project from Greenway Road to El Frio Street. The duct bank is generally located under or behind the sidewalk, and varies in depth between three to four feet deep.

There also underground telephone lines and pedestals located adjacent to the west right-of-way line within the project limits.

**Southwest Gas
Yvonne Aguirre
9 South 43rd Avenue,
Phoenix, AZ 85009
(602) 484-5338**

Southwest Gas (SWG) has underground gas lines within the project limits and shall be protected in place. The gas lines are not continuous through the project limits and are only limited to short segments along the frontage road.

From Luna Street to El Frio Street, the gas line is located behind the sidewalk adjacent to the right-of-way line.

There is a segment of gas line along the south side of Greenway Road just outside the project limits.

The following agency and utility company have facilities in conflict with the proposed construction. The contractor shall relocate the utilities as part of this project, and in accordance with the specifications on the plans and these special provisions:

**City of El Mirage
Bryce Christo
10000 N El Mirage Road
El Mirage, AZ 85335
(623) 876-2974**

The City of El Mirage has the one (1) manhole, one (1) water meter box, and twenty-one (21) frame and cover valve boxes as shown in the project plans that will have to be reset to the final finish grade by the contractor. The contractor shall contact the City and arrange for the City inspector to inspect the work.

**Century Link
Michael Vespucci
5025 N. Black Canyon Hwy,
Phoenix, AZ 85015
(602) 630-1429**

Century Link has three (3) existing manholes as shown in the project plans that will have to be adjusted. The contractor will reset the frame and cover to the final finish grade. The contractor shall contact Lendell Harvey at (602) 670-6320 to coordinate the work and arrange for Century Link inspector to inspect the work.

The following railroad has a facility in the area, and conflicts will be mitigated during construction.

**BNSF Railway Company
Mr. Jason Sanchez
740 E. Carnegie Drive
San Bernardino, CA 92408
(909) 386-4474
Jason.Sanchez@bnsf.com**

BNSF owns a spur crossing the US60 Frontage Road, at approximately STA 133+74, between Greenway Ave. and Thunderbird Rd. The project will reconstruct full depth pavement section up to match existing concrete slab railroad spur crossing the frontage road. The project does not anticipate any additional impact on any other railroad equipment or features.

The Contractor will be required to obtain a BNSF's right-of-entry-permit, prior to commencing this work, through the execution of an "APPLICATION FOR ROADWAY SURFACING/RESURFACING." This application may be obtained from the BNSF homepage at:

<http://www.bnsf.com/in-the-community/faqs.html>

See Appendix B for a sample Temporary Occupancy Permit (TOP) for roadway surfacing/resurfacing.

It shall be the contractor's responsibility to determine the exact location of the utilities prior to any construction operations and to notify the above mentioned utility companies at least two (2) working days prior to commencing any work on the project.

(107FINA, 09/19/12)

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

107.19 Federal Immigration and Nationality Act: of the Standard Specifications is revised to read:

(A) General:

The contractor and all subcontractors shall comply with all federal, state and local immigration laws and regulations, as set forth in Arizona Executive Order 2005-30, relating to the immigration status of their employees who perform services on the contract during the duration of the contract. The State shall retain the right to perform random audits of contractor and subcontractor records or to inspect papers of any employee thereof to ensure compliance.

The contractor shall include the provisions of Subsection 107.19 in all its subcontracts.

In addition, the contractor shall require that all subcontractors comply with the provisions of Subsection 107.19, monitor such subcontractor compliance, and assist the Department in any compliance verification regarding any subcontractor.

(B) Compliance Requirements for A.R.S. § 41-4401, Government Procurement, E-Verify Requirement; Sanctions:

By submission of a bid, the contractor warrants that the contractor and all proposed subcontractors are and shall remain in compliance with:

- (1) All federal, state and local immigration laws and regulations relating to the immigration status of their employees who perform services on the contract, and
- (2) A.R.S. Section 23-214, Subsection A (That subsection reads: "After December 31, 2007, every employer, after hiring an employee, shall verify the employment eligibility of the employee through the E-Verify program.").

A breach of a warranty regarding compliance with immigration laws and regulations shall be deemed a material breach of the contract, and the contractor and subcontractors are subject to sanctions specified in Subsection 107.19(D).

Failure to comply with a State audit process to verify the employment records of contractors and subcontractors shall be deemed a material breach of the contract, and the contractor and subcontractors are subject to sanctions specified in Subsection 107.19(D).

(C) Compliance Verification:

The State may, at any time and at its sole discretion, require evidence of compliance from the contractor or subcontractor.

Should the State request evidence of compliance, the contractor shall complete and return the State Contractor Employment Record Verification Form and Employee Verification Worksheet, provided by the Department, no later than 21 days from receipt of the request for such information.

Listing of the compliance verification procedure specified above does not preclude the Department from utilizing other means to determine compliance.

The State retains the legal right to inspect the papers of any employee who works on the contract to ensure that the contractor or subcontractor is complying with the warranty specified in Subsection 107.19(B).

(D) Sanctions for Non-Compliance:

For purposes of this paragraph, non-compliance refers to either the contractor's or subcontractor's failure to follow immigration laws or to the contractor's failure to provide records when requested. Failure to comply with the immigration laws or to submit proof of compliance constitutes a material breach of contract. At a minimum, the Department will reduce the contractor's compensation by \$10,000 for the initial instance of non-compliance by the contractor or a subcontractor. If the same contractor or subcontractor is in non-compliance within two years from the initial non-compliance, the contractor's compensation will be reduced by a minimum of \$50,000 for each instance of non-compliance. The third instance by the same contractor or subcontractor within a two-year period may result, in addition to the minimum \$50,000 reduction in compensation, in removal of the offending contractor or subcontractor, suspension of work in whole or in part or, in the case of a third violation by the contractor, termination of the contract for default.

In addition, if a contractor is in non-compliance three times within a two-year period, the Department will revoke the contractor's prequalification for a minimum of one year. Subcontractors and suppliers who are in non-compliance three times within a two-year period will be prohibited from participating in Department contracts for a minimum of one year.

Subcontractors who are in non-compliance three times within a two-year period, and who are prequalified with the Department as prime contractors, will also have such prequalifications revoked for a minimum of one year.

After the minimum one-year suspension, contractors, subcontractors, and suppliers may be considered eligible to participate in Department contracts, but only after successful demonstration, to the satisfaction of the Department, that their hiring practices comply with the requirements specified herein. If considered eligible, contractors shall be required to re-apply for prequalification and be accepted prior to bidding on Department contracts. Subcontractors interested in bidding on Department contracts as prime contractors shall also be required to re-apply for prequalification and be accepted prior to bidding. For purposes of considering suspension: (1) non-compliance by a subcontractor does not count

as a violation by the contractor, and (2) the Department will count instances of non-compliance on other Department contracts.

The sanctions described herein are the minimum sanctions; in case of major violations the Department reserves the right to impose any sanctions up to and including termination, revocation of prequalification, and prohibition from participation in Department contracts, regardless of the number of instances of non-compliance.

Contractors, subcontractors, and suppliers may appeal the sanctions to the State Engineer. That appeal must be in writing and personally delivered or sent by certified mail, return receipt requested, to the State Engineer. The appeal must be received by the State Engineer no later than seven calendar days after the Department's determination. The State Engineer shall promptly consider any appeals and notify the interested party of the State Engineer's findings and decision. The State Engineer's decision shall be considered administratively final.

Any delay resulting from a compliance verification or a sanction under this subsection is a non-excusable delay. The contractor is not entitled to any compensation or extension of time for any delays or additional costs resulting from a compliance verification or a sanction under subsection 107.19.

An example of the minimum sanctions under this subsection is presented in the following table:

Offense by:			Minimum Reduction in Compensation
Contractor	Subcontractor A	Subcontractor B	
First			\$10,000
	First		\$10,000
	Second		\$50,000
		First	\$10,000
	Third		\$50,000 *
* Will, in addition, result in removal of the subcontractor, prohibition from participating in Department contracts, and revocation of any Department prequalifications that the subcontractor may have obtained.			

(108SUBLT, 02/22/16)

SECTION 108 PROSECUTION AND PROGRESS:

108.01 Subletting of Contract: the fifth paragraph of the Standard Specifications is revised to read:

The Department may also refuse to approve any entity as a subcontractor or supplier for any of the reasons for which it could refuse to allow an entity to submit a bid, suspend the entity from bidding, or declare the entity non-responsible.

108.01 Subletting of Contract: the sixth paragraph of the Standard Specifications is modified to add:

- (G) Verification that an alternative dispute resolution process to resolve payment and prompt payment disputes is included in each subcontract. The alternative dispute resolution process shall include a means of prompt escalation beyond the project level and provide the opportunity to hire a mediator.

108.01 Subletting of Contract: the seventh paragraph of the Standard Specifications is revised to read:

The Engineer will not consent to subletting of any portion of the contract until:

- (a) The Engineer receives a copy of the subcontract or lower tier subcontract, and
- (b) The AZUTRACS Registration Number for the subcontractor has been provided.

The contractor's schedule shall allow seven calendar days for the Department's subcontract review of each subcontract.

The Engineer's consent shall in no way be construed to be an endorsement of the subcontractor or its ability to complete the work in a satisfactory manner.

If a subcontractor, of any tier, begins work on the contract prior to the contractor submitting the required documentation and receiving consent from the Engineer, the Department will withhold \$1,000 from monies due or becoming due the contractor as liquidated damages. The liquidated damages will be withheld for each subcontractor, of any tier, that starts work without the consent of the Engineer. These liquidated damages shall be in addition to all other retention or liquidated damages provided for elsewhere in the contract.

If a subcontractor, of any tier, is found working on the project without an approved contract the Engineer will immediately stop work on the subcontract. Work shall not resume until all required documentation is submitted and approved by the Engineer. The contractor shall not be entitled to additional compensation or an extension of contract time for any delays to the work because of the contractor's failure to submit the required documentation.

(108PRCN, 05/03/16)

SECTION 108 PROSECUTION AND PROGRESS:

108.03 Preconstruction Conference: the seventh paragraph of the Standard Specifications is revised to read:

The contractor shall submit a traffic control plan in accordance with Subsection 701-1. The contractor shall designate an employee who is competent and experienced in traffic control

to implement and monitor the traffic control plan. The qualifications of the designated employee must be satisfactory to the Engineer. Such designated employee shall have successfully completed a recognized traffic control supervisor training program. The traffic control supervisor training provided by the American Traffic Safety Services Association (A.T.S.S.A.) or the International Municipal Signal Association (IMSA) shall be acceptable. Training through other programs must be approved in advance by the Engineer. The contractor shall submit proof that the proposed individual has completed an approved training program at the preconstruction conference. The training shall be current, and must be valid throughout the duration of the project. In order to remain current with the Department, the traffic control supervisor training shall be completed or renewed every four years.

108.03 **Preconstruction Conference:** the fifth paragraph of the Standard Specifications is hereby deleted.

(108TIME, 10/12/01)

SECTION 108 - PROSECUTION AND PROGRESS:

108.08 **Determination and Extension of Contract Time:** the first paragraph of the Standard Specifications is revised to read:

Construction Phase:

The time allowed for the completion of the work included in the Construction Phase of the contract will be 300 calendar days.

Landscape Establishment Phase:

The time allowed for the completion of the work included in the Landscape Establishment Phase of the contract will be 180 calendar days.

The total of the time allowed for the Construction Phase plus the Landscape Establishment Phase will be known as the "Contract Time."

(108FCWT,07/01/14)

SECTION 108 - PROSECUTION AND PROGRESS:

108.09 Failure to Complete the Work on Time: the Schedule of Liquidated Damages table of the Standard Specifications is revised to read:

SCHEDULE OF LIQUIDATED DAMAGES			
Original Contract Amount		Liquidated Damages Per Day	
From More Than:	To and Including:	Calendar Day or Fixed Date:	Working Day:
\$ 0	\$ 100,000	\$ 430	\$ 600
100,000	500,000	640	900
500,000	1,000,000	1,000	1,400
1,000,000	2,000,000	1,290	1,800
2,000,000	5,000,000	1,860	2,600
5,000,000	10,000,000	2,710	3,800
10,000,000	20,000,000	2,790	3,900
20,000,000	30,000,000	3,570	5,000
30,000,000	60,000,000	5,500	7,700
60,000,000	90,000,000	9,430	13,200
90,000,000	-----	9,430	13,200

(109FORCE, 02/20/08)

SECTION 109 - MEASUREMENT AND PAYMENT:

109.04(D)(3)(a) Rental Rates (Without Operators): of the Standard Specifications is modified to add:

The Rental Rate Blue Book adjustment factor (F) will be 0.933.

(109PAY, 06/09/16)

SECTION 109 MEASUREMENT AND PAYMENT:

109.06(A) Partial Payments: the first paragraph of the Standard Specifications is revised to read:

If satisfactory progress is being made, the contractor will receive a payment each month based on the amount of work completed during the preceding month. The Department will prepare a draft monthly estimate for review by the contractor. The contractor shall work with the Engineer to finalize the monthly estimate. When the Engineer and the contractor have reached agreement, the final monthly estimate will be prepared and signed by the contractor and the Engineer. The contractor's signature constitutes a certification that the

work was satisfactorily performed, meets the specifications, and the quantities reported are accurate regardless of whether the work was performed by the contractor or a subcontractor. The Engineer will submit signed monthly estimate for payment.

Except as herein provided, the Department will not retain monies from the monthly payments.

109.06(B) Subcontractor Payments: of the Standard Specifications is revised to read:

(1) Retention:

If the prime contract does not provide for retention, the contractor and each subcontractor of any tier shall not withhold retention on any subcontract. If the prime contract provides for retention, the prime contractor and each subcontractor of any tier shall not retain a higher percentage than the Department may retain under the prime contract.

(2) No Set-offs Arising from Other Contracts:

If a subcontractor is performing work on multiple contracts for the same contractor or subcontractor of any tier, the contractor or subcontractor of any tier shall not withhold or reduce payment from its subcontractors on the contract because of disputes or claims on another contract.

(3) Partial Payment:

The contractor and each subcontractor of any tier shall make prompt partial payments to its subcontractors within seven days of receipt of payment from the Department. Notwithstanding any provision of Arizona Revised Statutes Section 28-6924, the parties may not agree otherwise.

(4) Final Payment:

The contractor and each subcontractor of any tier shall make prompt final payment to each of its subcontractors. The contractor and each subcontractor of any tier shall pay all monies, including retention, due to its subcontractor within seven days of receipt of payment. Notwithstanding any provision of Arizona Revised Statutes Section 28-6924, the parties may not agree otherwise.

(5) Payment Reporting and Sanctions:

For the purposes of this subsection "Reportable Contracts" means any subcontract, of any tier, DBE or non-DBE, by which work shall be performed on behalf of the contractor and any contract of any tier with a DBE material supplier.

The requirements of this subsection apply to all Reportable Contracts.

Payment Reporting for all Reportable Contracts shall be done through the Department's web-based DBE System. The DBE System can be accessed from the Department's BECO

website. No later than 15 calendar days after the preconstruction conference, the contractor shall log into the Department's web-based DBE System and enter or verify the name, contact information, and subcontract amounts for Reportable Contracts on the project. As Reportable Contracts are approved over the course of the contract, the contractor shall enter them in the system. Reportable contracts shall be entered into the system no later than five calendar days after approval by the Department.

The contractor shall report on a monthly basis indicating the amounts actually paid and the dates of each payment under any Reportable Contract on the project. In addition, the contractor shall require that all participants in any Reportable Contract electronically verify receipt of payment on the contract by the last day of the month and the contractor shall actively monitor the Department's DBE System to ensure that the verifications are input. The contractor shall proactively work to resolve any payment discrepancies in the DBE System between payment amounts it reports and payment confirmation amounts reported by others.

The contractor shall ensure that all Reportable Contract activity is reported to the Department. This includes all lower-tier Reportable Contracts.

The contractor shall maintain records for each payment explaining the amount requested by the subcontractor, and the amount actually paid pursuant to the request, which may include but are not limited to, estimates, invoices, pay requests, copies of checks or wire transfers, and lien waivers in support of the monthly payments in the DBE System.

The contractor shall provide information for payments made on all Reportable Contracts during the previous month by the 15th day of the current month. In the event that no payments were made during a given month, the contractor shall identify that by entering a dollar value of zero. If the contractor does not pay the full amount of any invoice from a subcontractor, the contractor shall note that and provide the reasons in the comment section of the Monthly Payment Audit of the DBE System.

For each Reportable Contract on which the contractor fails to submit timely and complete payment information the Department will retain \$1,000.00 as liquidated damages, from the monies due to the contractor. Liquidated damages will be deducted each month for each Reportable Contract on which the contractor fails to submit payment information until the contractor provides the required information as described herein. After 90 consecutive days of non-reporting, the liquidated damages will increase to \$2,000.00 for each subsequent month, for each Reportable Contract on which the contractor fails to report until the information is provided. These liquidated damages shall be in addition to all other retention or liquidated damages provided for elsewhere in the contract.

The contractor shall ensure that a copy of this Subsection is included in every Reportable Contract of every tier.

(6) Completion of Work:

A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished, documented, and accepted by the Department.

(7) Disputes:

If there is a discrepancy between what is reported by the contractor in the ADOT DBE System and what the subcontractor indicates an alert email will automatically be sent to the contractor. The email will be sent to the email address provided by the contractor in the Department's DBE System. It is the contractor's responsibility to ensure that the email address in the DBE System is kept current.

The contractor shall provide a verifiable explanation of the discrepancy in the DBE System as early as practicable but in no case later than seven days after the date of the alert email.

The Engineer will determine whether the contractor has acted in good faith concerning any such explanations. The Department reserves the right to request and receive documents from the contractor and all subcontractors of any tier, in order to determine whether prompt payment requirements are met.

The contractor shall implement and use the dispute resolution process outlined in the subcontract, as described in Subsection 108.01, to resolve payment disputes.

(8) Non-compliance:

Failure to make prompt partial payment, or prompt final payment including any retention, within the time frames established above, will result in remedies, as the Department deems appropriate, which may include but are not limited to:

- (a) Liquidated Damages. These liquidated damages shall be in addition to all other retention or liquidated damages provided for elsewhere in the contract.
 - (i) The Department will withhold two times the dollar amount not paid to each subcontractor.
 - (ii) If full payment is made within 30 days of the Department's payment to the contractor, the amount withheld by the Department will be released.
 - (iii) If full payment is made after 30 days of the Department's payment to the contractor, the Department will release 75 percent of the funds withheld. The Department will retain 25 percent of the monies withheld as liquidated damages.

- (b) Additional Remedies. If the contractor fails to make prompt payment for three consecutive months, or any four months over the course of one project, or if the contractor fails to make prompt payment on two or more projects within 24 months, the Department may, in addition, invoke the following remedies:
 - (i) Withhold monthly progress payments until the issue is resolved and full payment has been made to all subcontractors, subject to the liquidated damages described in paragraph (a) above,
 - (ii) Terminate the contract for default in accordance with Subsection 108.10, and/or

- (iii) Disqualify the contractor from future bidding, temporarily or permanently, depending on the number and severity of violations.

In determining whether liquidated damages will be assessed, the extent of the liquidated damages, or additional remedies assessed, the State Construction and Materials Engineer will consider whether there have been other violations on this or other contracts, whether the failure to make prompt payment was due to circumstances beyond the contractor's control, and other circumstances. The contractor may, within 15 calendar days of receipt of the decision of the State Construction and Materials Engineer, escalate the decision to the State Engineer. If the contractor does not escalate the decision of the State Construction and Materials Engineer, in writing to the State Engineer, within 15 calendar days of receipt of the decision, the contractor will be deemed to have accepted the decision and there will be no further remedy for the contractor. If the contractor escalates the decision to the State Engineer, and the contractor does not agree with the State Engineer's decision, the contractor may initiate litigation, arbitration or mediation pursuant to Subsection 105.21(D) and (E) of the Standard Specifications.

109.06(C) Payroll Submittals: of the Standard Specifications is hereby deleted:

109.07 Partial Payment for Material on Hand: the fifth paragraph of the Standard Specifications is hereby deleted.

(109ACCP, 05/07/13)

SECTION 109 MEASUREMENT AND PAYMENT:

109.11(B) Definitions, Abbreviations, and Formulas for Determining the "Total Percentage of Lot Within UL and LL (PT)" for Asphaltic Concrete:

Target Value (TV): of the Standard Specifications is revised to read:

Target values for gradation, asphalt cement content or asphalt-rubber content, and effective voids shall be as given in the contractor's mix design.

Standard Deviation (s): of the Standard Specifications is revised to read:

The square root of the value formed by summing the squared difference between each individual test result for a measured characteristic and AVE, divided by the number of test results minus one, as shown in the equation below. The standard deviation will be determined to two decimal places.

$$s = \sqrt{\frac{\sum \left[\left(\text{Each Individual Test Result} - \text{AVE} \right)^2 \right]}{\text{Number of Test Results} - 1}}$$

If the standard deviation calculated above is zero and the average of the individual test results meets the specified limits for "UL" and "LL", the determination of "QU", "QL", "PU", "PL", and "PT" as shown below will not be made; rather, the value for "PT" (Total Percent of Lot Within UL and LL) shall be "100". If the standard deviation calculated above is zero and the average of the individual test results does not meet the specified limits for "UL" and "LL", the value for "PT" shall be "0".

109.11(C) Definitions, Abbreviations, and Formulas for Determining the "Percent of Lot Within Limits (PWL)" for Thickness of Portland Cement Concrete Pavement:

Standard Deviation (s): of the Standard Specifications is revised to read:

The square root of the value formed by summing the squared difference between the thickness measurement for each core and AVE, divided by the number of cores minus one, as shown in the equation below. The standard deviation will be determined to two decimal places.

$$s = \sqrt{\frac{\sum \left[\left(\text{Thickness Measurement for each Core} - \text{AVE} \right)^2 \right]}{\text{Number of Cores} - 1}}$$

If the standard deviation calculated above is zero and the average of the individual test results meets the specified "LL" (Lower Limit), the determination of "QL" and "PWL" as shown below will not be made; rather, the value for "PWL" (Percent of Lot Within Limits) shall be "100". If the standard deviation calculated above is zero and the average of the individual test results does not meet the specified Lower Limit, the value for "PWL" shall be "0".

109.11(D) Definitions, Abbreviations, and Formulas for Determining the "Percent of Lot Within Limits (PWL)" for Compressive Strength of Portland Cement Concrete Pavement:

Standard Deviation (s): of the Standard Specifications is revised to read:

The square root of the value formed by summing the squared difference between the compressive strength result for each sample and AVE, divided by the number of samples minus one, as shown in the equation below. The standard deviation will be determined to the nearest whole number.

$$s = \sqrt{\frac{\sum \left[\left(\text{Compressive Strength Result for each Sample} - \text{AVE} \right)^2 \right]}{\text{Number of Samples} - 1}}$$

If the standard deviation calculated above is zero and the average of the individual test results meets the specified minimum strength “LL”, the determination of “QL” and “PWL” as shown below will not be made; rather, the value for “PWL” (Percent of Lot Within Limits) shall be “100”. If the standard deviation calculated above is zero and the average of the individual test results does not meet the specified minimum strength, the value for “PWL” shall be “0”.

(109FUEL, 02/10/12)

SECTION 109 - MEASUREMENT AND PAYMENT: of the Standard Specifications is modified to add:

109.12 Fuel Cost Adjustment:

(A) General:

The Department will adjust monthly progress payments up or down as appropriate for cost fluctuations in diesel fuel as determined in accordance with these special provisions.

A fuel cost adjustment will be made when fluctuations in the price of diesel fuel, in excess of 15 percent, occur throughout this contract. The Department will not provide such adjustments for fluctuations in the price of diesel fuel of 15 percent or less.

No adjustments will be made for fluctuations in the price of fuels other than diesel.

(B) Measurement:

The base index price of fuel will be determined by the Department from the selling prices of diesel fuel published by OPIS (Oil Price Information Service). The base index price to be used will be the price for Diesel fuel No. 2, Ultra Low Sulfur, PAD 5, City of Phoenix Rack. The reported average value for the Phoenix area will be used.

The base index price for each month will be the arithmetic average of the selling price for diesel fuel, as specified above, shown in the last four reports received prior to the last Wednesday of the month.

This price will be effective as of the last Wednesday of each month, and will be posted on the Department’s website, at <http://www.azdot.gov/Highways/cns/bitmat.asp>, on or shortly after the last Wednesday of the month.

This price may also be obtained from Contracts and Specifications Services at (602) 712-7221.

This price will be deemed to be the "initial cost" (IC) for diesel fuel on projects for which bids are opened during the following month.

The current index price for diesel fuel in subsequent months will be the base index price, determined as specified above, for the current month. For example; an adjustment for diesel fuel used in May, if applicable, will be based on the "current price" (CP) for May as posted on the last Wednesday of May. The amount of adjustment per gallon will be the net difference between the "initial cost," adjusted by 15 percent, and the current index price. The monthly adjustment will be determined by the Engineer and included in the payment estimate as a fuel adjustment. For fluctuations in excess of 15 percent, fuel cost adjustments will only be made for current price index increases greater than 1.15 times the "initial cost" or for decreases less than 0.85 times the "initial cost." No calculation will be made for fluctuations in the current index price of 15 percent or less when compared to the "initial cost."

The number of gallons of diesel fuel used per month will be considered to equal 1.5 percent of the dollar amount of work reported by the contractor for each month. Such dollar amount will not include incentives earned by the contractor for pavement smoothness, thickness, or strength for Portland cement concrete pavements; for pavement smoothness or quality lots for asphaltic concrete pavements; for any other revenue derived from quality incentives; or for revenue accrued in the previous month for bituminous material cost fluctuations or diesel fuel price adjustments.

A monthly adjustment, if applicable, will be made on this quantity, as shown below:

$$S = \frac{0.015(Q)}{IC} \times (CP - AC)$$

Where; S = Monetary amount of the adjustment (plus or minus) in dollars
Q = Dollar amount of work completed for the month
CP = Current index price in dollars per gallon
AC = Adjusted "initial cost" (1.15 or 0.85 times IC) in dollars per gallon
IC = "Initial cost" as determined above, dollars per gallon

If adjustments are made in the contract quantities, the contractor shall accept any fuel adjustment as full compensation for increases or decreases in the price of fuel regardless of the amounts of overrun or underrun.

The value calculated above (plus or minus) will be adjusted to include sales tax and other taxes as applicable.

No additional compensation will be made for any additional charges, costs, expenses, etc., which the contractor may have incurred since the time of bidding and which may be the result of any fluctuation in the base index price of diesel fuel.

No adjustments will be made for work performed after Substantial Completion, as defined in Subsection 105.19, has been achieved.

(C) Payment:

Price adjustments will be shown on the monthly progress estimate, but will not be included in the total cost of work for determination of progress or for extension of contract time.

(201MTBRN, 10/18/10)

SECTION 201 - CLEARING AND GRUBBING:

201-3.02 Removal and Disposal of Materials: the second and third paragraphs of the Standard Specifications are revised to read:

In the disposal of all tree trunks, stumps, brush, limbs, roots, vegetation and other debris, the contractor shall comply with the requirements of Title 49, Chapter 3, of the Arizona Revised Statutes, and with the Rules and Regulations for Air Pollution Control, Title 18, Chapter 2, Article 6, adopted by the Arizona Department of Environmental Quality pursuant to the authority granted by the Arizona Administrative Code.

Burning of trash, debris, plant material, wood, or any other waste materials will not be allowed.

(202RMVL, 10/03/14)

SECTION 202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS:

202-3.07 Removal of Embankment Curb: the second paragraph of the Standard Specifications is revised to read:

Asphaltic concrete obtained from sources approved by the Engineer shall be used to fill and repair voids on the existing pavement surface that result from the removals.

202-3.09 Removal of Guardrail: the first paragraph of the Standard Specifications is revised to read:

All guardrail to be removed shall become the property of the contractor unless otherwise specified on the project plans. Guardrail removal shall include complete removal of posts, concrete foundations, and foundation tubes, and subsequent backfill of the remaining holes with moist soil in compacted lifts, as approved by the Engineer.

202-5 Basis of Payment: the first paragraph of the Standard Specifications is revised to read:

Payment for the accepted quantities of removal of structures and obstructions will be made by lump sum or by specific removal items or by a combination of both. Payment for removal of structures and obstructions not listed in the bidding schedule, but necessary to

perform the construction operations designated on the project plans or specified in the Special Provisions shall be considered as included in the prices of contract items.

When saw cutting is not included as a contract pay item, full compensation for any saw cutting necessary to perform the construction operations designated on the plans shall be considered as included in the price of contract items.

ITEM 2020048 – REMOVAL OF STRUCTURE (CONCRETE BOX CULVERT)

Description:

The work under this item consists of furnishing all labor, equipment and materials to remove the existing box culvert under the pavement connecting US 60 with the Frontage Road near Acoma Drive at the location shown on the project plans in accordance with Section 202 of the Standard Specifications and as specified herein.

Construction Requirements:

Removal work shall be in accordance with the requirements of Subsection 202-3.01. All removals shall become the property of the contractor.

Method of Measurement:

Removal of Structure (Concrete Box Culvert) will be measured by the unit of Each for the work complete in place as shown on plans, details and described herein.

Basis of Payment:

Removal of Structure (Concrete Box Culvert) measured as provided above, will be paid for at the contract unit price each, complete in place, including removal, excavation and backfilling.

ITEM 2020053 – REMOVE (EXISTING LIGHTING PULL BOX):

Description:

The work under this item shall consist of furnishing materials, labor and equipment necessary to remove existing lighting pull boxes in accordance with the project plans and the requirements of these Special Provisions.

Construction Requirements:

The contractor shall remove existing lighting pull boxes in accordance with the requirements of Section 202 of the Specifications and as directed by the Engineer.

Upon removal all removed items shall become the property of the contractor.

Method of Measurement:

The removal of the existing lighting pull boxes will be measured by the unit each.

Basis of Payment:

The accepted quantities of lighting pull boxes to be removed, measured as provided above, will be paid at the contract unit price each, which price shall be full compensation for the work, complete in place, as shown on the project plans and in accordance with these Special Provisions.

ITEM 2020162 – REMOVE (CONCRETE CHANNEL)

Description:

The work under this item shall consist of removal of existing concrete lining in channels at the locations shown on the project plans and in accordance with the requirements of Subsection 202-3.04. The complete lining removal shall include saw cutting of lining at the limits shown on the plans.

Construction Requirements:

Demolished lining shall be hauled and disposed of at an off-site location.

Channel lining to be partially removed shall be cut with straight vertical edges free from irregularities.

Holes, cavities, trenches and depressions resulting from the removals shall be backfilled in accordance with Subsection 202-3.01 of the Standard Specifications.

Any damage to existing lining to that is to remain caused by the contractor's operations, as determined by the Engineer, shall be repaired by the contractor at no cost to the Department.

Method of Measurement:

Remove (Concrete Channel) will be measured by the square yard of exposed surface area of in-place lining along the channel bottom, over anchor slabs and parallel to the slope of the channel embankment.

Basis of Payment:

The accepted quantities of Remove (Concrete Channel) measured as provided above, will be paid for at the contract unit price per square yard, which price shall be full compensation for the work, complete in place, including saw cutting and removal of material.

ITEM 2020168 – REMOVE (LANDSCAPED MEDIAN)

Description:

The work under this item shall consist of removal of existing landscaped median along US 60 at the locations shown on the project plans and in accordance with the requirements of Subsections 201-3 and 203-1. The complete landscaped median removal shall include removal of shrubs, plants, gravel, and irrigation systems at the limits shown on the plans.

Materials:

The contractor shall furnish all materials and equipment required to remove the landscaped median and backfill any resulting void with material, as approved by the Engineer.

Construction Requirements:

Demolished landscaped median shall be hauled and disposed of at an off-site location.

Any damage to existing landscaped median that is to remain caused by the contractor's operations, as determined by the Engineer, shall be repaired by the contractor at no cost to the Department.

Method of Measurement:

Remove (Landscaped Median) will be measured by the square foot of exposed surface area of landscaping.

Basis of Payment:

The accepted quantities of Remove (Landscaped Median) measured as provided above, will be paid for at the contract unit price per square foot, which price shall be full compensation for the work, complete in place, including removal of excess materials, and all grading, shaping and compacting of materials necessary to construct the subgrade shown on the plans and as depicted by the new pavement section and median specified and in accordance with the requirements of these specifications.

ITEM 2020169 – REMOVE (PLANTER)

Description:

This work consists of the removal of the planter at the southeast corner of the frontage road and Luna Street. The work shall include, but is not limited to, the removal of the planter and backfilling any resulting void.

Materials:

The contractor shall furnish all materials and equipment required to remove the planter and backfill any resulting void with material, as approved by the Engineer.

Construction Requirements:

The planter shall be removed in its entirety. The backfill material shall be cement treated slurry per Subsection 501-3.02(A)(3) to the finished grade elevation. All removed material shall become the property of the contractor, and shall be disposed of off the project, as approved by the Engineer.

Method of Measurement:

REMOVE (PLANTER) will be measured by the square foot of exposed surface area of planter to be removed.

Basis of Payment:

The accepted quantity of REMOVE (PLANTER), as measured above, will be paid at the contract unit price per square foot, which price shall be full compensation for the work, complete in place, including removal and disposal of removed materials and backfilling any voids.

ITEM 2020170 – REMOVE (CONCRETE MEDIAN)

Description:

This work consists of the removal of the concrete median on Santa Fe Lane. The work shall include, but is not limited to, the removal of the concrete median and backfilling any void.

Materials:

The contractor shall furnish all materials and equipment required to remove the concrete median and backfill any resulting void with material, as approved by the Engineer.

Construction Requirements:

Demolished concrete median shall be hauled and disposed of at an off-site location.

Method of Measurement:

Remove (Concrete Median) will be measured by the square yard of concrete.

Basis of Payment:

The accepted quantities of Remove (Concrete Median) measured as provided above, will be paid for at the contract unit price per square yard, which price shall be full compensation for the work, complete in place, including removal of excess materials, and all grading, shaping and compacting of materials necessary to construct the subgrade shown on the plans and as depicted by the new pavement section and median specified and in accordance with the requirements of these specifications.

(203PRWTR, 10/16/03)

SECTION 203 - EARTHWORK:

203-2 General: of the Standard Specifications is modified to add:

Material to be excavated shall be pre-wetted prior to removal. The Engineer will specify the areas to be pre-wetted. The contractor shall rip or scarify these areas prior to the application of water, and provide a method to verify penetration of moisture for the full depth of excavation. The contractor shall provide a sprinkler system for distribution, and apply water at a rate to allow sufficient penetration without excess runoff.

No separate payment will be made for application of the water, or for water trucks, hoses, fittings, sprinklers, meters, and any other equipment required for pre-wetting, or for the labor involved, the cost being considered as included in contract items. Water for pre-wetting will be paid for in accordance with Section 209.

(203ERWK, 03/23/11)

SECTION 203 EARTHWORK:

203-5.03(B)(4) Compaction of Backfill: the first paragraph of the Standard Specifications is revised to read:

Each layer of structure backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual, as directed and approved by the Engineer.

203-5.03(C) Geocomposite Wall Drain: the first sentence of the first paragraph of the Standard Specifications is revised to read:

Geocomposite wall drains shall be installed on the soil side of abutment walls, retaining walls, and culvert wing walls. If shown on the plans, geocomposite wall drains shall also be installed on the soil side of culvert sidewalls.

(207DSP, 02/20/08)

SECTION 209 FURNISH WATER: of the Standard Specifications is hereby deleted.

SECTION 207 BLANK of the Standard Specifications is revised to read:

SECTION 207 DUST PALLIATIVE:

207-1 Description:

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

207-2 Blank

207-3 Construction Requirements:

The use of pressure pumps and spray bars on all sprinkling equipment used for the application of dust palliative will be required. The use of gravity flow spray bars and splash plates will not be permitted.

Water applied for dust control shall be as approved or directed by the Engineer. The contractor shall provide appropriate equipment for effective control of dust.

207-4 Method of Measurement and Basis of Payment:

No measurement will be made for application of dust palliative, including furnishing water and all necessary equipment and labor, the cost being considered as included in contract items.

(303QCAB, 07/15/05)

SECTION 303 AGGREGATE SUBBASES AND AGGREGATE BASES: of the Standard Specifications is modified to add:

303-3.04 Contractor Quality Control:

The contractor shall perform the quality control measures described in Subsection 106.04(C). At the weekly meeting, the contractor shall be prepared to explain and discuss how the following processes will be employed:

- (a) Aggregate production, including crusher methods, pit extraction, and washing.
- (b) Stockpile management, including stacking methods, separation technique, stockpile pad thickness, and segregation prevention.
- (c) Transporting and placing, including transport technique, lift thickness, processing and mixing technique, and compaction methods.

The contractor shall obtain samples and perform the tests specified in the following table:

CONTRACTOR QUALITY CONTROL TESTING REQUIREMENTS			
TYPE OF TEST	TEST METHOD	SAMPLING POINT	MINIMUM TESTING FREQUENCY
Aggregate Base Class 1, 2, or 3			
Fractured Coarse Aggregate Particles	ARIZ 212	Crusher belt or Stockpile	1 per 1,200 CY
Gradation	ARIZ 201	Crusher belt or Stockpile	1 per 600 CY
PI	AASHTO T 89 AASHTO T 90		
Proctor Density	ARIZ 225 ARIZ 226 ARIZ 245	Crusher belt or Stockpile	1 per Source and as needed
Field Density	ARIZ 227 ARIZ 230 ARIZ 232 ARIZ 235 ARIZ 246	Roadway	1 per 600 CY
Aggregate Subbase Class 4, 5, or 6			

Fractured Coarse Aggregate Particles (Class 4)	ARIZ 212	Crusher Belt or Stockpile	1 per 1,200 CY
Gradation	ARIZ 201	Crusher Belt or Stockpile	1 per 600 CY
PI	AASHTO T89 AASHTO T90		
Proctor Density	ARIZ 225 ARIZ 226 ARIZ 245	Crusher belt or Stockpile	1 per Source and as needed
Field Density	ARIZ 227 ARIZ 230 ARIZ 232 ARIZ 235 ARIZ 246	Roadway	1 per 600 CY

(403ACHP, 11/02/16)

SECTION 403 ASPHALTIC CONCRETE HOT PLANT REQUIREMENTS:

403-2 Requirements: the third paragraph of the Standard Specifications is revised to read:

The mineral admixture shall be added and thoroughly mixed with the mineral aggregate by means of a mechanical mixing device prior to the mineral aggregate and mineral admixture entering the dryer. For all asphaltic concrete mixes except ACFC (Specification Sections 407 and 411) and AR-ACFC (Specification Section 414), the moisture content of the combined mineral aggregate shall be a minimum of three percent by weight of the aggregate during the mixing process. For ACFC and AR-ACFC mixes, the mineral aggregate shall be wet with free moisture on the surface of the aggregate just prior to the mixing process. To ensure that adequate mixing water is available on the surface of the aggregate, the Engineer may require that the mineral aggregate for ACFC and AR-ACFC mixes have a moisture content of up to 1-1/2 percent above the combined water absorption.

403-2 Requirements: the twelfth paragraph of the Standard Specifications is revised to read:

The contractor shall provide daily documentation of the weight and proportion of each individual component (mineral aggregate, mineral admixture, and bituminous material) incorporated into the mix, within three business days of the production. When a dedicated plant is being used, plant startup waste shall be shown in the hot plant documentation. In addition, when reclaimed asphaltic pavement (RAP) is used, the contractor shall provide daily documentation of the weight, determined by a calibrated or certified belt scale, and proportion of material from each individual RAP stockpile incorporated into the mix. The

percent moisture content of the RAP material from each stockpile shall also be determined and provided daily by the contractor.

When Warm Mix Asphalt (WMA) technologies are used, the contractor shall provide the percent of water (for WMA water foaming processes) and/or the percent of WMA additive incorporated in the mix. The percent of each WMA technology shall be reported either by weight of total mix or by weight of total binder.

When incorporating WMA technologies, the hot plant shall be modified as required by the WMA technology manufacturer to introduce the WMA technology. Plant modifications may include additional plant instrumentation, the installation of asphalt binder foaming systems and/or WMA additive delivery systems, adjusting the plant burner and/or the mixing drum flights in order to operate at lower production temperatures, and/or reducing the production rate of WMA.

(404BITUM, 01/26/16)

SECTION 404 BITUMINOUS TREATMENTS:

404-1 Description: the first paragraph of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing all materials and constructing or applying a single or multiple course bituminous treatment in accordance with the requirements of the specifications and in reasonably close conformity to the lines shown on the project plans or established by the Engineer.

404-2.02(A) General: the first paragraph of the Standard Specifications is revised to read:

The contractor shall provide a source of aggregate material in accordance with the requirements of Section 1001.

404-3.02(A) Distributor Truck: the second paragraph of the Standard Specifications is revised to read:

Prior to the spreading of bituminous material, all distributor trucks proposed for use shall have been tested for rate of transverse spread, in accordance with the requirements of Arizona Test Method 411, and certified within 12 months prior to the date of spreading in accordance with ADOT Materials Policy and Procedure Directive No. 14, "Testing and Certification of Bituminous Distributor Trucks". However, the Engineer may at any time require that each distributor truck be tested to determine the rate of the transverse spread.

404-3.12 Tack Coat: of the Standard Specifications is revised to read:

Tack coat shall be applied prior to placing a bituminous mixture on a primed surface, an existing bituminous surface, or an existing Portland cement concrete pavement surface.

Tack coat shall also be applied between layers of bituminous mixtures. A light coat of bituminous material shall also be applied to edges or vertical surfaces against which a bituminous mixture is to be placed.

The contractor shall choose the bituminous material to be used for tack coat. The Engineer must approve the contractor's choice of bituminous material prior to its use.

The bituminous material used for tack coat shall conform to the requirements of Section 1005.

The rate of application for the specific usage will be specified by the Engineer. The following table shows approximate tack coat application rates:

Type of Bituminous Material	Approximate Tack Coat Application Rates: Gallons / Square Yard		Payment Factor
	Prior to Placing ACFC or AR-ACFC	All Other Tack Coats	
Emulsified Asphalt (Special Type) – See Note Below.	Not Allowed	0.12	0.7
Emulsified Asphalt (Other than Special Type)	0.08	0.08	1.0
Asphalt Cement	0.06 to 0.08	0.06 to 0.08	1.0
Note: Emulsified Asphalt (Special Type) shall consist of Type SS-1 or CSS-1 emulsified asphalt diluted with water to provide an asphalt content of not less than 26 percent.			

If emulsified asphalt of any type is used, it shall have broken before the bituminous mixture is placed.

If emulsified asphalt of any type is held over night, it shall be reheated and agitated prior to further application.

The Engineer may either adjust the application rate or, except as specified below, eliminate the use of tack coat in any part of the work if, in the Engineer's judgment, the bituminous mixture to be placed will be effectively bonded to the underlying surface. For asphaltic concrete friction course, asphaltic concrete friction course (asphalt-rubber), or asphaltic concrete (asphalt-rubber), application of the tack coat immediately prior to placing such pavements shall not be eliminated, although the Engineer may adjust the application rate.

Tack coat shall be applied only as far in advance of the placement of the bituminous mixture as is necessary to obtain the proper condition of tackiness. In no event shall more tack coat be applied in one day than will be covered by the bituminous mixture during that same day.

404-3.13 Fog Coat: of the Standard Specifications is revised to read:

The type of bituminous material shall be **SS-1**. The material shall be diluted with one part water to one part bituminous material. The bituminous material shall be applied at the approximate rate of **0.08** gallons per square yard.

Blotter material shall be applied to the treated surface in one or more applications for a total application of approximately **2** pounds per square yard at a time specified by the Engineer and before opening to traffic.

404-4 Method of Measurement: the third paragraph of the Standard Specifications is revised to read:

Cover material, when specified, will be measured by the cubic yard. Cover material will be weighed, and the amount in tons of dry material will be converted to cubic yards. The weight of all moisture contained in the cover material will be deducted prior to the conversion of the weight in tons to the volume in cubic yards. The dry weight per cubic yard will be determined in accordance with the requirements of AASHTO T 19 (Shoveling Procedure).

404-5 Basis of Payment: the last sentence of the first paragraph of the Standard Specifications is revised to read:

Adjustments will be made in accordance with Section 1005.

(404BIMAT, 01/26/16)

SECTION 404 BITUMINOUS TREATMENTS:

404-5 Basis of Payment: of the Standard Specifications is modified to add:

The term "bituminous material" as used herein shall include asphalt cement, liquid asphalt, and emulsified asphalt.

The contract unit price for each item of bituminous material will be considered to include all costs for furnishing, hauling, handling, spreading, and mixing of the material as required, including the "initial cost" of bituminous material, but excluding any difference in the cost of bituminous material that occurs between the date of bid opening and the date that the material is used on the project.

A cost for bituminous material will be determined monthly by the Department based on the selling prices of asphalt cement published by the Asphalt Weekly Monitor, a publication of Poten & Partners, Inc. The cost will be the arithmetic average of the high and low selling prices for asphalt cement shown in the previous four reports for the Arizona/Utah and Southern California regions.

This cost will be deemed the "initial cost" (IC) for bituminous material for projects on which bids are opened during the following month. This cost will also be deemed the "current price" (CP) for bituminous material for the following month for projects in construction.

This value will be effective as of the last Wednesday of each month, and will be posted on the ADOT Contracts and Specifications Section website, on or shortly after the last Wednesday of month.

For each item of bituminous material for which there is a specific pay item, and for the bituminous material used in Asphaltic Concrete (Miscellaneous Structural), an adjustment will be made as follows for each month that a quantity of bituminous material was used on the project.

The "initial cost" (IC) for the month in which the project was bid will be compared with the "current price" (CP) as specified above for the appropriate current month. The "current price" (CP) will be as posted on the Department's website on the last Wednesday of each month, and will be used to adjust costs for bituminous material incorporated into the job during the following month (for example; bituminous material used in May will be adjusted, as specified herein, based on the "current price" (CP) for May as posted on the last Wednesday of April). Any difference in price between these two values will be applied to the quantity of eligible bituminous material incorporated into the work.

Determination of the eligible quantities of bituminous material will be based on contractor-furnished invoices, except as modified below.

The tons of emulsified products to which the adjustment will be applicable will be the tons of the emulsified asphalt prior to dilution.

Adjustments in compensation for emulsified asphalts will be made at 60 percent of either the increase or decrease.

The tons of Bituminous Material (Asphalt-Rubber) to which the adjustment will be applicable will be 0.80 multiplied times the total quantity of the item used. The adjustment will not apply to the 20 percent of the material which constitutes the crumb rubber additive.

The tons of bituminous material incorporated in Asphaltic Concrete (Miscellaneous Structural) or Asphaltic Concrete (Miscellaneous Structural-Special Mix) to which an adjustment will be applicable shall be as follows:

- (1) For mixes without reclaimed asphalt pavement (RAP), the adjustment will be equal to five percent of the quantity, measured in tons, of asphaltic concrete placed, regardless of the actual percentage of bituminous material incorporated into the mix.
- (2) For mixes with reclaimed asphalt pavement (RAP), the adjustment will be equal to four percent of the quantity, measured in tons, of asphaltic concrete placed, regardless of the actual percentage of bituminous material incorporated into the mix.

- (3) If the quantity of asphaltic concrete is measured by volume, the supplemental agreement establishing the method of measurement will specify the manner in which the tons of bituminous material eligible for the adjustment is determined.

The tons of bituminous materials which are paid for on the basis of testing by nuclear asphalt content gauge, ignition furnace, or other approved methods to which the adjustment will be applicable, are the tons which have been incorporated into the mixture.

When reclaimed asphalt pavement (RAP) is used in asphaltic concrete, only the virgin asphalt cement will be subject to a bituminous material price adjustment. RAP binder is not subject to a price adjustment.

No additional compensation will be made for any additional or increased charges, costs, expenses, taxes, etc., which the contractor may have incurred since the time of bidding and which may be the result of any increase in the "initial cost" of bituminous material.

Adjustment in unit prices of items governed by this provision will be made in the next regular monthly progress payment following actual use or application of the bituminous material.

Any adjustment in compensation made for bituminous material incorporated into the work after the expiration of the specified completion time set forth in the contract, or as may be extended in accordance with the provisions of Subsection 108.08, will be on the basis of the price of bituminous material shown on the Department's website and applicable for the date of the expiration of the specified completion time as hereinbefore specified.

(404SLRY, 01/26/16)

ITEM 4040072 – EMULSIFIED ASPHALT (SLURRY SEAL):

ITEM 4040174 – DRY MINERAL AGGREGATE, (SLURRY SEAL) (TYPE II):

SLURRY SEAL:

1. Description:

The work under these items shall consist of furnishing all materials and constructing a slurry seal on an existing asphaltic concrete pavement surface. The slurry seal shall be a mixture of mineral aggregate, polymer modified emulsified asphalt, mineral filler, water, and other additives, properly proportioned, mixed, and uniformly spread on the surface of pavement as specified herein and as directed by the Engineer.

The slurry seal shall be applied as a homogeneous mat, adhere firmly to the prepared surface, and have a skid-resistant surface texture. The finished product shall have a uniform appearance and it shall be able to accept straight, rolling traffic within one hour after placement without damage; however, stopping and starting traffic, and adverse weather conditions, may require additional curing time.

2. Materials:

2.01 General:

All materials shall be approved by the Engineer prior to the start of construction.

The Engineer reserves the right to sample and test any materials used on the project. All materials that do not meet specifications will be rejected.

For comparison purposes, quantities shown in the bidding schedule have been calculated based on the information given in Table 1. Application rates are affected by the unit weight and gradation of the mineral aggregate and the demand of the surface to which the slurry seal is being applied. Exact quantities of emulsified asphalt and dry mineral aggregate shall be determined by mix design, or as directed by the Engineer.

TABLE 1		
Material	Type II Slurry Seal	Type III Slurry Seal
Emulsified Asphalt, by weight of Dry Mineral Aggregate, percent	14	13
Dry Mineral Aggregate, pounds per square yard	17	22

2.02 Emulsified Asphalt:

Polymer modified, quick setting emulsified asphalt (QS-P or CQS-P) shall be used. A minimum of 2% polymer solids, by total weight of polymer and asphalt residue, shall be added prior to the millhead. The type and amount of polymer solids used shall be certified by the supplier.

The polymer modified emulsified asphalt shall be preapproved and certified in accordance with ADOT Materials Policy and Procedure Directive (P.P.D.) No. 8, "Sampling, Testing, and Acceptance of Emulsified Bituminous Materials". As specified in P.P.D. No. 8, two copies of the appropriate certificate (Certificate of Compliance or Certificate of Analysis), conforming to the requirements of Subsection 106.05 of the specifications, shall accompany each shipment (delivery unit) of emulsion to the project.

The polymer modified emulsified asphalt shall conform to the requirements of Table 2.

TABLE 2 Polymer Modified Emulsified Asphalt (QS-P or CQS-P)			
TESTS ON EMULSION	TEST METHOD	REQUIREMENTS	
Viscosity, Saybolt Furol seconds @ 25 °C (77 °F)	AASHTO T-59	20 - 100	
Sieve Test, retained on No. 20, %	AASHTO T-59	0.10 Max (1)	
Particle Charge	AASHTO T-59	QS-P	Negative
		CQS-P	Positive
Storage Stability Test, 24 hours, %	AASHTO T-59	1.0 Max	
Percent Asphalt Residue by Evaporation	Arizona Test Method 512 (2)	57 Min	
TESTS ON RESIDUE BY DISTILLATION AASHTO T-59 [176.7 °C (350 °F) Max.]	TEST METHOD	REQUIREMENTS	
Original Dynamic Shear of Residue @ 64 °C, G*/Sin δ, kPa	AASHTO T-315	1.00 Min	
Penetration @ 4 °C (39.2 °F), 200 g, 60 seconds, 0.1 mm	AASHTO T-49	20 Min	
Elastic Recovery @ 25 °C (77 °F), %	AASHTO T-301 (3)	55 Min	
<p>(1) The maximum of 0.1 percent applies to the preapproval of emulsions in accordance with P.P.D. No. 8. A maximum of 0.3 percent is allowed for emulsions that are sampled at the project site.</p> <p>(2) The percent of asphalt residue will be determined in accordance with the requirements of Arizona Test Method 512; however, in the case of dispute the percent of asphalt residue by distillation [AASHTO T 59, modified to 176.7 °C (350 °F)] will be used.</p> <p>(3) Testing shall be performed on residue by distillation, not on residue by oven evaporation.</p>			

2.03 Mineral Aggregate:

The contractor shall provide a source in accordance with the requirements of Section 1001 of the specifications.

Mineral Aggregate shall consist of sound and durable sand and/or crushed stone. The materials shall be free from vegetation and other deleterious substances. Aggregates shall be 100% crushed with no rounded particles. No natural sand will be allowed.

The gradation shall be Type II. The gradation of the mineral aggregate, when tested in accordance with the requirements of Arizona Test Method 201, shall conform to the requirements of Table 3.

TABLE 3			
SIEVE SIZE	PERCENT PASSING SIEVES		
	MIX DESIGN GRADING LIMITS		PRODUCTION TOLERANCES (See Note Below)
	TYPE II	TYPE III	
3/8 inch	100	100	----
No. 4	90-100	70-90	± 5
No. 8	65-90	45-70	± 5
No. 16	45-70	28-50	± 5
No. 30	30-50	19-34	± 5
No. 50	18-30	12-25	± 4
No. 100	10-21	7-18	± 3
No. 200	5.0–15.0	5.0–15.0	± 3.0

Note:

The allowable tolerance during production will be determined by applying the production tolerances to the mix design target values. However, the allowable production tolerance shall not fall outside the mix design grading limits in this table.

The mineral aggregate shall conform to the requirements of Table 4 when tested in accordance with the applicable test methods.

TABLE 4		
MINERAL AGGREGATE CHARACTERISTICS		
CHARACTERISTIC	TEST METHOD	REQUIREMENTS
Sand Equivalent	AASHTO T 176 (After thoroughly sieving the sample, no additional cleaning of the fines from the plus No. 4 material is required.)	Minimum 60

Carbonates	Arizona Test Method 238	Maximum 20%
Abrasion	AASHTO T 96	500 Rev., Maximum 40%
Fractured Coarse Aggregate Particles	Arizona Test Method 212	Minimum 95% (with at least one fractured face)
Uncompacted Void Content	Arizona Test Method 247	Minimum 45.0%

Tests on aggregates outlined in Table 4, other than abrasion, shall be performed on materials furnished for mix design purposes and composited to the mix design gradation. Abrasion testing shall be performed separately for each source of mineral aggregate. All sources shall meet the requirements for abrasion. If desired, abrasion testing may be performed utilizing the parent aggregate from each source. Historical abrasion values may be supplied on sources provided the testing was conducted within the past two years.

2.04 Mineral Filler:

Mineral filler, required by the mix design, shall be Type I or Type II Portland cement conforming to the requirements of ASTM C 150. The mineral filler shall be added in the approximate amount of 1% by weight of the total mix; however, the exact amount will be determined by the mix design. The source of Portland cement must be on the ADOT Approved Materials Source List, as referenced in Materials Policy and Procedure Directive (P.P.D.) No. 13, "Certification and Acceptance of Hydraulic Cements, Fly Ash, Natural Pozzolan, Silica Fume, and Lime".

The mineral filler shall be added to the slurry seal mixture by an approved method that will ensure uniform distribution and proper control.

2.05 Water:

The water used shall be free of any injurious impurities. Potable water obtained from public utility distribution lines will be acceptable. The contractor shall state the source of water.

2.06 Additives:

Additives may be used to accelerate or retard the breaking of the emulsified asphalt and the set time of the slurry seal mixture, or to improve the resulting finished surface.

Appropriate additives, and their applicable use range, shall be specified in the mix design.

3. Mix Design:

The contractor shall provide a mix design which has been sealed, signed, and dated by a professional engineer experienced in the preparation of slurry seal mix designs.

Compatibility of the aggregate, mineral filler, water, additives, and polymer modified emulsified asphalt shall be evaluated during the mix design process.

All the materials used in the mix design shall be representative of the materials proposed by the contractor for use on the project.

The mix design shall be approved by the Engineer prior to the start of slurry seal production. After the mix design has been approved, no material substitution will be permitted unless approved by the Engineer.

In addition to the other requirements stated herein, the mix design shall conform to the requirements of Table 5.

TABLE 5		
PROPERTY	TEST METHOD	REQUIREMENTS
Residual Asphalt Content	ASTM D 2172	7.5% - 13%, by weight of dry aggregate
Mineral Filler	----	Approximately 1%, by weight of the total mix
Additives	----	As required for mix properties
Water	----	As required for mix properties
Wet Track Abrasion Test	ASTM D 3910	75 g/ft ² , Maximum
Wet Stripping	ISSA TB-114	90%, Minimum
Slurry Seal Mixing Test, 70-85 °F, seconds	ISSA TB 102	120, Minimum
Slurry Seal Setting Test, 70-85 °F (1 hour cure)	ISSA TB 102	No Brown Stain
Slurry Seal Water Resistance Test, (70-85 °F, 30 minute cure)	ISSA TB 102	No more than slight discoloration
Cure Time Test, 60-70 °F	ASTM D 3910	12 kg-cm torque, Minimum

The mix design shall show the recommended proportions of aggregate, mineral filler, water, additive(s), and emulsified asphalt; and how the proportions are based (dry aggregate weight, total mix, etc). The mix design shall also show the allowable production tolerance for residual asphalt content.

The mix design shall also show the aggregate gradation, sand equivalent, percent carbonates, abrasion, fractured coarse aggregate particles, and uncompacted void content of the aggregate used in the mix design.

4. Equipment:

4.01 Proportioning Devices:

Individual volume or weight controls for proportioning mix components shall be provided and properly labeled. Proportioning devices shall be capable of determining the material output at any time.

The proportioning of emulsion, mineral filler, water, and additives shall be tied directly to aggregate flow.

4.02 Mixing Equipment:

(A) General:

The slurry seal mixer shall be a continuous-flow mixing unit, specifically designed and manufactured to be used for the application of slurry seals. It shall be capable of delivering water and also be able to accurately predetermine the proportion of aggregate and emulsified asphalt to the mixing chamber. It shall discharge the thoroughly mixed product on a continuous basis. The aggregate shall be pre-wet immediately prior to mixing with the emulsion. The mixing unit of the mixing chamber shall be capable of thoroughly blending all ingredients together. No violent mixing shall be permitted.

The mixing machine shall be equipped with an approved fines feeder that provides an accurate metering device or method to introduce a predetermined amount of mineral filler into the mixer at the same time and location that the aggregate is fed.

The mixing machine shall be equipped with a water pressure system and fog type spray bar, adequate for complete fogging of the surface preceding the spreading equipment, with a maximum application rate of 0.05 gallons per square yard. A calibrated control for aggregate and emulsified asphalt shall be provided and capable of accurately proportioning the material.

The machine shall be capable of a minimum speed of 60 feet per minute and shall not be allowed to exceed 180 feet per minute while in operation. Sufficient machine storage capacity to mix properly and apply a minimum of five tons of the slurry shall be provided.

(B) Calibration:

Each slurry-mixing unit to be used in performance of the work shall be calibrated prior to construction. Previous calibration documentation covering the exact materials to be used may be accepted, provided the calibration was performed within the preceding twelve months. The documentation shall include an individual calibration of each material at various settings, which can be related to the machine metering device(s). No machine will be allowed to work on the project until the calibration has been completed and/or accepted.

4.03 Spreading Equipment:

The spreader box shall be equipped with a canvas or burlap drag to provide a highly textured, uniform surface texture. The drag shall be replaced as needed, and at least daily.

A mechanical type squeegee distributor equipped with flexible material shall be attached to the mixing unit. The flexible material shall be in contact with the surface to prevent loss of slurry from the distributor. The contractor shall maintain the distributor so as to prevent loss of slurry on varying grades and the roadway crown by adjustments to ensure uniform spread. There shall be a means to side shift the spreader box and the rear strike-off shall be adjustable.

4.04 Auxiliary Equipment:

Areas that cannot be reached with the slurry seal machine shall be surfaced using hand squeegees to provide complete and uniform slurry seal coverage.

5. Construction Requirements:

5.01 Test Strip:

A test strip shall be constructed on the roadway at the beginning of the first day of production. The test strip shall be limited to 500 to 1000 feet in length and shall be placed in the same manner, and with the same materials and equipment, that will be used during the remainder of slurry seal placement.

The test strip shall not exhibit any signs of distress when exposed to traffic after curing for one hour. The Engineer shall determine if performance of the test strip is satisfactory. If performance of the test strip is satisfactory, normal production may proceed. If performance of the test strip is unsatisfactory, the test strip shall be removed and replaced, or repaired to the satisfaction of the Engineer, at no additional cost to the Department. After necessary adjustments are made, an additional test strip shall be constructed. If necessary, the Engineer may require that a new mix design be submitted for approval.

5.02 Weather Limitations:

The slurry seal shall not be applied if either the pavement surface temperature or the air temperature is below 55 °F and falling, but may be applied when both pavement and air temperature are above 45 °F and rising. No slurry seal shall be applied when there is danger that the finished product will freeze within 24 hours following its placement. The mixture shall not be applied if weather conditions prolong opening to traffic beyond a reasonable time as determined by the Engineer.

At any time, the Engineer may require that the work cease or that the work day be reduced in the event that weather conditions, either existing or expected, are anticipated to have an adverse effect upon the slurry seal.

5.03 Surface Preparation:

Immediately prior to applying the slurry seal, the contractor shall clean the surface of all loose material, dirt, vegetation, and other objectionable material. If water is used, cracks shall be thoroughly dry before applying the slurry seal. The Engineer shall approve the surface preparation prior to applying the slurry seal.

5.04 Mixing and Application of Slurry Seal:

The slurry seal mixture shall be proportioned in accordance with the mix design.

The contractor shall determine the stockpile moisture content daily, and adjust the operation accordingly.

The slurry seal mixture shall be of the desired consistency when deposited in the spreader box and no additional materials shall be added to it. The mixing time shall be sufficient to produce a complete and uniform coating of the aggregate. No lumping, balling, or unmixed aggregate shall be permitted. The mixture shall be discharged into the spreader box at a sufficient rate to maintain an ample supply of material across the full width of the spreader box at all times. Overloading of the spreader box shall be avoided. No streaks, such as those caused by oversized aggregate, will be left in the finished surface. If excess oversize aggregate is encountered, the job will be stopped until the contractor proves that the situation has been corrected. Any skips, lumps, streaks, or tears in the finished product will not be allowed. The contractor shall repair any such deficiencies to the satisfaction of the Engineer, at no additional cost to the Department.

The slurry seal mixture shall possess sufficient stability so that premature breaking of the emulsified asphalt while the mixture is in the spreader box does not occur. The mixture shall be homogenous after mixing. During spreading, the mixture shall be free of excess water or emulsion and shall be free of segregation of the emulsion and aggregate fines from the coarser aggregate. Spraying of additional water into the spreader box is not allowed.

The surface of the existing pavement shall be pre-wetted by fogging with water ahead of the spreader box. The water used in pre-wetting the surface shall be applied such that the entire surface is damp with no apparent flowing water in front of the spreader box. The rate of application of the fog spray shall be adjusted during the day as the ambient temperature, surface texture, humidity, and dryness of the pavement surface changes.

The contractor shall remove slurry seal from any area specified by the Engineer.

The contractor shall remove any debris associated with the performance of the work on a daily basis.

5.05 Protection of Existing Fixtures:

The contractor shall take all necessary precautions to prevent slurry seal or other materials used in the work from entering or adhering to gutters, gratings, hydrants, valve boxes,

manhole covers, catch basins, bridge or culvert decks, permanent road markers (ceramic and reflective), and other existing fixtures.

Immediately after surfacing, the contractor shall clean and leave existing features in a condition satisfactory to the Engineer.

5.06 Joints:

No excessive buildup, or uncovered areas of unsightly appearance, shall be permitted on longitudinal or transverse joints. An excessive overlap will not be permitted in longitudinal joints. The contractor shall provide a minimum number of longitudinal joints throughout the project. When possible, longitudinal joints shall be placed on lane lines. Half passes and odd width passes will be used in minimum amounts. If half passes are used, they shall not be the last pass of any paved area.

5.07 Handwork:

Approved squeegees and lutes shall be used to spread the mixture in areas inaccessible to the spreader box and other areas where hand spreading may be required.

5.08 Damage to the Slurry Seal:

The contractor shall remove and replace slurry seal which is damaged prior to the final acceptance of the work, at no additional cost to the Department.

6. Sampling and Testing Requirements:

Mineral aggregate shall be sampled in accordance with Arizona Test Method 105.

At least two weeks prior to the start of slurry seal production, the Engineer shall obtain a representative sample of mineral aggregate for testing. The material shall be tested for gradation in accordance with Arizona Test Method 201, and shall conform to the production tolerances shown in Table 3. The sand equivalent, fractured coarse aggregate particles, and uncompacted void content shall conform to the requirements of Table 4. If the mineral aggregate does not meet these requirements, production shall not begin until the mineral aggregate is in compliance with these requirements.

For each 300 tons of mineral aggregate used in slurry seal production, the Engineer shall obtain a representative sample of mineral aggregate for gradation and moisture content testing. The material will be tested for gradation in accordance with Arizona Test Method 201, and shall conform to the production tolerances shown in Table 3. Should testing indicate results not meeting these requirements, operations shall cease and the contractor shall have the option of providing a new mix design or correcting the deficiencies. The material shall be tested for moisture content in accordance with AASHTO T 265.

For each 600 tons of mineral aggregate used in slurry seal production, the Engineer shall obtain a representative sample of mineral aggregate for the determination of sand equivalent, fractured coarse aggregate particles, and uncompacted void content. The

material shall conform to the requirements of Table 4 for these test characteristics. Should testing indicate results not meeting these requirements, operations shall cease and the contractor shall have the option of providing a new mix design or correcting the deficiencies.

During slurry seal production, a representative sample of the emulsion shall be obtained for testing to determine the percent asphalt residue by evaporation. A sample shall be obtained, in accordance with Arizona Test Method 103, from each delivery unit of emulsion by the contractor and witnessed by the Engineer. The emulsion shall conform to the requirements of Table 2 for percent asphalt residue by evaporation.

7. Method of Measurement:

Emulsified asphalt will be measured by the ton.

Mineral aggregate will be measured by the ton, excluding the weight of any moisture.

8. Basis of Payment:

The accepted quantities of emulsified asphalt, measured as provided above, will be paid for at the contract unit price per ton, which price shall be full compensation for the work, complete in place, as specified herein.

The accepted quantities of dry mineral aggregate, measured as provided above, will be paid for at the contract unit price per ton, which price shall be full compensation for the work, complete in place, including mineral filler, water, all surface preparation, mixing and application of materials.

(416ACES, 11/02/16)

SECTION 416 ASPHALTIC CONCRETE-END PRODUCT: of the Standard Specifications is revised to read:

416-1 Description:

The work under this section shall consist of constructing Asphaltic Concrete-End Product, hereinafter asphaltic concrete, by furnishing all materials, mixing at a plant, hauling and placing a mixture of aggregate materials, mineral admixture, and bituminous material (asphalt cement) to form a pavement course or to be used for other specified purposes, in accordance with the details shown on the project plans and the requirements of the specifications.

Reclaimed asphalt pavement (RAP), as defined in Subsection 416-3.04, may be used in the mixture provided all requirements of the specifications are met; however, RAP will not be allowed in the mixture when asphalt cement type PG 76-22 TR+ or PG 70-22 TR+ is specified in Subsection 416-3.03 (B). References to the use of RAP in this section apply only if RAP is utilized as part of the mixture. ADOT Materials Policy and Procedure

Directive No. 20, "Guidance on the Use of Reclaimed Asphalt Pavement (RAP) in Asphaltic Concrete", shall be used in conjunction with the requirements of the specifications.

Warm Mix Asphalt (WMA) technologies may be used in the mixture at the option of the contractor provided all requirements of the specifications are met. WMA is defined as asphaltic concrete that is produced within the temperature range of 215 to 275 F. WMA can be produced by one or a combination of several WMA technologies including plant water foaming processes, mineral additives, and chemical additives. The requirements for incorporating WMA technologies in the mixture are given in these specifications and in Materials Policy and Procedure Directive No. 23, "Requirements for the Use of Warm Mix Asphalt (WMA) Technologies in Asphaltic Concrete".

The contractor shall acquire and make all arrangements for a source or sources of material, furnish a mix design which will meet the design criteria specified hereinafter, and provide all the equipment, materials, and labor necessary to complete the work.

416-2 Asphaltic Concrete Mix Design Criteria:

Mix designs shall be developed by the contractor on the basis of the following criteria and tested in accordance with the requirements of the following test methods:

Criteria	Requirements			Arizona Test Method		
	1/2" Mix	3/4" Mix	Base Mix			
1. Voids in Mineral Aggregate: %, Range	15.5 - 18.5	15.0 - 18.0	14.5 - 17.0	Note (1)		
2. Effective Voids: %, Range	<u>5.5</u> ± 0.2	<u>5.5</u> ± 0.2	<u>5.5</u> ± 0.2	Note (1)		
3. Absorbed Asphalt: %, Range	0 - 1.0	0 - 1.0	0 - 1.0	Note (1)		
4. Index of Retained Strength: %, Minimum	60 Note (2)	60 Note (2)	60 Note (2)	Note (3)		
5. Wet Strength: psi, Minimum	150	150	150	Note (3)		
6. Stability: pounds, Minimum	2,000	2,000	3,000	Note (1)		
7. Flow: 0.01-inch, Range	8 - 16	8 - 16	8 - 16	Note (1)		
8. Mix Design Grading Limits:				201		
Sieve Size	Percent Passing					
	1/2 inch Mix		3/4 inch Mix		Base Mix	
	Without Admix.	With Admix.	Without Admix.	With Admix.	Without Admix.	With Admix.
1-1/4 in.				100	100	
1 inch			100	100	90 - 100	90 - 100

3/4 inch	100	100	90 – 100	90 – 100	85 – 95	85 – 95
1/2 inch	90 – 100	90 – 100	---	---	---	---
3/8 inch	67 – 82	67 – 82	62 – 77	62 – 77	57 – 72	57 – 72
No. 8	40 – 48	41 – 49	37 – 46	38 – 47	32 – 42	33 – 43
No. 40	10 – 18	11 – 19	10 – 18	11 – 19	8 – 16	9 – 17
No. 200	1.5 – 4.5	2.5 – 6.0	1.5 – 4.5	2.5 – 6.0	1.5 – 3.5	2.5 – 5.0

- (1) For mixes without RAP, Arizona Test Method 815. For mixes with RAP, Arizona Test Method 833.
- (2) If the average elevation of the project is above 3500 feet, the index of retained strength shall be a minimum of 70 percent.
- (3) For mixes without RAP, Arizona Test Method 802 (as modified by Arizona Test Method 815). For mixes with RAP, Arizona Test Method 802 (as modified by Arizona Test Method 833).
- (4) The ratio of the mix design composite gradation target for the No. 200 sieve, including mineral admixture, to the effective asphalt content shall be within the range specified below:

$$\frac{\text{Mix Design Composite Gradation Target}}{\text{Effective Asphalt Content}} = \underline{0.8} \text{ to } 1.2$$

416-3 Materials:

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

Special Mixes	3/4" Mix
Unit Weight, (lb./cu. ft.)	<u>147</u>
Asphalt Cement, %	<u>5.0</u>
Mineral Admixture, %	1.0

416-3.01 Mineral Aggregate:

(A) General:

Mineral aggregate shall consist of virgin aggregate, or a combination of virgin aggregate and aggregate from RAP (RAP aggregate). When the terms "mineral aggregate" or "aggregate" are used without being further described as "virgin" or "RAP", the intended meaning is the total aggregate material used in the mixture.

No individual stockpile or hot bin usage of either virgin aggregate or RAP aggregate shall be less than three percent of the total mineral aggregate.

(B) Virgin Mineral Aggregate:

The contractor shall provide a source in accordance with the requirements of Section 1001, except that sub-paragraph (3) under Subsection 1001-3.01(B) shall not apply.

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

For areas or applications where Special Mix is not called for on the plans, fine virgin mineral aggregate shall consist of natural sand or of sand prepared from rock, or other approved inert materials, or a combination thereof, conforming to the requirements of these specifications.

For areas or applications where Special Mix is called for on the project plans, the following shall apply:

Fine virgin mineral aggregate shall be obtained from crushed gravel or crushed rock. All uncrushed material passing the No. 4 sieve shall be removed prior to the crushing, screening, and washing operations necessary to produce the specified gradation. The contractor shall notify the Engineer a minimum of 48 hours in advance of crushing the material to be used as virgin mineral aggregate, so all crushing operations can be inspected. Existing stockpile material which has not been inspected during crushing will not be permitted for use unless the contractor is able to document to the Engineer's satisfaction that the virgin mineral aggregate has been crushed. Any material inspected by the Department as crushed material for the project shall be separated from the contractor's other stockpiles and reserved for use throughout the project duration.

The contractor may blend uncrushed fine virgin aggregate up to a maximum of 15 percent of the total aggregate for mixes not containing RAP, or up to a maximum of 10 percent of the total aggregate for mixes containing RAP. The total composite of virgin fine aggregate shall meet the requirement for uncompacted void content. The uncrushed fine virgin aggregate shall be 100 percent passing the ¼ inch sieve and contain not more than 4.0 percent passing the No. 200 sieve. Should the contractor modify the method of producing either the uncrushed or crushed fine aggregate, the Engineer shall be immediately notified and the materials sampled and tested for determination of uncompacted void content.

(C) RAP Mineral Aggregate:

RAP aggregate shall consist of the aggregate portion of the reclaimed asphalt pavement. A maximum of 25 percent RAP aggregate, by weight of total aggregate in the mix, may be used in mixes placed in a lower lift (minimum 2" below finished surface). A maximum of 20 percent RAP aggregate, by weight of total aggregate in the mix, may be used at all other locations.

(D) Mineral Aggregate Characteristics:

Aggregates shall be free of deleterious materials, clay balls, and adhering films or other material that prevent the thorough coating with the asphalt cement.

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

Mineral Aggregate Characteristics	Test Method	Requirement
Combined Bulk Oven Dry Specific Gravity (1)	Arizona Test Method 251	2.350 - 2.850
Combined Water Absorption (1)	Arizona Test Method 251	0 - 2.5%
Sand Equivalent (1)	AASHTO T 176 (After thoroughly sieving the sample, no additional cleaning of the fines from the plus No. 4 material is required.)	Minimum 55
Abrasion (2)	AASHTO T 96	100 Rev., Max. 9% 500 Rev., Max. 40%
Fractured Coarse Aggregate Particles (3)	Arizona Test Method 212	Minimum 70% (4) (at least one fractured face, determined on plus No. 4 material)
Uncompacted Void Content (1) (Special Mix Only)	Arizona Test Method 247	Minimum 45.0%
Carbonates (3) and (5)	Arizona Test Method 238	Maximum 20%

Notes:

- (1) When the mix design contains RAP, the requirements shall be for the virgin aggregate portion only.
- (2) Abrasion shall be performed separately on materials from each source of mineral aggregate, including RAP aggregate. All sources shall meet the requirements for abrasion.
- (3) When the mix design contains RAP, the requirements shall be for the composite of virgin and RAP aggregate.
- (4) When Special Mix is called for on the project plans, this value shall be minimum 85% with at least two fractured faces and minimum 92% with at least one fractured face, determined on plus No. 4 material.
- (5) Testing for carbonates only applies if either of the following conditions exist:
 - (a) The asphaltic concrete is the designed final pavement surface normally used by traffic.
 - (b) The asphaltic concrete, temporary or otherwise, will be subject to traffic for more than 60 days.

Tests on aggregates outlined above, except for abrasion, shall be performed on materials furnished for mix design purposes and composited to the mix design gradation. When RAP is used in the mixture, RAP aggregates for testing shall be obtained from the RAP material using Method A of AASHTO T 164, prior to combining with the virgin aggregate.

Virgin mineral aggregate from a source or combination of sources which does not meet the requirements given in the table above for combined bulk oven dry specific gravity, and/or combined water absorption (up to a maximum of 3.0 percent), but meets the other specified requirements, will be considered for acceptance by the Engineer if: a) the total estimated cost of all asphaltic concrete components, using the mix design unit weight, asphalt cement content, and mineral admixture percentage, does not exceed the total amount bid for these items by more than 5.0 percent; or b) a supplemental agreement is executed adjusting the unit prices of asphaltic concrete components such that the total estimated cost does not exceed the total amount bid by more than 5.0 percent.

416-3.02 Mineral Admixture:

Mineral admixture will be required. The amount used shall be 1.0 percent, by weight of the mineral aggregate, unless testing demonstrates that additional admixture is required in order to meet the mix design criteria for Wet Strength and Index of Retained Strength. A maximum of 2.0 percent admixture will be permitted. The exact amount of admixture required shall be specified in the mix design. Mineral admixture shall be either Portland cement, blended hydraulic cement or hydrated lime conforming to the following requirements.

Material	Requirement
Portland Cement, Type I or II	ASTM C 150
Blended Hydraulic Cement, Type IP	ASTM C 595
Hydrated Lime	ASTM C 1097

The certification and acceptance of Portland cement, blended hydraulic cement (Type IP), and hydrated lime shall be in accordance with ADOT Materials Policy and Procedure Directive No. 13, "Certification and Acceptance of Hydraulic Cement, Fly Ash, Natural Pozzolan, Silica Fume, and Lime".

416-3.03 Bituminous Material:

(A) General:

Bituminous material shall consist of performance grade (PG) asphalt binder (virgin binder), or a combination of virgin binder and binder from RAP (RAP binder). When the terms "bituminous material", "asphalt cement", "asphalt binder" or "binder" are used without being further described as "virgin" or "RAP", the intended meaning is the total bituminous material used in the mixture.

The percent of asphalt cement used shall be based on the weight of total mix (asphalt cement, mineral aggregate, and mineral admixture).

(B) Virgin Bituminous Material:

Virgin asphalt cement shall be a performance grade (PG) asphalt binder, conforming to the requirements of Section 1005. The type of virgin asphalt binder shall be PG **76-16** or, if RAP is used in the mixture, the virgin asphalt binder shall be as required to meet the blending requirements in Subsection 416-3.03(C) and Arizona Test Method 833.

The contractor shall provide the laboratory mixing and compaction temperature ranges to the mix design laboratory for each PG asphalt binder used for mix design purposes. The laboratory mixing temperature range is defined as the range of temperatures where the un-aged virgin asphalt binder has a rotational viscosity of 0.17 ± 0.02 Pascal-seconds, measured in accordance with AASHTO T 316. The laboratory compaction temperature range is defined as the range of temperatures where the un-aged virgin asphalt binder has a rotational viscosity of 0.28 ± 0.03 Pascal- seconds, measured in accordance with AASHTO T 316. The testing required in AASHTO T 316 shall be performed at 275 F and 350 F, and a viscosity-temperature curve developed in accordance with ASTM D 2493. The viscosity-temperature curve shall be included in the mix design report. For PG asphalt binders that have a maximum laboratory mixing temperature exceeding 325 F or a maximum laboratory compaction temperature exceeding 300 F, the laboratory mixing and compaction temperature ranges shall be specified in writing by the virgin asphalt binder supplier. A viscosity-temperature curve will meet this requirement for written documentation if the viscosity-temperature curve is developed and submitted by the binder supplier and includes language that the recommended laboratory mixing and compaction temperatures are within acceptable ranges, and the submittal includes a statement indicating the maximum laboratory mixing temperature to which the binder can be heated without damage. The laboratory mixing and compaction temperature ranges, as well as the actual laboratory mixing and compaction temperatures used, shall be reported on the mix design. The contractor shall ensure that the asphalt binder supplier information required in this paragraph is provided to all appropriate parties in a timely manner, and that copies are included in the mix design report. The laboratory mixing and compaction temperatures are for mix design purposes only. Field mixing and compaction temperatures are specified in Subsections 416-6 and 416-7.

(C) RAP Bituminous Material:

RAP binder shall consist of the asphalt binder portion of the reclaimed asphaltic pavement. A maximum of 25 percent RAP binder, by weight of total binder in the mix, may be used in mixes placed in a lower lift (minimum 2" below finished surface). A maximum of 20 percent RAP binder, by weight of total binder in the mix, may be used at all other locations.

When less than or equal to 15 percent RAP binder is used, by weight of total binder in the mix, no testing is required on the RAP binder. When greater than 15 percent RAP binder is used, by weight of total binder in the mix, the RAP binder shall be extracted, recovered, and tested in accordance with the requirements of Arizona Test Method 833. The virgin binder grade shall be modified if necessary to ensure the blend of virgin and RAP binder meets the PG grade specified in the Subsection 416-3.03(B). However, a change of only one virgin

PG binder grade (6 C on either or both the high and low temperatures) will be allowed from that shown in Subsection 416-3.03(B).

416-3.04 Reclaimed Asphalt Pavement (RAP):

RAP shall consist of salvaged, milled, pulverized, broken, or crushed asphalt pavement. If RAP is generated by milling, the minimum removal depth shall be 1-1/2 inches. The source of RAP may be from ADOT or other projects. The contractor shall be responsible for determining the suitability of the RAP for use in the mixture, regardless of its source.

For asphaltic concrete containing less than or equal to 15 percent RAP aggregate, all RAP material shall pass the 1-1/4" sieve. For asphaltic concrete containing greater than 15 percent RAP aggregate, the RAP material shall be processed into uniform coarse and fine stockpiles such that there will be a minimum amount of fines. The use of more than two RAP stockpiles is prohibited. The gradation, when tested in accordance with Arizona Test Method 240, shall meet the following requirements:

Stockpile	Sieve Size	Percent Passing
Coarse	1-1/4 inch	100
	3/8 inch	0-25
Fine	3/4 inch	100
	3/8 inch	75-100

The contractor may propose gradation bands differing from those shown in the table above. The proposal shall be submitted to the Engineer prior to the start of RAP processing. If approved, the required gradation bands will be adjusted accordingly.

RAP shall be stockpiled so that segregation is minimized. When two RAP stockpiles are used, acceptable methods to prevent intermingling of stockpiles shall be provided.

The Engineer reserves the right to reject obviously defective salvaged material or salvaged material that is not representative of the material used in the mix design.

416-3.05 Warm Mix Asphalt Technologies:

Warm Mix Asphalt (WMA) technologies include plant water foaming processes, mineral additives, and chemical additives. WMA technologies must be approved prior to their use in accordance with Materials Policy and Procedure Directive No. 23, "Requirements for the Use of Warm Mix Asphalt (WMA) Technologies in Asphaltic Concrete".

416-4 Mix Design:

Utilizing mineral aggregate and RAP which has been crushed, processed, separated and stockpiled, a mix design shall be formulated and submitted by the contractor to the Engineer. The mineral aggregate and RAP samples used for mix design purposes shall be representative of materials to be used during production.

The mix design shall be based on the mix design criteria and other requirements hereinbefore specified, utilizing asphalt cement and mineral admixture of the type and from the sources proposed for use in the production of asphaltic concrete.

The mix design shall be prepared by or under the direct supervision of a professional engineer experienced in the development of mix designs and mix design testing. The mix design engineer shall meet the requirements given in ADOT Materials Policy and Procedure Directive No. 4, "Asphaltic Concrete Mix Design Proposals and Submittals". The mix design shall be provided in a format that clearly indicates all the mix design requirements and shall be sealed, signed, and dated by the mix design engineer.

The mix design shall be prepared by a mix design laboratory that has met the requirements of ADOT Materials Policy and Procedure Directive No. 19, "ADOT System for the Evaluation of Testing Laboratories".

The contractor may propose the use of a mix design that has been developed for a previous project. The proposed mix design shall meet the requirements of these specifications. The contractor shall provide evidence that the type and source of bituminous material, the type of mineral admixture, and the source and methods of producing virgin mineral aggregate and RAP have not changed since the formulation of the previous mix design. The contractor shall also provide current test results for all specified characteristics of the mineral aggregate and RAP proposed for use. The Engineer will determine if the previously used mix design is suitable for the intended use and if the previous use of the mix design was satisfactory to the Department. The Engineer will either approve or disapprove the proposed mix design. Should the Engineer disapprove the use of the previously used mix design, the contractor shall prepare and submit a new mix design proposal in accordance with the requirements of these specifications.

A previously used mix design older than two years from the date it was formulated, sealed, signed, and dated shall not be allowed for use. Once approved for use on a project, a mix design may be used for the duration of that project.

The mix design shall contain as a minimum:

- (1) The name and address of the testing organization and the person responsible for the mix design testing.
- (2) The specific location(s) of the source(s) of mineral aggregate.
- (3) The supplier, refinery, type of asphalt cement and any modifiers including polymers. The source and type of mineral admixture. The percentage of asphalt cement and mineral admixture to be used.
- (4) The anticipated mineral aggregate gradation in each stockpile.
- (5) Mix design gradation. The mix design shall contain the mineral aggregate gradation, and also the gradation with mineral admixture.

- (6) The results of all testing, determinations, etc., such as: specific gravity of each component, water absorption, sand equivalent, loss on abrasion, fractured coarse aggregate particles, uncompacted void content (for Special Mix), percent carbonates (if required), immersion compression results (Index of Retained Strength, wet and dry strengths), Marshall stability and flow, asphalt absorption, percent air voids, voids in mineral aggregate, and bulk density.
- (7) Viscosity-temperature curve along with the laboratory mixing and compaction temperature ranges, as well as the actual laboratory mixing and compaction temperatures used.

When RAP is used in the mixture, the following additional information shall be included in the mix design:

- (1) The specific location(s) of the source(s) of RAP.
- (2) The anticipated RAP gradation, RAP aggregate gradation, and RAP binder content in each stockpile.
- (3) If greater than 15 percent RAP binder is used in the mixture, the results of all tests on the recovered RAP binder, as well as all tests on the blend of virgin binder and recovered RAP binder.
- (4) The percent RAP binder, virgin binder, and total binder in the mixture.
- (5) The composite gradation of virgin and RAP aggregates, with and without mineral admixture. The composite gradation of the virgin aggregate and RAP, with and without mineral admixture.
- (6) The results of all testing, determinations, etc., for the RAP, virgin aggregate, RAP aggregate, and composite of virgin and RAP aggregates as required, such as: specific gravity, water absorption, sand equivalent, loss on abrasion, fractured coarse aggregate particles, uncompacted void content (for Special Mix), and percent carbonates.
- (7) The viscosity-temperature curve along with the laboratory mixing and compaction temperature ranges for the blended binder, if greater than 15 percent RAP binder is used in the mixture, as well as the actual laboratory mixing and compaction temperatures used.

When Warm Mix Asphalt (WMA) technologies are used in the mixture, the additional mix design requirements specified in Materials Policy and Procedure Directive No. 23, "Requirements for the Use of Warm Mix Asphalt (WMA) Technologies in Asphaltic Concrete", shall also be included in the mix design.

Test results used in the formulation of the mix design shall be from testing performed no earlier than 45 days prior to the date the mix design is signed by the mix design

engineer. Historical abrasion values may be supplied on sources provided the testing was conducted within the past two years.

The mix design shall be submitted to the Engineer under a cover letter signed by an authorized representative of the contractor.

A copy of the mix design and representative samples of the materials used in the mix design shall be submitted to the Engineer for calibration of the ignition furnace, and for the determination of sand equivalent and fractured coarse aggregate particles. When Special Mix is used, the uncompacted void content shall also be determined. Approximately 300 pounds of virgin mineral aggregate (proportional to the mix design gradation), three gallons of asphalt cement, and one gallon of mineral admixture shall be submitted. When RAP is used, a minimum of 40 pounds of representative RAP material and a minimum of 10 pounds of solvent-extracted RAP aggregate, per AASHTO T 164, Method A, shall be submitted. If RAP is fractionated, the RAP and RAP aggregate from each stockpile shall be kept separate. The Engineer shall witness the sampling of the virgin mineral aggregate and RAP. The mix design and samples shall be submitted to the Engineer at least five working days prior to the start of asphaltic concrete production.

The sand equivalent, fractured coarse aggregate particles, and (for Special Mix) uncompacted void content shall meet the requirements specified in Subsection 416-3.01. Additional testing of the uncrushed and crushed fine aggregate for uncompacted void content will be required if the method of producing either fine aggregate is modified.

If the mineral aggregate fails to meet the requirements specified herein, asphaltic concrete production shall not commence, and the contractor shall either submit a revised mix design which is representative of the materials produced or correct the deficiencies in the aggregate stockpiles.

The Engineer will review the mix design to assure that it contains all required information. If it does not, it will be returned within two working days of receipt of all samples and mix design information, for further action and resubmission by the contractor.

If the contractor elects to change its source(s) of mineral aggregate or RAP, or adds or deletes the use of a stockpile(s) regardless of source, the contractor shall furnish the Engineer with a new mix design which meets the requirements specified hereinbefore.

If changes are made in the source or type of bituminous material, or the type of mineral admixture, the contractor shall provide verification testing results. Verification testing shall be performed at the original mix design asphalt content using the original mineral aggregate and RAP (if used), the proposed bituminous material, and/or the proposed mineral admixture. Three specimens shall be fabricated and tested for bulk density, maximum theoretical density, and effective voids. The percent effective voids must be within ± 0.2 of the percent effective voids in the original design and also be within the current effective voids mix design specification limits. Verification testing results shall not replace target values shown in the original mix design. All target values from the original design shall be used in future production with the exception of any self-directed target value changes that

are requested. The verification process does not ensure that the contractor can meet the target values during production.

In addition to the verification testing specified above, verification testing for immersion compression may also be required. If there is a change in the type of mineral admixture, immersion compression testing is required. If there is a change in the source or type of bituminous material, immersion compression testing is required if the Index of Retained Strength of the original mix design is less than ten percentage points greater than the specified minimum, or if the Wet Strength is less than 100 psi greater than the specified minimum.

The contractor may make self-directed target changes to the approved mix design within the limits shown below. Requests for self-directed target changes shall be made in writing and acknowledged by the Engineer prior to start of production for a lot. Self-directed target changes shall meet contract requirements for mix design criteria and grading limits.

MEASURED CHARACTERISTICS	ALLOWABLE SELF-DIRECTED TARGET CHANGES
Gradation (sieve size): 3/8 inch No. 8 No. 40 No. 200	±4% from mix design target value ±4% from mix design target value ±2% from mix design target value ±0.5% from mix design target value
Asphalt Cement Content	±0.2% from mix design target value
Effective Voids	None

The contractor may propose target changes to the approved mix design for the Engineer's approval. The Engineer will determine if the proposed target change will result in mix production that meets the contract requirements for mix design criteria and grading limits. For acceptance purposes, target changes will not be retroactive.

In no case shall the approval of mix design changes relieve the contractor of the responsibility for the results obtained by the use of such approved changes.

Should a mix design prove unsatisfactory to the contractor during production, the contractor shall furnish the Engineer with a revised mix design. For acceptance purposes, the revised mix design will not be retroactive.

The contractor shall not change its methods of crushing, screening, washing, or stockpiling from those used during production of material used for mix design purposes without approval of the Engineer or without preparing a new mix design.

416-5 Contractor Quality Control:

The contractor shall perform the quality control measures described in Subsection 106.04(C). At the weekly meeting, the contractor shall be prepared to explain and discuss how the following processes will be employed.

- (a) Aggregate production, including crusher methods, pit extraction, and washing.
- (b) RAP production, including milling, crushing, screening, and handling methods.
- (c) Stockpile management, including stacking methods, separation technique, plant feed technique, stockpile pad thickness, and segregation prevention.
- (d) Proportioning and plant control, including plant scale calibration, mix temperature control, storing method, and addition of admixture.
- (e) Transporting and placing, including hauling distance and temperature control, segregation and non-uniform placement control, and joint placement and technique.
- (f) Compaction, including types and weight of rollers, establishing and monitoring of roller patterns, and temperature controls.

The contractor shall obtain samples and perform the tests specified in the following table:

CONTRACTOR QUALITY CONTROL TESTING REQUIREMENTS			
TYPE OF TEST	TEST METHOD	SAMPLING POINT	MINIMUM TESTING FREQUENCY
Virgin Mineral Aggregate			
Gradation	ARIZ 201	Crusher Belt or Stockpile	1 per stockpile per day
Sand Equivalent	AASHTO T 176		1 per 2000 Tons of total virgin aggregate (1)
Fractured Coarse Aggregate Particles	ARIZ 212		
Uncompacted Void Content (2)	ARIZ 247		
Reclaimed Asphalt Pavement			
Gradation, Moisture Content, and Binder Content	ARIZ 428 (Appendix A)	Crusher Belt or Stockpile	1 per stockpile per day
RAP Aggregate			
Gradation	ARIZ 201	Crusher Belt or Stockpile	1 per stockpile per day
Fractured Coarse Aggregate Particles	ARIZ 212		1 per stockpile every other day
Asphaltic Concrete			
Gradation	ARIZ 201 or 427 (428 for RAP mixes)	Cold Feed, Hot Bins, Roadway, or	1 per 1000 Tons

		Plant	
Asphalt Content	ARIZ 421, 427 (428 for RAP mixes), or other approved methods	Roadway or Plant	1 per 1000 Tons
Voids	ARIZ 410, 415, 417, 424		1 per 1000 Tons each day. Maximum of 4 per day.
Compaction	ARIZ 412	Roadway	1 per 300 tons
<p>Notes:</p> <p>(1) Prior to the completion of the mix design, quality control tests on mineral aggregate shall be performed based on the anticipated percent use of each stockpile. Samples taken from individual stockpiles may be composited prior to performing the required tests, or testing may be performed on material from each stockpile and the composite test result for each required test determined mathematically.</p> <p>(2) For Special Mix.</p>			

416-6 Construction Requirements:

The contractor shall be responsible for the proportioning of all materials, for the hauling, placing, loading, spreading, and finishing of asphaltic concrete and for the applying of bituminous material, such as tack coats, prime coats, and provisional seals, all in accordance with the appropriate portions of the specifications.

The asphaltic concrete hot plant shall conform to the requirements of Section 403 of the Specifications.

During production, the percent RAP aggregate and percent RAP binder shall not exceed the maximum allowed in Subsections 416-3.01(C), 416-3.03(C), and 416-3.04. In addition, the percent RAP material shall be maintained to within plus 2 percent and minus 5 percent of the mix design value(s). When two RAP stockpiles are used, this tolerance shall apply to the total percent RAP material in the mixture, as well as the percent RAP material from each stockpile.

The temperature of asphaltic concrete or mineral aggregate upon discharge from the drier shall not exceed 325 °F unless a higher temperature is recommended in writing by the asphalt binder supplier and approved by the Engineer.

All courses of asphaltic concrete shall be placed and finished by means of self-propelled paving machines except under certain conditions or at certain locations where the Engineer deems the use of self-propelled paving machines impractical.

Self-propelled paving machines shall spread the mixture within the specified tolerances, without segregation or tearing, true to the line, grade, and crown indicated on the project plans. Pavers shall be equipped with hoppers and augers which shall distribute the mixture uniformly in front of adjustable screeds.

Pavers shall be equipped with a screed for the full width being paved, heated if necessary, and capable of spreading and finishing all courses of asphaltic concrete.

Pavers shall be equipped with automatic screed controls with sensors for either or both sides of the paver, capable of sensing grade from an outside reference line, sensing the transverse slope of the screed, and providing the automatic signals which operate the screed to maintain the desired grade and transverse slope.

Failure of the control system to function properly shall be cause for the suspension of the placing of asphaltic concrete.

The base or subgrade upon which asphaltic concrete is to be placed shall be prepared and maintained in a firm condition until asphaltic concrete is placed. It shall not be frozen or excessively wet.

At any time, the Engineer may require that the work cease or that the work day be reduced in the event that weather conditions, either existing or expected, are anticipated to have an adverse effect upon the asphaltic concrete.

All wheels and tires of compactors and other equipment surfaces shall be treated when necessary with a release agent approved by the Engineer in order to prevent the sticking of asphaltic concrete. Release agents which degrade, dissolve, or in any way damage the bituminous material shall not be used. Diesel fuel shall not be used as a release agent.

Longitudinal joints of each course shall be staggered a minimum of one foot with relation to the longitudinal joint of any immediate underlying course.

When surfacing courses are placed on 10 foot or wider shoulders which are to receive rumble strips, the contractor shall place any longitudinal joints approximately one foot away from the travel lane side of the rumble strip.

Longitudinal joints shall be located within one foot of the center of a lane or within one foot of the centerline between two adjacent lanes. Joints shall be formed by a slope shoe or hot-lapped, and shall result in an even, uniform surface.

Before a surface course is placed in contact with a cold transverse construction joint, the cold existing asphaltic concrete shall be trimmed to a vertical face by cutting the existing asphaltic concrete back for its full depth of the lift and exposing a fresh face. After placement and finishing of the new asphaltic concrete, both sides of the joint shall be dense

and the joint shall be well sealed. The surface in the area of the joint shall conform to the requirements hereinafter specified for surface tolerances when tested with the straightedge placed across the joint.

All locations where plate samples are taken from the roadway shall be immediately repaired by the contractor utilizing hot asphaltic concrete. All holes where cores are taken shall be repaired within 48 hours after coring using a material approved by the Engineer. All holes shall be in a dry condition prior to repair. The patching material shall be thoroughly compacted in the holes by the contractor.

The handling of asphaltic concrete shall at all times be such as to minimize segregation. Any asphaltic concrete which displays segregation shall be removed and replaced.

Before asphaltic concrete is placed, the surface to be paved shall be cleaned of all objectionable material and tacked in accordance with the requirements of Section 404. The cleaning of the surface, the tacking of the surface, and the type of bituminous material used shall be acceptable to the Engineer. The amount of bituminous material used shall be as directed by the Engineer.

A light coat of bituminous material shall be applied to edges or vertical surfaces against which asphaltic concrete is to be placed.

The contractor shall schedule its paving operations to minimize exposed longitudinal edges. Unless otherwise approved by the Engineer, the contractor shall limit the placement of asphaltic concrete courses, in advance of adjacent courses, to one shift of asphaltic concrete production. The contractor shall schedule its paving operations in such a manner to eliminate exposed longitudinal edges over weekends or holidays.

The moisture content of the asphaltic concrete immediately behind the paver shall not exceed 0.5 percent. The moisture content will be determined in accordance with Arizona Test Method 406.

When Warm Mix Asphalt (WMA) technologies are used, the contractor shall comply with the manufacturer's recommendations for incorporating additives and WMA technologies into the mixture. The contractor shall comply with the manufacturer's recommendations regarding transporting, storage, and delivery of additives and water foaming processes. The contractor shall maintain a copy of the manufacturer's recommendations on file at the asphalt mixing plant and make those recommendations available for reference while using WMA technologies.

416-7 Acceptance:

416-7.01 General:

In addition to the random acceptance samples taken from each lot, the Engineer may sample and reject material which appears to be defective. Such rejected material shall not be used in the work. The results of tests run on rejected material will not be included with the lot acceptance tests.

Acceptance will be on the basis of the following:

- Sand Equivalent
- Fractured Coarse Aggregate Particles
- Uncompacted void Content (for Special Mix)
- Material Spread
- Gradation
- Asphalt Cement Content
- Effective Voids
- Stability
- Compaction
- Smoothness

416-7.02 Sand Equivalent, Fractured Coarse Aggregate Particles, and Uncompacted Void Content of Mineral Aggregate:

During asphaltic concrete production, the Engineer shall obtain and test samples of material for the determination of the sand equivalent and fractured coarse aggregate particles. When Special Mix is used, the uncompacted void content shall also be determined. When RAP is used in the mixture, the sand equivalent and uncompacted void content shall be determined on the composite of virgin aggregates only. Samples shall be obtained from the cold feed belt prior to the addition of mineral admixture, or from the stockpiles when sampling from the cold feed belt is not possible.

When RAP is used in the mixture, the material for determining the fractured coarse aggregate particles shall come from an asphaltic concrete sample taken and tested in accordance with Arizona Test Method 428, as specified in Subsection 416-7.04(A). However, if the Engineer determines that excessive breakdown of the aggregate has occurred due to the use of the ignition furnace, the fractured coarse aggregate particles testing shall be performed on the combination of RAP aggregate, as obtained in accordance with Arizona Test Method 428, and virgin mineral aggregate.

Virgin mineral aggregate will be acceptable for sand equivalent if it meets the minimum requirements specified in Subsection 416-3.01.

The fractured coarse aggregate particles shall meet the minimum requirements specified in Subsection 416-3.01.

For Special Mix, the uncompacted void content shall meet the minimum requirements specified in Subsection 416-3.01. Additional testing of the uncrushed and crushed fine aggregate for uncompacted void content will be required if the method of producing either fine aggregate is modified.

If the mineral aggregate fails to meet the requirements specified herein, operations shall cease and the contractor shall have the option of submitting a revised mix design conforming to the requirements of Subsection 416-4 or correcting deficiencies in the aggregate stockpiles.

416-7.03 Material Spread:

A spread lot shall be considered to be one-half shift of production. Lots encompassing more than one project shall be separated in accordance with Subsection 416-9(D).

The contractor shall record information pertaining to each spread lot on forms provided by the Engineer. Information shall include the project number, date and period of time that each spread lot was placed, the spread lot number, beginning and ending station, the plans thickness, and tons placed in each lot. Completed spread lot forms shall be signed by the contractor and given to the Engineer at the end of each shift.

The Engineer will calculate the quantity required in each spread lot using the mix design bulk density unless a request is made by the contractor to use a production bulk density. If a request is made to use production bulk density, the first three non-rejected lots following the test lot will be used to determine the average production bulk density. All lots placed prior to establishing the average production bulk density shall be calculated using the mix design bulk density. For each new mix design used on the project, a new production bulk density may be requested by the contractor. In addition, if conditions warrant during asphalt production, the contractor may request establishment of a new average production bulk density. All requests to use a production bulk density shall be made in writing and approved by the Engineer prior to use. The same procedure will be used for determining average production bulk density in all cases. Changes to the bulk density for calculating spread quantities will not be retroactive.

The calculated quantity required in each spread lot will be compared to the actual quantity placed. A lot will be considered to be acceptable, with a zero pay factor, if the actual quantity placed varies by no more than -2.0 to +5.0 percent from the required quantity.

If the quantity in a lot is found to vary from the required quantity by -2.1 to -12.0 percent, the appropriate pay factor will be determined in accordance with Table 416-1. This pay factor will be utilized in determining the pay adjustment as outlined in Subsection 416-9.

416-7.04 Gradation, Asphalt Cement Content, Effective Voids, and Stability:

(A) General:

A mixture properties lot shall be considered to be one shift's production. In the event a shift's production is less than 1200 tons, multiple shifts may be combined to form a lot. When a lot consists of production from more than one shift, the following conditions apply: at least one sample shall be taken each shift, at least one sample shall be taken every 500 tons, and no mix design or target value changes shall be made within the lot. If changes are made in the mix design or target values, new lots will be established.

Four samples of the asphaltic concrete shall be taken for each lot by the contractor, under the observation of the Engineer, at random locations designated by the Engineer. Samples will be taken in accordance with the requirements of Section 2 or 3 of Arizona Test Method 104 and delivered to the Engineer immediately after being taken. The minimum weight of the sample shall be 75 pounds. The Engineer will split the sample and save one-half for 15

days after written notification to the contractor of test results for that lot has been made. The material will be tested by the Engineer for the following properties:

Test Property	Test Method
Asphalt Cement Content	Arizona Test Method 427 (428 for RAP mixes) (See Notes 1 and 2 below)
Gradation	
Marshall Density and Stability	Arizona Test Method 410
Maximum Theoretical Density	Arizona Test Method 417
Effective Voids	Arizona Test Method 424
Notes: (1) A new calibration of the ignition furnace shall be performed for each mix design, and at any other time the Engineer directs. (2) Ignition furnace results will be corrected for asphalt cement content in accordance with Subsection 416-7.04(B) or (C) as required.	

Acceptance testing results will be furnished to the contractor within four working days of receipt of samples by the Engineer.

A mixture-properties lot placed with an average stability below 2,500 pounds for base mixes, or 1,750 pounds for 1/2 or 3/4 inch mixes shall be rejected, and shall be subject to an engineering analysis of anticipated performance in accordance with Subsection 416-9(E). Production shall cease until the contractor proposes a corrective action the Engineer finds acceptable. If the Engineer rejects the proposed corrective action, the contractor shall submit a revised mix design.

The target values for gradation, asphalt cement content, and effective voids are given in the contractor's mix design. The Upper Limits (UL) and Lower Limits (LL) of acceptable production of each of the measured characteristics are as follows:

Measured Characteristics	LL (Note 1)	UL (Note 1)
Gradation (Sieve size):		
3/8 inch (Note 2)	TV - 6.0	TV + 6.0
No. 8	TV - 6.0	TV + 6.0
No. 40	TV - 5.0	TV + 5.0
No. 200	TV - 2.0	TV + 2.0
Asphalt Cement Content	TV - 0.50	TV + 0.50
Effective Voids	TV - 2.0	TV + 1.5
Notes: (1) The limits are used in the statistical calculations for Quality Index. Acceptance is controlled by the variability of the produced material and every effort should be made to strive for the applicable target value (TV).		

(2) In the case of the 3/8 inch sieve requirement, for the base mix only, the lower limit shall be the target value minus 8.0, and the upper limit shall be the target value plus 8.0.

The Engineer will determine the PT for each measured characteristic in accordance with Subsection 416-9(l), and utilizing Table 416-1 will determine the pay factor for each measured characteristic.

In the event the contractor elects to question the mixture property test results, the contractor may request referee testing in accordance with Subsection 416-9 (J).

(B) Ignition Furnace Correction for Non-RAP Mixes:

For plants providing asphaltic concrete exclusively for the project, the difference between the asphalt cement content as measured by ignition furnace testing and the actual asphalt cement content shall be determined by the Engineer for each of the first five lots of asphaltic concrete produced for each mix design. If there are less than five lots for the mix design, the total number of available lots shall be used. If approved by the Engineer, a plant may be considered exclusive to the project if an asphalt cement tank is dedicated for the shift of asphaltic concrete production. The determination of the actual asphalt cement content may include weighing of asphalt cement deliveries, invoice quantities, volumetric tank measurements using a calibrated rod (tank stickings) corrected for temperature, computerized mass-flow meter, and accounting for wasted materials. If a computerized mass-flow meter is used, documentation of its calibration shall be submitted to the Engineer prior to asphaltic concrete production. At any time during asphaltic concrete production, the Engineer may require that a new calibration of the mass-flow meter be performed. If the average difference exceeds ± 0.10 percent asphalt cement content between the asphalt cement content measured by ignition furnace testing and the actual asphalt cement content, the contractor may request that a correction to the asphalt cement content by ignition furnace testing be made. The contractor must make such a request in writing within two working days after receiving the test results for the fifth lot of asphaltic concrete production. If referee testing is performed on a lot of asphaltic concrete for which a correction, based on the actual asphalt cement content, was made to the asphalt cement content by ignition furnace testing, referee testing shall not apply to the determination of asphalt cement content. The correction, once documented and approved by the Engineer, shall be applied to test results from the beginning of asphaltic concrete production through the remainder of asphaltic concrete production using that mix design; however, a new correction may be determined at any time the Engineer believes it is necessary due to a change in material or other circumstances. If the contractor submits a new mix design, a new correction must be established and applied as specified above. For plants not providing asphaltic concrete exclusively for this project, no correction will be made to asphalt cement content values measured by ignition furnace testing.

(C) Ignition Furnace Correction for Mixes Containing RAP:

For mixes containing RAP, an asphalt cement tank shall be dedicated to the project for each shift of asphaltic concrete production. The difference between the asphalt cement content as measured by ignition furnace testing and the actual asphalt cement content shall

be determined by the Engineer for each of the first five lots of asphaltic concrete produced for each mix design. If there are less than five lots for the mix design, the total number of available lots shall be used. The actual asphalt cement content shall be determined by adding the virgin asphalt cement content to the RAP binder content determined in Subsection 416-7.04(D), both expressed as a percent of the total mix. The determination of the virgin asphalt cement content may include weighing of asphalt cement deliveries, invoice quantities, volumetric tank measurements using a calibrated rod (tank stickings) corrected for temperature, computerized mass-flow meter, and accounting for wasted materials. If a computerized mass-flow meter is used, documentation of its calibration shall be submitted to the Engineer prior to asphaltic concrete production. At any time during asphaltic concrete production, the Engineer may require that a new calibration of the mass-flow meter be performed. If the average difference exceeds ± 0.10 percent asphalt cement content between the asphalt cement content measured by ignition furnace testing and the actual asphalt cement content, a correction to the asphalt cement content by ignition furnace testing shall be made. The correction shall be applied to test results from the beginning of asphaltic concrete production through the remainder of asphaltic concrete production using that mix design; however, a new correction may be determined at any time the Engineer believes it is necessary due to a change in material or other circumstances. If the contractor submits a new mix design, a new correction must be established and applied as specified above. Referee testing shall not apply to the determination of asphalt cement content for asphaltic concrete containing RAP.

(D) RAP Binder Content:

(1) General:

During asphaltic concrete production, the Engineer shall obtain and test samples of the RAP material to determine the RAP binder content in each stockpile at a minimum frequency of one sample per lot. The RAP will be tested by the Engineer for asphalt binder content in accordance with Arizona Test Method 428. When more than one RAP sample is tested for a given lot and stockpile, the average of the results shall be used.

(2) RAP Binder Content Correction Factor:

A RAP binder correction factor shall be determined for each RAP stockpile used in the mixture.

At the start of asphaltic concrete production, the first two samples of RAP material from each stockpile will be split and tested for asphalt binder content; one split is tested in accordance with Arizona Test Method 428 (ignition furnace) and the other split is tested in accordance with AASHTO T 164 (solvent extraction). A RAP binder correction factor will be determined by subtracting the average ignition furnace result from the average solvent extraction result. The appropriate correction factor shall be added to each asphalt binder test result determined on the material from each RAP stockpile in accordance with Arizona Test Method 428 to determine the RAP binder content. At the discretion of the Engineer, the correction factor may be determined prior to the start of asphaltic concrete production provided representative RAP samples are available. A new correction factor may be

determined at any time the Engineer believes it is necessary due to a change in material or other circumstances.

416-7.05 Compaction:

(A) Courses 1 1/2 Inches or Less in Nominal Thickness:

(1) General Requirements:

Asphaltic concrete shall be placed only when the temperature of the surface on which the asphaltic concrete is to be placed is at least 65 degrees F and the ambient temperature at the beginning of placement is at least 65 degrees F and rising. The placement shall be stopped when the ambient temperature is 70 degrees F or less and falling.

When Warm Mix Asphalt (WMA) technologies are not used in the mixture, asphaltic concrete immediately behind the laydown machine shall be a minimum of 275 degrees F.

When Warm Mix Asphalt (WMA) technologies are used in the mixture, the recommended temperature range for compaction during production shall be shown on the mix design and shall be approved by the Engineer.

All edges shall be rolled with a pneumatic tired compactor, or other methods approved by the Engineer, while the mixture is still hot.

(2) Equipment:

Compacting and smoothing shall be accomplished by the use of self-propelled equipment. Compactors shall be pneumatic-tired and/or steel wheel.

Compactors shall be operated in accordance with the manufacturer's recommendations. Compactors shall be designed and properly maintained so that they are capable of accomplishing the required compaction.

Steel wheel compactors shall weigh not less than eight tons.

Pneumatic-tired compactors shall be the oscillating type with at least seven pneumatic tires of equal size and diameter. Wobble-wheel compactors will not be permitted. The tires shall be spaced so that the gaps between adjacent tires will be covered by the following tires. The tires shall be capable of being inflated to 90 pounds per square inch and maintained so that the air pressure will not vary more than five pounds per square inch from the designated pressure. Pneumatic-tired compactors shall be constructed so that the total weight of the compactor will be varied to produce an operating weight per tire of not less than 5,000 pounds. Pneumatic-tired compactors shall be equipped with skirt-type devices mounted around the tires so that the temperature of the tires will be maintained during the compaction process.

(3) Rolling Method Procedure:

Compaction shall consist of an established sequence of coverage using specified types of compactors. A pass shall be defined as one movement of a compactor in either direction. Coverage shall be the number of passes as are necessary to cover the entire width being paved.

The rolling sequence, the type of compactor to be used, and the number of coverages required shall be as follows:

Rolling Sequence	Type of Compactor		No. of Coverages	
	Option No. 1	Option No. 2	Option No.1	Option No. 2
Initial	Static Steel	Vibrating Steel	1	1
Intermediate	Pneumatic Tired	Vibrating Steel	4	2- 4*
Finish	Static Steel	Static Steel	1-3	1-3
* Based on the roller pattern which exhibits the best performance.				

The Engineer shall select the option for compaction and, when pneumatic-tired compactors are used, will designate the tire pressure.

One pneumatic-tired roller shall be furnished for each 300 tons of asphaltic concrete per hour.

Steel wheel compactors shall not be used in the vibratory mode for courses of one inch or less in thickness nor when the temperature of the asphaltic concrete falls below 180 degrees F.

Initial and intermediate compaction shall be accomplished before the temperature of the asphaltic concrete falls below 200 degrees F.

Compaction will be deemed to be acceptable on the condition that the asphaltic concrete is compacted using the type of compactors specified, ballasted and operated as specified, and with the number of coverages of the compactors as specified.

(B) Courses Greater than 1 1/2 Inches in Nominal Thickness:

Compaction control shall be the responsibility of the contractor. The number and types of rollers shall be the contractor's responsibility and shall be sufficient to meet these requirements.

All edges shall be rolled with a pneumatic tired compactor, or other methods approved by the Engineer, while the mixture is still hot.

A compaction lot shall be identical to the mixture properties lot described in Subsection 416-7.04. Lots encompassing more than one project shall be separated in accordance with Subsection 416-9 (D). Each lot shall be tested for acceptance.

Twenty cores shall be taken for each lot by the contractor, under the observation of the Engineer. The Engineer will designate ten random locations within the lot, and the contractor shall take two cores at each location; however, if more than one shift constitutes a lot, two cores shall be taken from a minimum of two random locations each shift, or as directed by the Engineer. The Engineer will save one core from each location for 15 days after written notification to the contractor of test results for the lot has been made. Randomly selected locations will be determined to the nearest one-half foot in the transverse direction and to the nearest foot in the longitudinal direction of the pavement course; however, the outside one foot of the unconfined pavement course will be excluded from testing as shown in Materials ADOT Policy and Procedure Directive (P.P.D.) No. 18, "Determining Sample Times and Locations for End Product Asphaltic Concrete". P.P.D. No. 18 also addresses areas to be excluded relative to longitudinal joints. Areas excluded from testing will be compacted in accordance with Subsection 416-7.05(A). Cores shall be taken utilizing mechanical coring equipment in accordance with the requirements of Arizona Test Method 104. Cores shall be a minimum of four inches in diameter and shall be taken not later than two working days after placement of the asphaltic concrete. The cores shall be delivered to the Engineer immediately upon being taken. The bulk density of each core will be determined by the Engineer in accordance with the requirements of Arizona Test Method 415. The test results will be furnished to the contractor within four working days of receipt of cores by the Engineer. In areas where more than one lift is placed in the same lot, coring shall be accomplished through the full depth of the lifts after the final lift is placed, and the compaction density shall be based on the full depth of the lifts.

The target value for compaction shall be 7.0 percent in-place air voids. In-place air voids shall be determined in accordance with Arizona Test Method 424. The maximum theoretical density used in the determination of air voids will be the average of the four maximum theoretical densities determined for the lot in Subsection 416-7.04.

The Upper Limit (UL) is 9.0 percent in-place air voids and the Lower Limit (LL) is 3.5 percent in-place air voids. The Engineer will determine the PT for compaction in accordance with Subsection 416-9(I), and utilizing Table 416-1 will determine the compaction pay factor.

In the event the contractor elects to question the core test results, the contractor may request referee testing in accordance with Subsection 416-9(J).

416-7.06 Smoothness and Surface Tolerances:

Asphaltic concrete shall be compacted as required, smooth and true to the required lines, grades, and dimensions.

The Special Provisions may require the smoothness of the final pavement surface to be tested in accordance with Subsection 109.13.

Regardless of whether testing in accordance with Subsection 109.13 is specified or not, the following requirements shall be met:

- (1) The surface of the final lift of asphaltic concrete placed under this section of the specifications shall be tested and shall not vary by more than 1/8 inch from the lower edge of a ten-foot straightedge when it is placed in the longitudinal direction (including across transverse joints), and when it is placed in the transverse direction across longitudinal joints.
- (2) The surface of any lift of asphaltic concrete placed under this section of the specifications, other than the final lift, shall be tested and shall not vary by more than 1/4 inch from the lower edge of a ten-foot straightedge when it is placed in the longitudinal direction (including across transverse joints), and when it is placed in the transverse direction across longitudinal joints.
- (3) All deviations exceeding the specified tolerances above shall be corrected by the contractor, to the satisfaction of the Engineer.

416-8 Method of Measurement:

(A) Asphaltic Concrete:

Asphaltic concrete will be measured by the ton for the asphaltic concrete actually used, which will include the weight of mineral aggregate, asphalt cement, and mineral admixture. Measurement will include any quantity used in construction of intersections, turnouts, or other miscellaneous items or surfaces.

(B) Asphalt Cement:

(1) Non-RAP Mixes:

Asphalt cement will be measured by the ton on the basis of the asphalt cement content determined in accordance with Subsections 416-7.04(A) and (B) for each lot of asphaltic concrete accepted. The average asphalt cement content will be multiplied by the number of tons of asphaltic concrete in that lot to determine the amount of asphalt cement. If the contractor has requested referee testing, the average asphalt cement content will come from the independent testing laboratory results unless a correction, based on the actual asphalt cement content, was made to the ignition furnace test value as allowed in Subsection 416-7.04(B). If a correction, based on the actual asphalt cement content, was made to the ignition furnace test value, the average asphalt cement content determined from the Department's acceptance testing will be used. At the discretion of the Engineer, asphalt cement may be measured by invoice quantities, adjusted as necessary for waste. Waste generated from startup of the asphalt plant will be considered to have a binder content of 3.0 percent. In no case shall the measured amount of asphalt cement for payment be greater than the total of the invoice quantities, adjusted for waste.

(2) Mixes Containing RAP:

Asphalt cement will be measured by the ton on the basis of the asphalt cement content determined in accordance with Subsections 416-7.04(A) and (C) for each lot of asphaltic concrete accepted. The average asphalt cement content will be multiplied by the number of

tons of asphaltic concrete in that lot to determine the amount of asphalt cement. At the discretion of the Engineer, asphalt cement may be measured by adding invoice quantities to the RAP binder used, adjusted as necessary for waste. RAP binder used shall be determined by multiplying the RAP binder content determined in Subsection 416-7.04(D) by the number of tons of dry RAP material used in that lot. Waste generated from startup of the asphalt plant will be considered to have a binder content of 3.0 percent. In no case shall the measured amount of asphalt cement for payment be greater than the total of the invoice quantities plus the RAP binder as determined above, adjusted for waste.

(C) Mineral Admixture:

Mineral admixture will be measured by the ton for the mineral admixture actually used in accordance with Subsection 403-2.

416-9 Basis of Payment:

The accepted quantities of asphaltic concrete, measured as provided above, will be paid for at the contract unit price adjusted by the appropriate pay factors as hereinafter provided.

When Warm Mix Asphalt (WMA) technologies are used in the mixture, no separate payment will be made for WMA additives or technologies, necessary hot plant modifications, or other associated costs.

For the purpose of determining acceptability and appropriate pay factors, each unit of asphaltic concrete will be included in three separate lots: a "spread lot," a "mixture-properties lot," and a "compaction lot." The total unit price for any unit of accepted asphaltic concrete will be the contract unit price, adjusted by the applicable spread lot pay factor, mixture-properties lot pay factor, and compaction lot pay factor.

The contractor may request to place the first lot of each mix type as a test strip. Requests to place a test strip shall be made in writing and acknowledged by the Engineer prior to start of production. A test strip shall be limited to 1,000 tons and may only be placed on shoulders, ramps, cross roads, or other areas approved by the Engineer. A test strip shall be excluded from the mixture properties lot pay factor and the compaction lot pay factor; however, all other provisions of Subsection 416-9 shall still apply to such areas.

The Engineer may exclude asphaltic concrete from the spread lot and from the spread lot pay factor calculations if the Engineer determines that the proposed use of the material or the existing surface conditions are not conducive to the use of spread lots.

The Engineer may exclude certain locations from the mixture properties lot and/or the compaction lot and from the random sampling used in determining the mixture properties lot pay factor and/or the compaction lot pay factor should the Engineer determine that the location of the work precludes normal construction operations.

(A) Spread Lot Pay Factor:

The spread lot pay factor will be determined in accordance with Subsection 416-7.03. If the quantity in a spread lot is found to vary by more than + 5.0 percent from the required quantity, no payment will be made for the material which exceeds + 5.0 percent, including asphalt cement and mineral admixture. If the quantity is found to vary by more than - 12.0 percent from the required quantity, the spread lot will be rejected.

(B) Mixture-Properties Lot Pay Factor:

The mixture properties lot pay factor shall be determined in accordance with the following procedure:

- (1) The individual PT values and pay factors for Gradation, Asphalt Cement Content, and Effective Voids shall be determined as set forth in Subsection 416-7.04.
- (2) A single pay factor shall be determined for Gradation and Asphalt Cement Content. That pay factor shall be the lowest pay factor for the individual measured characteristics for Gradation and Asphalt Cement Content.
- (3) If no individual PT value in (1) above is less than 50, the mixture properties lot pay factor shall be the sum of the pay factor determined in (2) above and the Effective Voids pay factor. The negative pay factor for mixture properties shall not exceed \$3.00 per ton. If any individual PT value is less than 50, the lot is in reject and the provisions in Subsection 416-9(E) shall apply.

(C) Compaction Lot Pay Factor:

The compaction lot pay factor shall be determined as set forth in Subsection 416-7.05(B).

(D) Determination of Lot Pay Factors on Contracts Involving Multiple Projects:

When more than one project is included in a single contract, placement during a shift or half shift of production may encompass more than one project. In such case, the applicable spread lot pay factor, mixture-properties lot pay factor, and compaction lot pay factor for each project shall be determined as follows:

- (1) Spread lot pay factors will be determined separately for each project utilizing the procedure set forth in Subsection 416-7.03.
- (2) The individual PT values and pay factors for Gradation, Asphalt Cement Content, and Effective Voids will be determined from the results of the random samples taken and tested in accordance with Subsection 416-7.04, regardless of which project(s) the samples fall within.

- (3) PT values and pay factors for compaction, for those areas subject to Subsection 416-7.05(B), shall be determined from separate sets of core samples for each project utilizing the procedure set forth in that Subsection.
- (4) The mixture-properties lot pay factor shall be determined separately for each project in accordance with Subsection 416-9(B), utilizing the individual pay factors determined in (2) above.
- (5) The compaction lot pay factor shall be determined separately for each project in accordance with Subsection 416-9(C), utilizing the pay factor determined in (3) above.

(E) Acceptability:

Asphaltic concrete included in any mixture properties lot possessing an individual PT value lower than 50 for Gradation, Asphalt Cement Content, or Effective Voids will be rejected. Asphaltic concrete included in any compaction lot possessing a PT value lower than 50 will be rejected.

Within 15 days after receiving notice that a spread lot, mixture properties lot, or compaction lot of asphaltic concrete has been rejected by the Engineer, the contractor may submit a written proposal to accept the material in place at the applicable maximum negative pay factor(s). Maximum negative pay factors are defined as a minus \$1.00 per ton for spread lots, minus \$5.00 per ton for compaction lots, minus \$3.00 per ton for mixture properties lots in reject for gradation only, minus \$5.00 per ton for mixture properties lots in reject for asphalt cement content and/or effective voids only, and minus \$5.00 per ton for mixture properties lots in reject for asphalt cement content and/or effective voids and also gradation. Positive mixture properties lot pay factors become zero when the compaction lot is in reject and the material is allowed to be left in place. In addition, for any mixture properties lot that is in reject due to asphalt cement content but allowed to remain in place, payment shall not be made for asphalt cement quantities in excess of the upper limit (UL) as determined in Subsection 416-7.04(A).

The proposal shall contain an engineering analysis of the anticipated performance of the asphaltic concrete if left in place. The engineering analysis shall also detail any proposed corrective action, and the anticipated effect of such corrective action on the performance. The engineering analysis shall be performed by an independent professional engineer experienced in asphaltic concrete testing and the development of asphaltic concrete mix designs. If a rejected mixture properties lot or a rejected compaction lot is submitted for referee testing by the contractor, the 15 days allowed to prepare an engineering analysis will begin upon notification of referee test results.

Within three working days, the Engineer will determine whether or not to accept the contractor's proposal. If the proposal is not accepted, the asphaltic concrete shall be removed at no additional cost to the Department and replaced with asphaltic concrete meeting the requirements of these specifications. If the proposal is accepted, the asphaltic concrete shall remain in place at the applicable maximum negative pay factor(s), and any necessary corrective action shall be performed at no additional cost to the Department.

The Department reserves the right to suspend the work should any of the following conditions occur:

- (1) The occurrence of two or more rejected lots within any ten consecutive production lots.
- (2) The occurrence of three consecutive negative mixture properties lot pay factors or three consecutive negative compaction lot pay factors.
- (3) The occurrence of five or more pay factors that are negative either for a mixture properties lot or for a compaction lot within any ten consecutive production lots.

If the Department elects to suspend the work for any of these conditions, the contractor shall either submit a revised mix design in accordance with Subsection 416-4, or submit for the Engineer's approval a written engineering analysis. The engineering analysis shall detail the course of action necessary to correct deficiencies in the contractor's present production methods such that further production can be accomplished without excessive amounts of asphaltic concrete in penalty or rejection. If approved by the Engineer, the revised mix design, or the course of action proposed in the engineering analysis, shall be implemented, and the work may continue. Costs or delays due to the provisions of this subsection are not compensable.

(F) Asphalt Cement:

(1) Non-RAP Mixes:

Payment for asphalt cement will be made by the ton. Adjustments in payment shall be made in accordance with the requirements of Subsection 1005-3.01.

(2) Mixes Containing RAP:

When RAP is used in the mixture, payment for asphalt cement will be made by the ton for the total asphalt cement as determined in Subsection 416-8(B)(2). Adjustments in payment shall be made in accordance with the requirements of Subsection 1005-3.01 for the virgin binder only.

(G) Mineral Admixture:

Mineral admixture will be paid for at the predetermined price established in the Bidding Schedule.

(H) Smoothness:

When required in the Special Provisions, payment for smoothness shall be made in accordance with the requirements of Subsection 109.13.

(I) Statistical Acceptance:

The “Total Percentage of Lot within UL and LL (PT)” shall be determined in accordance with Subsection 109.11 of the Specifications.

Pay Factors (PF) shall be determined by entering Table 416-1 with PT.

TABLE 416-1 PAY FACTORS					
Material Spread		Mixture Properties and Compaction			
Negative Variance %	Pay Factor (Dollars per Ton)	PT	Pay Factors(Dollars per Ton)		
			Gradation and Asphalt Cement Content	Effective Voids	Compaction
2.1 - 3.0	- 0.10	100	0.00	+ 2.00	+ 2.00
3.1 - 4.0	- 0.20	95 - 99	0.00	+ 0.50	+ 0.50
4.1 - 5.0	- 0.30	90 - 94	0.00	0.00	0.00
5.1 - 6.0	- 0.40	85 - 89	0.00	- 0.25	- 0.25
6.1 - 7.0	- 0.50	80 - 84	- 0.25	- 0.50	- 0.50
7.1 - 8.0	- 0.60	75 - 79	- 0.50	- 0.75	- 0.75
8.1 - 9.0	- 0.70	70 - 74	- 0.75	- 1.00	- 1.00
9.1 - 10.0	- 0.80	65 - 69	- 1.00	- 1.25	- 1.25
10.1 - 11.0	- 0.90	60 - 64	- 1.50	- 1.50	- 1.75
11.1 - 12.0	- 1.00	55 - 59	- 2.00	- 2.00	- 2.25
More than 12.0	Reject	50 - 54	- 2.50	- 2.50	- 3.00
See Subsections 416-9 (A) and (E)		Less than 50	Reject-See Subsection 416-9 (E)		

(J) Referee Testing:

(1) Referee Testing Performed for Mixture Properties Only:

Within 15 days after written notification to the contractor of test results for a particular mixture properties lot, the contractor may make a written request for referee testing. The referee testing shall be performed by an independent approved laboratory designated by the Department. The testing of the samples will be performed by the independent testing laboratory without knowledge of the specific project conditions such as the identity of the contractor or mix design laboratory, the test results by the Department, or the mix design targets for gradation and effective voids. The asphaltic concrete samples previously saved will be tested for the following properties:

Test Property	Test Method
Asphalt Cement Content (See Note 1 below)	Arizona Test Method 427 (428 for RAP mixes)
Gradation	
Marshall Density and Stability	Arizona Test Method 410
Maximum Theoretical Density	Arizona Test Method 417
Effective Voids	Arizona Test Method 424
<p>Note:</p> <p>(1) If a correction to the asphalt cement content by ignition furnace testing is made in accordance with Subsection 416-7.04(B), or if RAP is used in the mixture, the asphalt cement content shall not be subject to referee testing.</p>	

The results of the referee testing will be binding on both the contractor and the Department.

Using the referee testing results, the Engineer will determine new PT's for all characteristics, with the exception of asphalt cement content if a correction to the ignition furnace value was made as specified in Subsection 416-7.04(B), or if RAP is used in the mixture.

When referee testing is performed on a mixture properties lot, the referee test result for the average maximum theoretical density will be used to determine a new PT for compaction.

The Department will pay for the referee testing; however, if the combined pay factor of the lot (Mixture Properties plus Compaction) does not improve or is reduced, or if either the mixture properties lot or compaction lot remains in reject or is placed in reject, payment to the contractor for asphaltic concrete shall be reduced by the amount of the cost of the referee testing for the mixture properties of that particular lot.

(2) Referee Testing Performed for Compaction Only:

Within 15 days after written notification to the contractor of test results for a particular compaction lot, the contractor may make a written request for referee testing. The bulk

density of each of the cores previously saved will be determined in accordance with the requirements of Arizona Test Method 415 by an independent testing laboratory designated by the Department. The testing of the cores will be performed by the independent testing laboratory without knowledge of the specific project conditions, such as the identity of the contractor or mix design laboratory, or the test results by the Department. The percent air voids will be determined in accordance with Arizona Test Method 424. The maximum theoretical density used in the determination of air voids will be the average of the four maximum theoretical densities determined for the lot in Subsection 416-7.04.

The results of the referee testing will be binding on both the contractor and the Department.

When referee testing is performed on the compaction lot, the Engineer will determine a new PT for compaction using the referee testing results.

The Department will pay for the referee testing; however, if the pay factor of the compaction lot does not improve or is reduced, or the compaction lot remains in reject or is placed in reject, payment to the contractor for asphaltic concrete will be reduced by the amount of the cost of referee testing for the compaction of that particular lot.

(3) Referee Testing Performed for Both Mixture Properties and Compaction:

When referee testing is performed, as described above, for both the mixture properties lot and the compaction lot, the Engineer will use the referee test results to determine new PT's as specified in Subsections 416-9(J)(1) and 416-9(J)(2).

The Department will pay for the referee testing; however, if the combined pay factor of the lot (Mixture Properties plus Compaction) does not improve or is reduced, or if either the mixture properties lot or compaction lot remains in reject or is placed in reject, payment to the contractor for asphaltic concrete shall be reduced by the amount of the cost of the referee testing for the mixture properties and compaction of that particular lot.

(501PIPE, 05/03/16)

SECTION 501 PIPE CULVERT AND STORM DRAINS:

501-1 Description: the first paragraph of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing pipe and all other materials required and the installing of pipe, including excavating, and furnishing, placing and compacting backfill material, all in accordance with the details shown on the plans and the requirements of the specifications.

501-1 **Description:** the last sentence of the third paragraph of the Standard Specifications is revised to read:

Special sections, fittings, elbows, branch connections, tapered inlets, end sections, connectors, coupling, and other such items shall be of the same material and coating as the pipe to which they are attached unless otherwise stated in the specifications.

501-3.03(A) **General:** the second paragraph of the Standard Specifications is revised to read:

If the Engineer determines that the end of an existing pipe is damaged to the extent that it cannot be repaired sufficiently to be joined properly to the new pipe, the damaged portion shall be removed.

Pipe shall be installed in reasonably close conformity with the lines, grades and dimensions shown on the project plans or specified by the Engineer.

501-3.03(B)(1) **General:** the seventh paragraph of the Standard Specifications is hereby deleted:

501-3.03(C) **Slotted Pipe:** the third paragraph of the Standard Specifications is revised to read:

Slotted pipe shall be backfilled with grout in accordance with the details shown on the project plans. The grout shall conform to the requirements of Subsection 1010-3. Grout shall not be placed when a descending air temperature falls below 40 degrees F or until an ascending air temperature exceeds 35 degrees F. Temperatures shall be taken in the shade and away from artificial heat. The grout shall be cured in accordance with the requirements of Subsection 912-3.09.

501-3.03(G) **Corrugated High Density Polyethylene Plastic Pipe:** the title and text of the Standard Specifications are revised to read:

501-3.03(G) **Corrugated High Density Polyethylene Plastic Pipe, Steel Reinforced High Density Thermoplastic Ribbed Pipe, and Corrugated Polypropylene Plastic Pipe:**

Corrugated high density polyethylene plastic pipe, steel reinforced high density thermoplastic ribbed pipe, and corrugated polypropylene plastic pipe shall be assembled and installed in accordance with the manufacturer's instructions.

Watertight joints, unless otherwise specified, will not be required for storm drains, culverts, or other drainage pipes. However, joints for these pipes shall be water resistant. Watertight joints shall be provided for siphon and irrigation pipe installations.

Watertight and water resistant joints shall conform to the requirements of Subsection 1010-8.

Tracer wire for magnetic detection shall be placed in accordance with the requirements of Subsection 104.15.

To prevent damage and to assure that proper line and pipe grade are maintained throughout the backfilling operation, special care shall be taken in the handling and installation of corrugated high density polyethylene plastic pipe and fittings, steel reinforced high density thermoplastic ribbed pipe and fittings, and corrugated polypropylene plastic pipe and fittings.

When end sections for the above listed pipes are called for on the plans, the contractor shall use metal safety end sections unless otherwise specified.

ITEM 5019008 – PIPE (SLEEVES) (12”):

Description:

The work under this item shall consist of furnishing all materials, labor and equipment necessary to install the 12 inch pipe sleeves as shown on the project plans, or at the locations determined on site at the time of installation in accordance with the requirements of Section 501 of the Standard Specifications and these Special Provisions.

The work shall also include all barricades, warning tape, potholing, locating of buried utilities during excavation and shoring required or specified by the Landscape Architect.

Materials:

12” pipe shall meet the requirements of Corrugated High Density Polyethylene Plastic Pipe per Standard Section 501 and 1010-8 of the Standard Specifications and as shown on the Pipe Sleeve Summary in the project plans.

Construction Requirements:

All Sleeves construction shall conform to Standard Detail C-16.40 Irrigation Sleeves with the exception that the sleeve markers will not be required.

All Sleeve extension construction shall conform to Detail I-11 of the Project plans.

Sleeves shall be installed through the use of open trench.

Trenches shall be barricaded in accordance with ADOT’s standard requirements.

The contractor shall locate all existing utilities prior to the installation of the sleeves.

The contractor shall repair any existing utilities damaged during the sleeve installation.

Method of Measurement:

Pipe (Sleeves) (12") will be measured by the linear foot of pipe.

Basis of Payment:

The accepted quantities of Pipe (Sleeves) (12"), measured as provided above, will be paid at the contract unit price per lineal foot, which price shall be full compensation for the work, complete in place, as described and specified herein and/or on the project plans including pipe, and all trenching, bedding, backfill, compaction, trench shoring, potholing, utility locating and incidentals as specified herein and as shown on the plans.

No measurement or direct payment will be made for supplying the sand bedding material or in coordinating the efforts with the Landscape Architect in verifying all sleeve locations the cost being considered included in the cost of the pipe sleeve items.

ITEM 5030604 - CONCRETE CATCH BASIN (MODIFIED PHOENIX DET. P1572 PER DET. D3)

Description:

The work under these items shall consist of furnishing all materials, equipment and labor for construction of a concrete catch basin in accordance with Detail D3 on the plans and the requirements of these specifications.

The work shall consist of excavation and backfill; concrete and reinforcing steel; and all necessary framing, pipe connections, non-structural concrete fill, and all work included in the plans and specified herein.

All work shall be in accordance with project plans and the requirements of the Standard Specifications and these Special Provisions.

Materials:

Materials shall be in accordance with CITY OF PHOENIX Standard Drawing P1564, P1565, P1572 and section 505 of the CITY OF PHOENIX Standard Specifications.

Construction Requirements:

Construction requirements shall be in accordance with CITY OF PHOENIX Standard Drawing P1564, P1565, P1572 and section 505 of the CITY OF PHOENIX Standard Specifications.

Method of Measurement:

The catch basin construction and materials necessary for its completion will be measured as each.

Basis of Payment:

CONCRETE CATCH BASIN (MODIFIED PHOENIX DET. P1572 PER DET. D3) will be paid at the contract price per each, complete in place and shall be considered full compensation for all labor, materials, equipment, and all other items included and specified herein, and as indicated on the Project Plans and as directed by the Engineer, and as required by the contractor for the complete construction of the junction structure and ancillary features.

ITEM 5041901 - DRAINAGE STRUCTURE (PIPE PENETRATION INTO CHANNEL PER DET. D1)

Description:

The work under this item shall consist of furnishing all materials, equipment, and labor to install 18" concrete pipe into the existing concrete channel. Installation of the Modified ADOT C-13.80 pipe outlet to existing channel and barrier gates shall be installed in accordance with the details shown on the project plans, detail D1, and the requirements of these special provisions. Work under this item shall include the saw cutting and removal of the existing concrete lined channel as specified on the plans as necessary to properly install the 18" pipes. Construction shall also include the reconstruction of the existing concrete lined channel within the saw cut limits as necessary to ensure a cohesive transition between pipe penetrations and existing concrete channel. Contractor shall match new concrete channel color with existing concrete channel color.

Materials:

The concrete shall be Class S (3000 Psi) as specified per Section 1006 of the Standard Specifications. The concrete color shall match the existing concrete channel color.

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

Concrete channel replacement shall match in kind. Concrete shall be a float finish. The channel lining finish shall not deviate more than 1/8 inch by 10 feet in any direction.

The Reinforcing Steel shall be Grade 60 and in accordance with Section 605 and 1003 of the Standard Specifications.

Construction Requirements:

The pipe outlet to existing channel shall be constructed per detail shown on the project plans.

Contractor shall saw cut existing concrete lined canal in order to properly install the 18" pipe penetrations.

Method of Measurement:

DRAINAGE STRUCTURE (PIPE PENETRATION INTO CHANNEL PER DET. D1) will be measured by the unit of Each for the pipe outfall connection to existing channel complete in place constructed as shown on plans, details and described herein.

Basis of Payment:

Pipe outlet to existing channel shall be measured as provided above and will be paid for at the contract unit price of Each, which shall be full compensation for the work complete in place, preparing the ground area, saw cutting the existing concrete lined channel, removal and disposal of excavated material, installing the 18" pipe connection to the existing channel and installation. Replacement of the existing concrete lined channel, concrete, reinforcing steel, and color matching of the existing concrete channel shall be included in the each unit price of Modified ADOT C-13.80 pipe outlet to existing channel. 18" concrete pipes shall be paid for under item number 5011014.

ITEM 5050202 – RESET FRAME AND COVER FOR MANHOLE (MAG DET. 422):

Description:

The work under this item consists of furnishing all labor, equipment, and materials to reset existing frames and covers for sanitary sewer manholes to new finished grade at the locations shown on the project plans and as directed by the Engineer.

Materials:

Materials for frame and cover adjustment shall conform to the requirements of the Maricopa Association of Government (MAG) Uniform Standard Details for Public Works Construction.

Construction Requirements:

All work shall be in accordance with the locations shown on the project plans and with MAG Standard Detail 422 and the requirements of the City of Safford Construction Standards. Backfill and compaction shall be in accordance with the requirements of Subsection 202-3.01 of the Standard Specifications.

Any damage to the frame and cover caused by the contractor's removal, as determined by the Engineer, shall be replaced by the contractor at no cost to the Department. If an existing frame and cover is damaged and cannot be replaced, the contractor shall notify Engineer prior to removal.

Method of Measurement:

Reset Frame and Cover for Manhole (MAG DET. 422) will be measured as a unit of work for each frame and cover reset.

Basis of Payment:

The accepted quantities of Reset Frame and Cover for Manhole (MAG DTL. 422), measured as provided above, will be paid for at the contract unit price per each, which shall be full compensation for all materials and work, complete in place, as shown on the project plans and as described herein.

(607POST, 09/08/11)

SECTION 607 ROADSIDE SIGN SUPPORTS:

607-1 Description: the first paragraph of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing and installing roadside sign supports in accordance with the details shown on the plans and the requirements of the specifications.

607-2.05 Concrete: the last paragraph of the Standard Specifications is revised to read:

Reinforcing steel bars for breakaway sign post foundations shall conform to the requirements of ASTM A 615. Unless otherwise specified, steel bars meeting the requirements of ASTM A 706 may be substituted for ASTM A 615 steel bars. When ASTM A 706 bars are used, tack welding of the reinforcement will not be permitted unless approved in writing by the Engineer. Reinforcing steel wire shall conform to the requirements of ASTM A 82.

(608PANEL, 01/26/16)

SECTION 608 - SIGN PANELS:

608-1 Description: of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing and installing sign panels in accordance with the details shown on the plans and the requirements set forth herein.

The sign panels shall be of the following types:

- Extruded Aluminum Sign Panels with Direct-Applied, Digitally-Imaged, or Demountable Characters
- Flat Sheet Aluminum Sign Panels With Direct-Applied, Digitally-Imaged, Electronic-Cut, or Screen-Printed Characters
- Warning, Marker, and Regulatory Sign Panels

- Route Shields for Installation on Sign Panels
- EXIT ONLY Panels for Installation on Sign Panels

608-2.01 **General:** of the Standard Specifications is modified to add:

Signs shall be fabricated in accordance with the recommendations established by the manufacturer of the sign sheeting. All processes and materials used to make a sign shall in no way impact the performance, uniform appearance (day and night), or durability of the sheeting, or invalidate the sign sheeting manufacturers' warranty.

All sheeting used for background and legend shall be from the same manufacturer. Sign panels shall not be overlaid.

All text and numerals shall all be installed at the same orientation: either zero degrees or 90 degrees.

Design of letters and numbers shall be in accordance with the project plans with a tolerance of $\pm 1/16$ th of an inch.

The contractor shall not paint the bolts or the washers unless otherwise specified.

608-2.02 **Extruded Aluminum Sign Panels With Demountable Characters:** the title of the Standard Specifications is revised to read:

608-2.02 **Extruded Aluminum Sign Panels With Direct-Applied, Digitally-Imaged, or Demountable Characters:**

608-2.02 **Extruded Aluminum Sign Panels With Demountable Characters:** the third paragraph of the Standard Specifications is revised to read:

The letters, numerals, symbols, borders and other features of the sign message shall be direct-applied, digitally-imaged, or demountable, and shall conform to the requirements of Subsection 608-2.14, Demountable Characters, Subsection 608-2.15, Screen-Printed, Direct-Applied, or Electronic-Cut Characters, or Subsection 608-2.16, Digitally-Imaged Characters.

608-2.07 **Flat Sheet Aluminum Sign Panels With Direct-Applied or Silk-Screened Characters:** the title and text of the Standard Specifications are revised to read:

608-2.07 **Flat Sheet Aluminum Sign Panels With Direct-Applied, Digitally-Imaged, Electronic-Cut, or Screen-Printed Characters:**

Panels shall be fabricated from 0.125-inch thick 5052-H36, or 5052-H38 Aluminum Alloy conforming to the requirements of ASTM B 209.

Panel facing shall be prepared and covered with retroreflective sheeting in accordance with the recommendations of the sheeting manufacturer. The color of the sheeting shall be as specified on the plans or as shown in the Manual of Approved Signs.

All surfaces not covered shall be etched to reduce glare from reflected sunlight.

The retroreflective sheeting shall conform to the requirements of Section 1007. Splicing of retroreflective sheeting shall not be allowed on sign panels having a minimum dimension up to and including four feet.

Messages shall be reflectorized white or, if called for on the plans, opaque black, and shall be produced by either screen printing, direct-applying, digital imaging, or electronic cutting, as specified under Subsections 608-2.15 and 608-2.16.

608-2.09 Warning, Marker, and Regulatory Sign Panels: of the Standard Specifications is revised to read:

Panels shall be fabricated from flat sheet aluminum and shall be reflectorized as specified herein.

Panels shall be fabricated in one piece from 0.125-inch thick 5052-H36, 5052-H38, or 6061-T6 Aluminum Alloy conforming to the requirements of ASTM B 209.

All surfaces of panels to be covered with retroreflective sheeting shall be prepared in accordance with the recommendations of the sheeting manufacturer. Surfaces not covered shall be etched to reduce glare from reflected sunlight. Retroreflective sheeting shall conform to the requirements of Section 1007.

Warning signs shall be reflectorized with fluorescent yellow retroreflective sheeting.

Regulatory signs shall be reflectorized with white retroreflective sheeting.

Reflectorized red signs shall be reflectorized with white retroreflective sheeting. The red color shall be produced by screen printing.

Regulatory signs with reflectorized red circles and slashes shall be reflectorized with white retroreflective sheeting. The red color shall be produced by screen printing.

Interstate route markers shall be cut to shape. The colors and legend shall be as shown on the plans and shall be reflectorized with white retroreflective sheeting. The Interstate route colors shall be screen-printed. The numerals may be screen-printed, electronic-cut, or direct-applied characters.

United States, State Route, and Cardinal Direction markers shall be reflectorized with white retroreflective sheeting unless otherwise shown on the plans.

Splicing of retroreflective sheeting shall not be allowed on sign panels having the minimum dimension up to and including four feet.

608-2.11 Route Shields (For Installation on Sign Panels): of the Standard Specifications is revised to read:

Route shields may be demountable, direct-applied, or digitally-imaged.

Demountable route shields shall be cut to shape and shall consist of 0.063-inch thick, 5052-H36, or 5052-H38 Aluminum Alloy conforming to the requirements of ASTM B 209. The aluminum shall be degreased and etched in accordance with the recommendations of the sheeting manufacturer. Retroreflective sheeting shall be white and shall conform to the requirements of Section 1007. Route shields shall be attached to the sign panel with self-plugging aluminum blind rivets.

608-2.12 EXIT ONLY (For Installation on Sign Panels): the title and text of the Standard Specifications are revised to read:

608-2.12 EXIT ONLY Panels (For Installation on Sign Panels):

EXIT ONLY panels may be demountable, direct-applied, or digitally-imaged. Demountable EXIT ONLY panels shall be attached to the sign panel with self-plugging aluminum blind rivets.

Demountable EXIT ONLY panels shall be fabricated from 0.063-inch thick, 5052-H36 or 5052-H38 Aluminum Alloy conforming to the requirements of ASTM B 209 with fluorescent yellow retroreflective sheeting adhered to the face side. The aluminum shall be degreased and etched in accordance with the recommendations of the sheeting manufacturer. Retroreflective sheeting shall conform to the requirements of Section 1007.

608-2.13 Retroreflective Sheeting, Inks and Opaque Film: the second and third paragraphs of the Standard Specifications are hereby deleted.

608-2.14(A) General: the second paragraph of the Standard Specifications is revised to read:

Flat sheet aluminum substrates used for characters and borders shall be either aluminum alloy 3105-H14, 3003-H14, 5052-H36, or 5052-H38 as specified in ASTM B 209. Characters produced from the flat sheet aluminum alloy shall sit flat on the face of the sign panel without visible gap or deformation.

608-2.14(B) Sheeting and Colors: the third, fourth, and fifth paragraphs of the Standard Specifications are revised to read:

The color for demountable letters, numbers, symbols, and route shields on green, blue, and brown background signs shall be white, and shall conform to the requirements of Section 1007. Demountable legends on white and yellow background signs shall be black, and shall be opaque and non-reflective. Black characters shall be finished with laminated black opaque acrylic film.

When borders are used with demountable characters, white legend and border shall be used on green, blue, or brown sign backgrounds, and black legend and border shall be used on white or yellow sign backgrounds. Sign sheeting conforming to Section 1007 shall be used for white borders. Black borders shall be laminated black opaque acrylic film.

Laminated black opaque acrylic film to be used for characters or borders, as specified above, shall be applied in accordance with the coating manufacturer's recommendations. The contractor shall provide copies of any warranties provided by the manufacturer to the Engineer.

608-2.15 **Silk-Screened or Direct-Applied Characters:** the title and text of the Standard Specifications is revised to read:

608-2.15 **Screen-Printed, Direct-Applied, and Electronic-Cut Characters:**

Screen-printed letters, numerals, arrows, symbols, and borders, shall be applied on the retroreflective sheeting background of the sign by direct or reverse screen process. Messages and borders of a color darker than the background shall be applied to the retroreflective sheeting by direct process. Messages and borders of a color lighter than the sign background shall be produced by the reverse screen process.

Opaque or transparent colors, inks, and paints used in the screen process shall be of the type and quality recommended by the manufacturer of the retroreflective sheeting.

The screening shall be performed in a manner that results in a uniform color and tone, with sharply defined edges of legends and borders and without blemishes on the sign background that will affect intended use.

Signs, after screening, shall be air dried or baked in accordance with the manufacturer's recommendations to provide a smooth hard finish. Any signs on which blisters appear during the drying process will be rejected.

Direct-applied letters, numerals, symbols, borders, and other features of the sign message shall be cut from black opaque or retroreflective sheeting of the color specified and applied to the retroreflective sheeting of the sign background in accordance with the instructions of the manufacturer of the retroreflective sheeting.

Direct-applied legend may be moved vertically 1/2 inch to avoid placing only a small amount of material over the adjacent extruded panel. The bottom of all characters for a line of legend shall line up within 1/8 of an inch.

Electronic-cut characters shall be cut from translucent acrylic sheeting using computerized automated cutting processes.

608-2 **Materials:** of the Standard Specifications is modified to add:

608-2.16 **Digitally-Imaged Characters:**

Digitally-imaged characters shall consist of characters produced through ultraviolet jet-printing or thermal transfer. Signs with digitally-imaged characters shall be manufactured using matched component ink, transparent electronic-cutttable film, and/or overlay film as supplied by the reflective sheeting manufacturer. For digitally-imaged copy on white sheeting, the coefficient of retroreflection shall be not less than 70 percent of the original values for the corresponding integral color. When characters are spread over two adjacent extruded panels, the characters shall align with each other within 1/16th of an inch.

608-3.01 **Fabrication:** of the Standard Specifications is modified to add:

During fabrication of the sign panels, the contractor shall ensure the bolt holes on each sign panel are placed so the holes will not coincide with any legend and any bolts, washers, or other hardware used will not cover any portion of the legend. If the bolt holes on a sign panel do not comply with these requirements, the Engineer may reject the sign panel or accept the sign panel and require the contractor to paint the bolts, washers, and any hardware coinciding with the sign legend to match the color of the legend.

608-3.02 **Installation of Sign Panels:** of the Standard Specifications is revised to read:

The sign panels shall be installed on overhead sign structures and roadside sign supports in accordance with the details shown on the plans and in accordance with the recommendations of the manufacturers of the sign panel components.

Minor scratches and abrasions resulting from fabrication, shipping and installation of panels may be patched; however, patching shall be limited to one patch per 50 square feet of sign area with the total patched area being less than five percent of the sign area. Panels requiring more patching than the specified limit will be rejected. Patches shall be edge sealed by a method approved by the retroreflective sheeting manufacturer.

Sign panels shall be attached to the posts with hex head bolts as shown in the Standard Drawings; slotted head bolts shall not be used. A cadmium-plated or zinc-plated fender washer shall be placed between the bolt head and panel face.

For flat sheet panels, bolts shall be fastened with a cadmium-plated or zinc-plated fender washer and two standard nuts. Nylon washers shall not be used. The fender washer shall be placed against the sign post, the first nut shall be tightened against the fender washer, and the second nut shall be tightened against the first nut. Bolts shall be tightened from the back by holding the bolt head stationary on the face of the panel. Twisting of the bolt head on the panel face will not be allowed.

The contractor shall provide two copies of a detailed list of all new signs installed on the project to the Engineer. The list shall include the sign identification code, the date each sign was installed (month and year), the fabricator of the sign, and the materials used to

make the sign (manufacturer, type of sheeting, ink and film). The list shall be provided in a commonly used electronic spreadsheet format, such as EXCEL, and the two copies shall be submitted on CD-ROM disks. Signs shall be listed in numerical order by route, direction, and milepost and, where more than one sign is installed at the same general location, a letter subscript.

Sign panels within the same sign assembly shall be placed at the same orientation along the roadway so that the entire legend of the signs appear uniform under normal viewing conditions, both day and night.

Upon fabrication or installation of each sign, the contractor shall place information on the back of the sign showing the sign identification code, the sign fabricator, the manufacturer of the sheeting used, and the month and year of the installation. The formatting of the required information shall be as shown on the standard drawings. The information shall be positioned to be readily visible from a vantage point outside the flow of traffic and not obstructed by sign posts, extrusions, stringers or brackets. All letters shall be made of a long life material such as a black opaque acrylic film. Signs not marked as required will not be eligible for payment.

Temporary traffic control signs are exempt from the installation information requirement unless noted otherwise on the project plans.

608-3.04 **Inspection:** the second paragraph of the Standard Specifications is revised to read:

Each sign panel face shall be cleaned thoroughly just prior to the inspection by a method recommended by the manufacturer. The cleaning material shall in no way scratch, deface or have any adverse effect on the sign panel components.

608-4 **Method of Measurement:** of the Standard Specifications is revised to read:

Sign panels will be measured by the square foot for each type or types of sign panels furnished and installed. Individual sign panels will be measured to the nearest 0.1 square foot. The total area of each type of sign panel will be summed and rounded to the nearest square foot.

The area of each sign panel, except for warning, regulatory and marker sign panels, will be measured per plans dimensions.

For warning, regulatory and marker sign panels, the area of each sign panel will be determined as follows:

The areas of each rectangular, square or triangular sign panel will be determined from the dimensions shown on the plans.

The area of irregular shaped signs, such as stop signs and route markers, will be determined by multiplying the maximum height in feet by the maximum width in feet, using the dimensions shown on the plans.

Miscellaneous Work (Sign Panels) will be measured on a lump sum basis.

608-5 Basis of Payment: first and second paragraphs of the Standard Specifications are revised to read:

The accepted quantities of each type of sign panel designated in the bidding schedule, measured as provided above, will be paid for at the contract unit price per square foot, complete in place, regardless of the type of sheeting or type of character used on the sign panel. Payment shall be made on the total area of each type of sign panel to the nearest square foot.

No additional payment will be made for signs with sheeting applied to both sides, the cost being considered as included in the contract unit price for the sign panel.

No measurement or payment will be made for Route Shields and EXIT ONLY Panels (for installation on sign panels), the cost being considered as included in the contract unit price for the sign panel.

(701PDMPT, 11/01/16)

SECTION 701 MAINTENANCE AND PROTECTION OF TRAFFIC:

701-1 Description: the first and third paragraphs of the Standard Specifications are revised to read:

The work under this section shall consist of providing flagging services and pilot trucks, and furnishing, installing, maintaining, moving and removing barricades, warning signs, lights, signals, cones, and other traffic control devices to provide safe and efficient passage through and/or around the work and to protect workers in or adjacent to the work zone. The work shall be done in accordance with the requirements of Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD) and the associated Arizona Department of Transportation supplement. When referred to herein, these documents will be referred to as MUTCD and associated ADOT Supplement.

When a traffic control plan is included in the project plans, this plan shall govern unless an alternate plan, acceptable to the Engineer, is submitted by the contractor. If no traffic control plan is provided or if the contractor desires to deviate from the provisions for maintaining traffic as described in this section, it shall submit to the Engineer for approval a proposed sequence of operations and a compatible method of maintaining traffic.

The contractor's submittal shall be prepared by an individual meeting one of the following criteria:

- (a) Has successfully completed a recognized traffic control supervisor training and certification program. The traffic control supervisor training and certification provided by the American Traffic Safety Services Association (A.T.S.S.A.) or the International Municipal Signal Association (IMSA) shall be acceptable. Training and certification through other programs must be approved in advance by the Engineer. The individual's training and certification shall be current and must be valid throughout the duration of the project. In order to remain current with the Department, training and certification shall be completed or renewed at least once every four years.
- (b) Be a licensed professional engineer registered in the State of Arizona and have completed an approved traffic control supervisor training program, as specified in Subsection 108.03. The training shall be current and must be valid throughout the duration of the project. In order for the training to remain current with the Department, it shall be completed or renewed every four years.

The contractor shall submit proof of the proposed individual's credentials at the preconstruction conference. The contractor bears all responsibility for any such contractor-submitted traffic control plan, whether prepared by its direct employee or other individual.

The contractor's proposal shall be submitted early enough to allow at least two weeks for review and approval before use of the proposed traffic control plan.

701-2.01(B)(1) General Requirements: item (d) of the second paragraph of the Standard Specifications is revised to read:

- (d) The name, title and signature of a person having legal authority to bind the manufacturer or supplier of the Category I and II devices. The binding authority shall be in accordance with the applicable requirements of Subsection 106.05(B).

701-2.03 Temporary Concrete Barrier: the second paragraph of the Standard Specifications is revised to read:

The contractor shall provide, at the preconstruction conference, a certificate of compliance, conforming to the requirements of Subsection 106.05, stating that any temporary concrete barrier to be used on the project conforms to Signing and Marking Standard Drawing C-3. The contractor shall include the project number on the submittal.

701-2.04 Temporary Impact Attenuation Devices: the second paragraph of the Standard Specifications is revised to read:

Temporary impact attenuation devices shall also meet evaluation criteria for Test Level 3 per NCHRP (National Cooperative Highway Research Program) Report 350, or for Test

Level 3 per MASH (AASHTO Manual for Assessing Safety Hardware). The contractor shall provide, at the preconstruction conference, a certificate of compliance, conforming to the requirements of Subsection 106.05, certifying that any temporary impact attenuation devices to be used on the project will meet the above requirement. The contractor shall include the project number on the submittal.

701-2.08 Barricades: the title and second paragraph of the Standard Specifications are revised to read:

701-2.08 Barricades and Other Channelizing Devices:

All sheeting for barricades and other channelizing devices shall conform to the requirements of Section 1007.

701-3.05 Temporary Pavement Markings (Application and Removal):

(C) Preformed Pavement Markings: the first paragraph of the Standard Specifications is revised to read:

Preformed pavement markings for temporary applications shall be Type II (Temporary-Removable) and III (Temporary-Nonremovable) and shall conform to the requirements of Section 705 of the specifications.

701-3.07 Truck-Mounted Attenuator: the title and text of the Standard Specifications are revised to read:

701-3.07 Truck-Mounted and Trailer-Mounted Attenuators:

The contractor shall provide trucks and truck-mounted attenuators, or trailer-mounted attenuators and host vehicles, at the locations shown on the project plans and/or as directed by the Engineer.

Attenuators shall meet either NCHRP Report 350, Test Level 3 criteria, or MASH (Manual for Assessing Safety Hardware), Test Level 3 criteria, passing both mandatory and optional tests. The truck and attenuator combination shall only be used in the configuration tested. Either the truck or attenuator shall have a sequential arrow display panel or changeable message board.

Attenuators that require chocking or blocking of the vehicle to meet NCHRP Report 350 or MASH certification shall not be used.

Attenuators shall have rear-mounted, retroreflective chevron stripes and a standard trailer lighting system, including brake lights, turn signals, ICC-bar lights, and two yellow rotating beacons, strobe lights, or LED lights mounted on opposite rear corners of the truck or attenuator approximately 4-1/2 feet above the bottom of the tires. A Type C arrow panel or changeable message board shall be provided and shall be installed in accordance with the NCHRP 350/ MASH Crashworthiness Certification or FHWA Letter of Acceptance. There shall be a minimum of seven feet from the roadway to the bottom of the panel or board.

Frame work shall be an integral part of the truck and be permanently mounted in such a way as to prevent the unit from separating from the truck in the case of a collision.

For each proposed truck-mounted or trailer-mounted attenuator, the contractor shall provide a Certificate of Compliance, in accordance with Subsection 106.05, to the Engineer for approval prior to use. For truck-mounted attenuators, the certificate shall also include the certified weigh bill for the truck, and for trailer-mounted attenuators the certificate shall state the minimum weight for the host vehicle. The certificate shall state that the attenuator meets the specified criteria, and shall clearly state the roll-ahead distance. When trucks require ballasting to comply with NCHRP 350/MASH Crashworthiness Certifications, the contractor shall provide a letter from the owner supplying the attenuator and truck stating that the ballast is in compliance with the manufacturer's recommendations and that it is anchored to the truck frame. The letter shall be on the supplier's official company letterhead and shall include:

- (1) the current name, address, and phone number of the supplier of the attenuator,
- (2) a statement that the individual signing the letter has the legal authority to bind the supplier,
- (3) the name, title and signature of the responsible individual, and
- (4) the date of the signature.

A copy of the Certificate of Compliance and if required, the letter regarding ballast shall be kept in the truck cab or host vehicle, available for immediate inspection when requested by the Engineer.

When in use for attenuation, trucks shall be used exclusively for attenuators. When in use for attenuation, such trucks shall not be used to carry or store equipment or devices, secured or unsecured. No modification in configuration or use shall be allowed without a resubmitted certified weigh bill for the Engineer's approval.

Truck-mounted or trailer-mounted attenuators used as shadow vehicles per the MUTCD shall be positioned at a distance greater than the roll-ahead distance in advance of the workers or equipment being protected so that there will be sufficient distance, but not so much that errant vehicles will travel around the shadow vehicle and strike the protected workers and/or equipment.

The contractor shall cease operations when a truck-mounted or trailer-mounted attenuator is damaged. The contractor shall not resume operations until the attenuator has been repaired or replaced, unless authorized by the Engineer.

701-3.08 Changeable Message Board: of the Standard Specifications is revised to read:

Changeable message boards shall be furnished and maintained by the contractor at the locations shown on the plans and as specified by the Engineer. The operations and messages programmed into the board controller shall be as directed by the Engineer. The changeable message board shall be a complete and operational portable unit which shall consist of a wheeled trailer with an adjustable, changeable message board, board message controller and self-contained power supply.

The power supply for the changeable message board shall be a fully independent self-contained trailer-mounted system. The changeable message board power supply shall be battery operated and rechargeable from a solar panel mounted above the changeable message board.

The message characters shall be delineated by either electromagnetically actuated reflective dots or optically enhanced light emitting diode pixels (LED) operating under the control of a digital computer.

The contractor shall submit, at the pre-construction conference, a Certificate of Compliance that the changeable message board to be used on this project shall be as described herein.

The character formation system and components shall conform to the following requirements:

- (1) The changeable message board shall be programmable, and shall be capable of displaying a minimum of three lines of message copy, with a minimum of eight characters per line, in various alphanumeric combinations.
- (2) The changeable message board matrix configuration shall be 35 dots or pixels per character in a five horizontal by seven vertical arrangement of the dots or pixels.
- (3) The dot or pixel size shall be a 2.5-inch high by 1.625-inch wide rectangle (minimum), or equivalent area.
- (4) Each character shall be 18 inches in height and 12 inches in width (minimum).
- (5) The horizontal character separation shall be three inches or more.
- (6) Dot color shall be fluorescent yellow upon activation and flat black when not activated. The LED pixels shall emit amber light upon activation and be dark when not activated.
- (7) The line separation shall be five to 12 inches.

- (8) Changeable message boards shall be protected with a clear lexan-type or equivalent shield that shall not interfere with or diminish the visibility of the sign message.
- (9) The programmable message board shall be capable of displaying moving arrow patterns as one of the operator-selected programs.
- (10) The message board shall also be capable of displaying up to two messages in sequence, with variable timing in a minimum of quarter-second increments.
- (11) The message board shall be clearly visible and legible from a distance of 800 feet under both day and night conditions. The dot-matrix board shall have an internal illumination system that shall automatically activate under low light conditions to achieve the visibility requirements. The LED-pixel matrix board shall adjust light output (pulse width modulation) to achieve the visibility requirements.
- (12) The power supply achieved from the battery and solar panel recharging system shall have sufficient capacity to operate the changeable message board for a minimum of 20 days without direct sunshine. The solar panel array shall be capable of recharging the batteries such that 2.5 to 3.5 hours of direct sunshine shall provide for a minimum of one 24-hour period of usage. Additionally, the battery recharging controller shall have an ambient temperature sensing device which will automatically adjust the voltage supplied from the solar panels to the batteries. The sensing device shall ensure that the batteries are properly charged in hot or cold weather and shall provide the sign with sufficient power to operate the sign as specified.

When in operation, the changeable message board trailer shall be offset a minimum of eight feet from the nearest edge of pavement. If the trailer is located behind temporary concrete barrier, a minimum offset of six feet will be required. Should the specified shoulder width not be available, a minimum two-foot offset from the nearest edge of pavement or temporary concrete barrier shall be required. When positioned on the highway, the changeable message board trailer shall be delineated with a minimum of 10 Type II barricades or vertical panels with Type C steady burn lights at a spacing of 10 to 20 feet, or as shown on the approved traffic control plan.

When not in operation, the changeable message board shall be moved a minimum of 30 feet from the edge of pavement.

The changeable message board trailer shall be placed on a level surface and be secured as recommended by the manufacturer and as directed by the Engineer. The contractor shall provide any necessary incidental grading and clearing work required to provide a level surface and clear area for the sign.

701-3.10 Sign Sheetings: of the Standard Specifications is revised to read:

Sign sheeting for all temporary work zone signs shall conform to the requirements of Section 1007.

701-3.13 Flagging Services: of the Standard Specifications is revised to read:

Flagging services shall consist of either civilian, local enforcement officers and their vehicles, or DPS (Department of Public Safety) officers and their vehicles. The Engineer will determine the type of flagger needed, and may adjust the relative number of hours of each type of flagger specified in the traffic control plan.

If available, only DPS officers shall be used on Interstate Highways and Urban Freeways. DPS officers shall also be used on other construction projects except when a local law enforcement agency has jurisdiction, in which case a local law enforcement officer and vehicle shall be used.

The contractor shall be responsible to procure civilian flaggers, DPS officers, and local enforcement officers. When procuring DPS officers, the contractor shall contact DPS at least two business days before flagging services will be required. Such contact must be made between the hours of 7:00 A.M. and 5:00 P.M. (M.S.T.).

In the event that local enforcement officers or DPS officers are temporarily unable to provide flagging services, the contractor shall ensure that traffic control is maintained and all personnel are protected, either by providing civilian flaggers or through other means as approved by the Engineer. No adjustments to the contract will be allowed for any delays resulting from the unavailability of local enforcement officers or DPS officers.

A DPS or local enforcement officer shall not work more than 12 consecutive hours unless an emergency situation exists which, in the opinion of the Engineer, requires that the officer remain in the capacity of a flagger.

The contractor shall furnish verification to the Engineer that all civilian flaggers have completed a recognized training and certification program. Flaggers certified by the American Traffic Safety Services Association (A.T.S.S.A.) or by the National Safety Council shall be acceptable. Certification through other programs offering flagger training must be approved by the Engineer. Flagger certification must be current. Training and certification shall be required at least once every four years.

701-4.03(E) Limitation of Measurement: the second paragraph of the Standard Specifications is revised to read:

Measurement will be made after the initial installation and once weekly thereafter for items in continuous use and at any other times changes are made in the use of traffic control elements listed under Subsection 701-4.01(B). The contractor shall notify the Engineer when any changes are made in the use or location of traffic control elements.

701-4.04 Measurement of Work Elements: Sub-paragraph (A) of the Standard Specifications is revised to read:

- (A) Temporary concrete barrier will be measured by the linear foot along the center line of the uppermost surface upon its initial installation (Complete-in-Place), and upon any subsequent relocations, as defined in Subsection 701-5.01. Barrier will be measured by linear foot for each 24-hour day for the "In-Use" condition.

701-4.04 Measurement of Work Elements: Sub-paragraph (C) of the Standard Specifications is revised to read:

- (C) Truck-Mounted Attenuators, including driver, and Trailer-Mounted Attenuators, including host vehicle and driver, will be measured by the day for each 24-hour day that a truck-mounted or trailer-mounted attenuator and operator are used to protect the work site.

701-4.04 Measurement of Work Elements: Sub-paragraph (F) of the Standard Specifications is revised to read:

- (F) Civilian flagging services will be measured by the hour for each hour that a civilian flagger is provided. Flagging services by DPS officers and local enforcement officers will be measured for each hour that a uniformed, off-duty DPS officer or law enforcement officer with vehicle is employed directly by the contractor as a flagger within the project limits, when authorized in advance by the Engineer. Quantities will be rounded to the nearest 0.5 hour.

Civilian, DPS, or local enforcement flagging services and traffic control devices required to permit contractors' traffic to enter safely into normal traffic within the project limits will be paid under their respective items. Flaggers required by a written local permit agreement will be measured for payment under this item. Additional civilian, DPS, or local enforcement flagging services used within the project limits shall be measured for payment under this item, subject to the approval of the Engineer.

Civilian, DPS, or local enforcement flagging services and traffic control devices used outside the project limits will be measured under their respective items. The Department will pay 50 percent of the unit bid price for such flaggers and traffic control devices used as described in this paragraph, subject to the approval of the Engineer. The project limits are defined as the construction work zone as shown on the approved traffic control plan for the specific section of highway under construction.

701-5.01 Temporary Concrete Barrier (Installation and Removal): of the Standard Specifications is revised to read:

Temporary concrete barrier, measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the plans, including furnishing, placing, dismantling, and removal. The price bid shall also include any required connection devices, barrier markers, and glare screen.

Fifty percent of the contract unit price for temporary concrete barrier will be paid upon satisfactory installation.

Should it be necessary to dismantle, pick up and relocate a portion of the barrier installation during construction, whether laterally or vertically, that portion of the removed and relocated barrier will be considered a new installation and paid for at 100 percent of the contract unit price.

Fifty percent of the contract unit price will be paid upon final removal.

No payment will be made for portions of the barrier which the contractor can adjust or realign without dismantling and picking up, such cost being considered as included in the bid price for Temporary Concrete Barrier "Installation and Removal." The Engineer will be the sole judge as to whether devices are to be dismantled, picked up and reinstalled, or are to be adjusted or realigned.

701-5.02 Temporary Impact Attenuators (Installation and Removal): of the Standard Specifications is revised to read:

Temporary Impact Attenuation Devices shall include Sand Barrels and Energy Absorbing Terminals. Temporary Impact Attenuation Devices, measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the plans, including furnishing the devices with replacement parts, installing, removing and stockpiling the devices.

Fifty percent of the contract unit price for temporary impact attenuators will be paid upon satisfactory installation.

Should it be necessary to dismantle, pick up and reinstall attenuation devices during construction, the work of removing and reinstalling the devices will be considered a new installation and paid for at 100 percent of the contract unit bid price.

Fifty percent of the contract unit price will be paid upon final removal.

The Engineer will be the sole judge as to whether devices are to be dismantled, picked up and reinstalled or are to be adjusted or realigned. No additional payment will be made for devices which are adjusted or realigned, the cost being considered as included in the contract unit price paid for Temporary Impact Attenuator "Installation and Removal."

Measurement and payment for furnishing materials, equipment and labor and repairing attenuation devices that are damaged by the traveling public will be made in accordance with the requirements of Subsection 109.04 of the specifications.

No measurement or direct payment will be made for furnishing replacement parts and repairing devices damaged by other than the traveling public.

701-6.05 Truck-Mounted Attenuators: of the Standard Specifications is revised to read:

The accepted quantities of truck-mounted attenuators or trailer-mounted attenuators, measured as provided above, will be paid for at the unit bid price for truck-mounted attenuators per day of work site protection, which rate shall be full compensation for the work, complete, including, but not limited to, furnishing all materials; equipment; attached arrow panel or changeable message board; and labor (including the operator); and maintaining and repairing the truck and truck-mounted attenuator, or trailer-mounted attenuator and host vehicle, as specified herein and on the project plans. No adjustment to the unit bid price for truck-mounted attenuators will be made when trailer-mounted attenuators are provided, such price being considered as full compensation for the work, as specified herein, regardless of which type of attenuator is used to protect the work site. It shall be the contractor's responsibility to replace any damaged or destroyed parts of the truck-mounted attenuator or trailer-mounted attenuator and host vehicle at no additional cost to the Department.

701-6.06 Flashing-Arrow Panels, and Changeable Message Boards: the second paragraph of the Standard Specifications is revised to read:

The accepted quantities of changeable message boards, measured as provided above, will be paid for at the unit bid price per day, which price shall be full compensation for the work, complete, including incidental grading; furnishing, operating, maintaining, and relocating the boards on the work site; and providing all necessary labor. Signs, sign stands, Type II barricades, or vertical panels and lights that are used to delineate changeable message boards shall be paid for at the respective unit bid prices.

701-6.07 Pilot Services, and Flagging Services: the last paragraph of the Standard Specifications is revised to read:

The accepted quantities of flagging services provided by the DPS officers, measured as provided above, will be paid for at the predetermined hourly rate of \$65.26, as shown in the bidding schedule. Of this amount, \$44.00 per hour shall be remitted to the DPS officer, and \$12.75 per hour shall be remitted to DPS. The remaining \$8.51 per hour represents profit and overhead for both the prime contractor and subcontractor. Such price shall be considered full compensation for the work. No additional payment will be made for costs in excess of the predetermined rate, for overtime hours, and for travel time to and from the project, such costs being considered as included in contract items.

(704THRMO, 01/16/2018)

SECTION 704 THERMOPLASTIC PAVEMENT MARKINGS:

704-1 Description: of the Standard Specifications is revised to read:

The work under this section shall consist of cleaning and preparing pavement surfaces and furnishing and applying either white or yellow thermoplastic reflectorized pavement markings using extrusion or ribbon dispensing devices of the required shape and thickness to the prepared pavement surface at the locations and in accordance with the details shown on the project plans, the manufacturer's specifications, and the requirements of these specifications.

704-2.01 General Requirements: the second and third paragraphs of the Standard Specifications are revised to read:

Only thermoplastic materials currently shown on the Department's Approved Products List (APL) shall be used. Copies of the most recent version of the APL are available on the internet from the ADOT Research Center through its Product Evaluation Program.

Certificates of Compliance conforming to the requirements of Subsection 106.05 shall be submitted along with precertification test results from the ADOT Central Laboratory for samples from each batch of material obtained for precertification at the production line of the manufacturer.

704-2.02 Composition: of the Standard Specifications is revised to read:

(A) General:

The thermoplastic composition shall conform to the following requirements:

Component	Percent by Weight	
	White	Yellow
Binder (Min.) (Note 1)	20	20
Titanium dioxide (Min.)	10	1.75
Yellow Lead-Free Pigment (Min.)	-----	1.5
Reflective glass inter-mix beads (Min.) (Note 1)	20/ M 247 T1 & 20/ M 247 T3	20/ M 247 T1 & 20/ M 247 T3
Calcium carbonate or equivalent filler (Max.)	30	36.75
Note 1: As described in 704-2.05(C), for precertification purposes, thermoplastic material will be tested for binder content and glass bead content according to ASTM D4797.		

The ingredients of the thermoplastic composition shall be thoroughly mixed and in a solid or sectionalized block, or free-flowing granular form. When heated in a melting apparatus, the material shall readily liquefy into a uniform solution. This solution shall be free from all

skins, dirt, foreign objects or any other ingredient which would cause bleeding, staining, blotting, or discoloration when applied to the bituminous or concrete pavement surfaces.

The thermoplastic formulation shall utilize an alkyd binder. The alkyd binder shall consist of a mixture of synthetic resins, at least one of which is solid at room temperature, and of high-boiling-point plasticizers. At least one third of the binder composition and no less than eight percent by weight of the entire material formulation shall be solid maleic-modified glycerol ester resin or solid maleic-modified pentaerythritol ester resin. The alkyd binder shall not contain any petroleum-based hydrocarbon resins.

(B) Reflective Glass Beads:

In addition to incorporating glass beads in the thermoplastic mix, glass beads shall be evenly applied to the surface of the molten material as specified in Subsection 704-3.02(G).

(C) Filler:

The filler shall be a white calcium carbonate or equivalent filler with a compressive strength of at least 5,000 pounds per square inch.

(D) Titanium Dioxide:

Titanium Dioxide shall conform to the requirements of ASTM D476 for Type II (92 percent).

(E) Yellow Pigment:

The yellow pigment shall be heat resistant and lead free. The type of yellow pigment shall be at the option of the manufacturer provided that the material conforms to all color requirements in a stable and durable fashion as specified herein.

704-2.03 Physical Characteristics of the Composition: of the Standard Specifications is revised to read:

(A) General Requirements:

The thermoplastic material shall not exude fumes which are toxic, injurious, or require specialized breathing apparatus when heated to the temperature range specified by the manufacturer for application. The material shall remain stable when held for four hours at this temperature, or when subjected to four reheatings, not exceeding a total of four hours, after cooling to ambient temperature. The temperature viscosity characteristics of the plastic material shall remain constant throughout the reheatings and shall show like characteristics from batch to batch. There shall be no obvious change in color of the thermoplastic material as a result of reheating, and the color of the material shall not vary from batch to batch.

(B) Color:

The thermoplastic material, after heating for four hours \pm five minutes at $425 \pm$ three degrees F and cooled to $77 \pm$ three degrees F, shall meet the following:

White: Daylight reflectance at 45 degrees - 0 degrees shall be 70 percent minimum.

Color shall match Federal Test Standard Number 595, color chip no. 17925.

Yellow: Daylight reflectance at 45 degrees - 0 degrees shall be 43 percent minimum.

Color shall match Federal Test Standard Number 595, color chip no. 13538.

(C) Retroreflectance:

All white and yellow pavement marking materials shall have the following minimum retroreflectance values when measured by the Department, as described in Subsection 704-3.02(G), in accordance with ASTM E1710 within 30 days of application, but no sooner than three days after application to the roadway surface.

Product	Retroreflectance (millicandelas)	Retroreflectance on Chip Seals (millicandelas)
White	350	250
Yellow	200	175

(D) Softening Point:

After heating the thermoplastic material for four hours \pm five minutes at $425 \pm$ three degrees F and testing in accordance with ASTM D36, the thermoplastic materials shall have a softening point of 215 ± 15 degrees F.

(E) Water Absorption and Specific Gravity:

The thermoplastic material shall not exceed 0.5 percent by weight of retained water when tested in accordance with the requirements of ASTM D570.

The specific gravity of the material, as determined by AASHTO T 250, shall be between 1.85 and 2.15.

(F) Impact Resistance:

After heating the thermoplastic material for four hours \pm five minutes at $425 \pm$ three degrees F and forming test specimens, the impact resistance shall be not less than 10 inch-pounds when tested in accordance with AASHTO T 250.

(G) Bond Strength:

After heating the thermoplastic material for four hours \pm five minutes at $425 \pm$ three degrees F, the bond strength to Portland cement concrete shall be not less than 180 pounds per square inch. The bond strength shall be determined in accordance with the procedures specified in AASHTO T 250.

(H) Abrasion Resistance:

The abrasion resistance of the thermoplastic material shall be determined by forming a representative lot of the material at a thickness of 125 mils on a four-inch square monel panel (thickness 50 ± 1 mil), on which a suitable primer has been previously applied, and subjecting it to 200 revolutions on a Taber Abraser at 25 degrees C, using H-22 calibrated wheels weighted to 250 grams. The wearing surface shall be kept wet with distilled water throughout the test.

The maximum loss of thermoplastic material shall be 0.5 grams.

(I) Cracking Resistance at Low Temperature:

After heating the thermoplastic material for four hours \pm five minutes at $425 \pm$ three degrees F, applying to concrete blocks, and cooling to $15 \pm$ three degrees, the material shall show no cracks when observed from a distance exceeding 12 inches. Testing for low temperature crack resistance shall be in accordance with the procedures specified in AASHTO T 250.

(J) Flowability:

After heating the thermoplastic material for four hours \pm five minutes at $425 \pm$ three degrees F, and testing for flowability in accordance with AASHTO T 250, the white thermoplastic shall have a maximum percent residue of 18, and the yellow thermoplastic shall have maximum percent residue of 21.

(K) Yellowness Index:

The white thermoplastic material shall not exceed a yellowness index of 0.12 when tested in accordance with ASTM D 4960. As described in Subsection 704-2.05(C), for precertification purposes, thermoplastic material will be tested for yellowness index. The material will be prepared and tested in accordance with ASTM D4960. The yellowness index will be calculated using ASTM E313.

(L) Flowability (Extended Heating):

After heating the thermoplastic material for eight \pm 1/2 hours at $425 \pm$ three degrees F, with stirring the last six hours, and testing for flowability in accordance with AASHTO T 250, the thermoplastic shall have a maximum percent residue of 28.

(M) Flash Point:

The thermoplastic material shall have a flash point not less than 475 degrees F when tested in accordance with the requirements of ASTM D92.

(N) Storage Life:

The materials shall meet the requirements of this specification for a period of one year from the date of manufacture. The month and year of manufacture shall be clearly marked on all packages of thermoplastic material. The thermoplastic material must also melt uniformly with no evidence of skins or unmelted particles for this one year period. Any material which does not meet the above requirements, or which is no longer within this one year period at the time of application, shall not be used. The contractor shall replace any outdated material with material meeting the above performance and time requirements at no additional cost to the Department.

(O) Primer-Sealer:

Primer-sealers shall be used on Portland cement concrete, or existing hot mix asphaltic concrete surfaces prior to application of the thermoplastic material, and shall be applied as recommended by the thermoplastic material manufacturer. The primer-sealer shall be compounded specifically for use with the specified thermoplastic material.

Application of primer-sealer will not be required on newly placed hot-mix asphaltic concrete surfaces prior to application of the thermoplastic material.

(P) Color Stability:

Using accelerated weathering per ASTM G155, Cycle 1, white color stability shall be measured for no color change after 500 hours of exposure, and yellow color stability shall be measured for no color change after 1000 hours of exposure.

704-2.04 Physical Requirements for Glass Beads: the second paragraph of the Standard Specifications is revised to read:

The intermix beads shall conform to AASHTO M 247 for Type 1 and Type 3, and may be coated or uncoated as recommended by the manufacturer. If uncoated beads are used, the thermoplastic formulation shall be configured to minimize settling of the intermix beads when the material is heated and applied.

Drop-on beads shall conform to the gradation requirements of AASHTO M 247 for Type 1, Type 3, and Type 4. Type 4 drop-on glass beads will only be considered for use on chip seal pavement surfaces.

704-2.05 Precertification of Thermoplastic Material: is hereby added to the Standard Specifications:

(A) General:

As described in Subsection 704-2.01, the contractor shall provide to the Engineer a Certificate of Compliance from the manufacturer and test results from the Central Laboratory for samples from each batch of material obtained for precertification at the production line of the manufacturer. If the material fails the precertification testing by Central Laboratory, the manufacturer shall not supply any thermoplastic material represented by the failing test results to ADOT projects.

(B) Precertification Sampling:

Sampling of thermoplastic material for precertification must be for an active ADOT project. The manufacturer shall obtain a sample of thermoplastic material from each batch of production that will be shipped to an ADOT project. The manufacturer shall select three equal sized bags, representative of thermoplastic material from the batch. It is recommended that the three bags be pulled from the initial, middle, and final portions of each batch or truck load. The manufacturer shall prepare a composite one-gallon sample from these three bags in accordance with ASTM D7307. The manufacturer shall ship the composite sample to the Central Laboratory at 1221 N. 21st Avenue Phoenix, AZ 85009, along with a Certificate of Analysis, for precertification testing. The manufacturer shall identify the thermoplastic material with the batch number, the batch quantity, the batch date, the manufacturer's name, and the product name. Such identification shall be shown on the side of the container.

(C) Central Laboratory Precertification Testing Responsibilities:

The Central Laboratory is responsible for coordinating precertification for each batch of thermoplastic material that is to be precertified.

For precertification purposes, thermoplastic material will be tested for binder content and glass bead content according to ASTM D4797. For yellowness index, the material is prepared and tested in accordance with ASTM D4960. The yellowness index will be calculated using ASTM E313.

Upon completion of testing, the Central Laboratory will provide the manufacturer with a copy of the test results for each tested batch. Typically, testing will be completed within three working days of receipt of the sample. If the material fails the precertification testing, the manufacturer shall not supply any thermoplastic material represented by the failing test results to ADOT projects.

704-3.01 Equipment: the second, third, and fourth paragraphs of the Standard Specifications are hereby deleted.

704-3.01 Equipment: the eighth paragraph of the Standard Specifications is revised to read:

The bead dispenser shall be capable of evenly distributing glass beads at the required application rate immediately after the application of the thermoplastic. The bead dispenser on truck-mounted units shall be equipped with an automatic cut-off which is synchronized with the cut-off of the thermoplastic material.

704-3.02(A) Placement Locations: the first paragraph of the Standard Specifications is revised to read:

Survey layout for pavement markings shall be provided in accordance with Subsection 925-3.01. On projects that include no-passing zones, the contractor shall coordinate with the ADOT No Passing Zone Crew as described in Subsection 925-3.01.

Pavement markings shall be positioned as defined on the plans and in the specifications. When it becomes necessary for proper installation, the Engineer may revise individual marking locations as necessary to accommodate the following requirements:

704-3.02(B) Material Selection and Compatibility: the second, third, fourth, and fifth paragraphs of the Standard Specifications are revised to read:

All materials shall be properly packaged and stored. Each container to be used on the project shall be clearly labeled to indicate the following information:

- Nature, type, and formulation of the material;
- Manufacturer, batch number, and date of manufacture;
- Application requirements and constraints; and

Preparation and application equipment shall be in accordance with the plans and specifications, and shall conform to the recommendations of the materials manufacturer.

Incompatible materials shall not be used together. The contractor shall not combine alkyd and hydrocarbon materials in preparation or application equipment.

704-3.02(D) Pavement Surface: the first paragraph of the Standard Specifications is revised to read:

The contractor shall remove all dirt, dust, loose surfacing materials, poorly adhered existing markings, or other detrimental material from the road surface prior to application of the thermoplastic material.

704-3.02(F) Pavement Temperatures: of the Standard Specifications is revised to read:

Extruded ribbon-gun application procedures shall not be used if the wind chill factor is below 65 degrees F.

For other application procedures, the road surface temperature at the time of application shall be a minimum of 55 degrees F and rising.

If at any time during marking operations the air or pavement temperature falls below these requirements, all marking operations shall stop.

704-3.02(G) Thermoplastic Application: of the Standard Specifications is revised to read:

The thermoplastic pavement marking material shall be placed after 30 calendar days but before 60 calendar days after completion of the final pavement surface, or as directed by the Engineer.

The thermoplastic pavement marking material shall be extruded on to the pavement surface at a material temperature between 385 and 415 degrees F, depending on manufacturer's recommendations, ambient air and pavement temperatures, and the nature of the pavement surface. The contractor shall verify temperature requirements with a non-contact infrared thermometer as directed by the Engineer.

The thermoplastic material temperatures shall not exceed 450 degrees F. Material temperatures exceeding 440 degrees F shall be allowed for short periods of time; however, in no case shall the material be held for more than four hours at temperatures above 440 degrees F. Total heating time for any batch of material shall not exceed six hours. The contractor shall note in the temperature log the time when each batch of thermoplastic material is first heated. The start of heating time shall also be marked on the side of the kettle to which it applies.

Drop-on glass beads shall be mechanically deposited into the thermoplastic material immediately after the thermoplastic marking is applied, using a double drop method. One drop shall be Type 1 glass beads and the other drop shall be Type 3 glass beads. Double drop methods using all Type 1 or Type 3 beads for both drops will not be allowed. Prior to the application of thermoplastic material, the contractor shall provide to the department, in writing, the drop-on bead mix package that includes the type of glass beads as described in AASHTO M 247 and the drop rate in pounds per 100 square feet used in each drop.

The dispensers shall evenly distribute the beads in the thermoplastic material. Glass beads shall be embedded in the surface of the thermoplastic to a depth of between 50 and 60 percent of the bead diameter. If the glass beads do not adhere to the thermoplastic marking, operations shall be stopped until the problem has been corrected.

Unless otherwise specified, all thermoplastic pavement markings shall be extruded, and shall be a minimum of 90 mils thick. The thermoplastic thickness shall be uniform and consistent throughout the total length of the marking project.

For thermoplastic measured 80 mils or less in thickness, a second application of extruded 90 mil thick thermoplastic meeting all the requirements of the specifications shall be placed over the original application.

For chip seal pavement surfaces, thermoplastic pavement markings shall be extruded and shall be a minimum of 120 mils thick. The thermoplastic thickness shall be uniform and consistent throughout the total length of the marking project. The drop-on glass beads shall be mechanically deposited into the thermoplastic material immediately after the thermoplastic marking is applied, using a double drop method. One drop shall be Type 1 glass beads and the other drop shall be Type 3 or Type 4 glass beads. Double drop methods using only one type of glass beads for both drops will not be allowed. Prior to the application of thermoplastic material, the contractor shall provide to the department, in writing, the drop-on bead mix package that includes the type of glass beads as described in AASHTO M 247 and the drop rate in pounds per 100 square feet used in each drop.

For chip seal pavement surfaces, for thermoplastic measured 120 mils or less in thickness, a second application of extruded 80 mil thick thermoplastic meeting all the requirements of the specifications shall be placed over the original application.

The contractor shall perform periodic spot checks of thermoplastic material to verify that the required thickness has been attained.

The finished thermoplastic line shall have well defined edges and be free from waviness. Lateral deviation of the thermoplastic line shall not exceed one inch in 100 feet. The longitudinal deviation of a painted segment and gap shall not vary more than six inches in a 40-foot cycle. The actual width of line shall be within the limits specified in the following table, according to the width of line called for on the plans:

Plan Width	Actual Width
4 inches	4 to 4-1/2 inches
6 inches	6 to 7 inches
8 inches	8 to 9 inches
Over 8 inches	± 1 inch

After application and sufficient drying time, the thermoplastic marking shall show no appreciable deformation or discoloration under local traffic conditions with air and road temperatures ranging from -10 to 180 degrees F. The drying time shall be defined as the minimum elapsed time, after application, when the thermoplastic pavement markings shall have and retain the characteristics required herein, and after which normal traffic will leave no impression or imprint on the newly applied marking. When applied within a temperature range of 400 ± 15 degrees F and thickness of 0.090 inches, the material shall set to bear traffic in not more than two minutes when the air and pavement surface temperatures are approximately 50 ± 3 degrees F and not more than 10 minutes when the air and road surface temperatures are approximately 90 ± 3 degrees F. The Engineer may conduct field tests in accordance with ASTM D711 to verify actual drying times.

704-3.03 Sampling and Testing of In-Place Thermoplastic Material: is hereby added to the Standard Specifications:

(A) Thickness Testing:

Random spot checks of the thermoplastic thickness will be made by the Engineer to ensure conformance with the required criteria. Suggested spot check procedures include the following:

- Wet:** Thickness can be field tested immediately after the thermoplastic marking is applied by inserting a thin, graduated machinist rule or similar instrument into the molten thermoplastic to the depth of the pavement surface. The thickness is then determined visually by noting on the scale the depth of the penetration or coating of the instrument.
- Dried:** Thickness can be field tested by placing a small flat sheet of metal or duct tape with a known thickness immediately ahead of the striping apparatus. After striping, remove the sample and use a suitable measuring device, such as a caliper or micrometer, to determine the thickness of the dried marking.

Thickness will be tested at a minimum of two locations, randomly selected in any given mile, using the "Dried" method. The thickness measurement includes glass beads. Thickness sampling locations do not require reapplication over the gaps created when removing tape/plate.

Thickness will be measured with a digital caliper capable of measuring to the nearest thousandth of an inch.

(B) Retroreflectance Testing:

The Department will notify the contractor 72 hours prior to testing. Retroreflectance testing will be performed every 0.2 mile, with four readings taken at each location. The four readings will be taken randomly within a 10 foot section. The average of the four readings shall be the result for that location. Should the average of these readings not meet the required retroreflectance values, a second test of four readings will be performed 50 foot forward from the failing test. The higher average value of the two tests will determine the results for that location. The Department will provide raw test results to the contractor.

Retroreflectance testing will be performed in the direction of traffic. On roadways where yellow stripes separate opposing traffic, testing is done in both directions (two locations per 0.2 miles, one in each direction).

Transverse and symbol markings will not be subject to retroreflectance testing.

Longitudinal lines less than 0.2 miles (such as 12 inch white turn lanes), regardless of length, must be tested. A single test of four readings shall be taken at the approximate midpoint of each line. Should the average of these readings not meet the required

retroreflectance values, a second test of four readings will be performed at the approximate half way point between the midpoint and the end. The higher average value of the two tests will determine the results for that location.

All markings that fail to meet these minimums will require reapplication and retesting of striping materials. Reapplication shall start from the location of a passing test, across the failure area(s), to the next passing test location. For thermoplastic sections applied on asphalt determined to be deficient in retroreflectance, a second application of 80 mils shall be applied. The reapplication does not require removal of the deficient section. For thermoplastic applied on both PCCP and concrete bridge decks that are determined to be deficient in retroreflectance, the failing application shall be removed and reapplied.

Depending on the extent of failing pavement markings, it may not be practical to retest with the reflectometer. In that case, the Department may perform a visual nighttime inspection. If the striping appears as bright as or brighter than the adjacent striping that meets the required retroreflectance, the Engineer may accept the reapplication.

Should retests for the reapplication of thermoplastic pavement markings fail to meet the required minimum retroreflectance, the contractor shall remove the entire stripe down to the road surface.

(C) Verification Sampling for Composite Testing of In-Place Thermoplastic:

At the discretion of the Engineer, thermoplastic material may be sampled on the project at any time during the construction of the project for verification testing. The thermoplastic material shall be field sampled utilizing a 4 inch x 12 inch galvanized sheet metal plate during thermoplastic application. The galvanized sheet metal plate shall be sprayed with thermoplastic material without additional application of glass beads. When sampling behind a striping truck, the sample will be obtained randomly from the drop nozzle after at least 150 feet of striping has been placed. Once the sample is no longer in a molten state and has cooled sufficiently, it shall remain attached to the sampling plate and be stored in a plastic bag.

For molten samples taken in the field for verification testing, the contractor shall perform the sampling under the observation of the Engineer.

704-4 Method of Measurement: the first paragraph of the Standard Specifications is revised to read:

Thermoplastic pavement longitudinal markings (i.e. edge lines, lane lines, and gore lines) and transverse markings (i.e. cross-walks, stop bars, cross hatch, chevron lines, and railroad markings) will be measured by the linear foot along the center line of the pavement marking line and will be based on a four-inch-wide line. Measurement for striping with a plan width greater or less than the basic four inches as shown on the plans or directed by the Engineer will be made by the same method and then adjusted by the following factor:

704-4 Method of Measurement: the seventh paragraph of the Standard Specifications is revised to read:

Removal of curing compound from new Portland cement concrete pavement and the application of primer-sealer, will be measured along the centerline of the line of curing compound being removed or the line of primer-sealer being applied or by the unit each for symbols and legends, as appropriate. Measurement of a line of removal of curing compound or a line of application of primer-sealer will be based on a four-inch wide line, and shall be measured by the linear foot, and in accordance with the items of work established in the bid schedule. Measurement for lengths of removal of curing compound or application of primer-sealer with a plan width greater than four inches as shown on the plans or directed by the Engineer will be made by the same method and then adjusted by the following factor:

$$\frac{\text{Plan Width (inches)} \times \text{Linear Feet}}{4 \text{ (inches)}}$$

The plan width will include an extra 4 inches – 2 inches on each side – beyond the plan width of pavement marking and will be based on a continuous length of pavement marking lines unless indicated on the project plans.

(708PPM, 06/15/09)

SECTION 708 - PERMANENT PAVEMENT MARKINGS:

708-2.02(B) Physical Requirements: of the Standard Specifications is modified to add:

(6) Heavy Metal Concentration:

Heavy metal concentration in glass beads shall be as specified in the following table, when tested by an independent laboratory, approved by the Engineer, using EPA Method 3052 and EPA Method 6010B. A Certificate of Analysis conforming to Subsection 106.05 shall be furnished to the Engineer prior to use.

Heavy Metal	Concentration
Arsenic	< 75 ppm
Antimony	< 75 ppm
Lead	< 100 ppm

708-3.02 **Application:** the last paragraph of the Standard Specifications is revised to read:

Tolerances for Placing Paint, Beads, and Primer:

The length of painted segment and gap shall not vary more than six inches in a 40-foot cycle.

The finished line shall be smooth, aesthetically acceptable and free from undue waviness.

Painted lines shall be four, eight, or 12 inches wide as shown on the plans with a tolerance of $\pm 1/8$ inch and shall be placed at a minimum rate of 16 gallons per mile for a solid four-inch line and four gallons per mile for a broken four-inch line, based on a 10-foot stripe and a 30-foot gap (40-foot cycle aggregate).

Glass reflectorizing beads shall be applied on the wet paint at a minimum rate of eight pounds per gallon of paint.

Wet thickness shall not be less than 15 mils, unless otherwise shown on the plans.

ITEM 7310186 – POLE (SPECIAL) (30' APS DECORATIVE TRANSIT STYLE):

Description:

The work under this item shall include all labor, material, and equipment required for a complete-in-place and fully operational lighting pole furnished and installed where indicated on the plans.

Materials:

The pole shall be a 6 inch round pole, the shaft being 30 ft, long. The pole shall have a handhole located approximately 25 inches above final grade. The pole shall be capable of accepting a luminaire mounted on a 24 inch long mast arm for the roadway pathway light application (mounted at the top of the pole). The pole shall be Black in color. Units to match existing units installed in a previous project.

Construction Requirements:

Each pole shall be located at the station and offset indicated on the plans. The pole shall be installed 90 degrees to the roadway curb line such that the mast arm is towards the roadway. The hand hole shall face the sidewalk. Refer to APS Standard drawing 1945 Sheets 1 and 2 of 2 (Details A and B, Project plans. No light at 15'-2").

Method of Measurement:

This item shall be measured as a unit for each pole furnished and installed.

Basis of Payment:

The accepted quantities of this work, measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work complete-in-place and fully operational as described and specified herein and on the plans.

ITEM 7310371 – FOUNDATION (SPECIAL) (TRANSIT STYLE POLE):

Description:

The work under this item consists of furnishing and installing lighting pole foundation as shown on the plan and as specified herein.

Materials:

The pole foundation shall be a 24 inch diameter by 60 inch long cylindrical 3000 psi concrete pole foundation installed in undisturbed soil or recompacted soil to a minimum of 95% of the maximum density as determined by ASTM D698. The foundation is to have #4 horizontal (circular) steel reinforcing ties @ 12 inches on center and (8) #7 vertical steel reinforcing bars equally spaced. The pole foundations shall comply with additional requirements indicated on the plans.

Construction Requirements:

The pole foundation shall meet the requirements of APS Standard detail 1945, shown on the plan.

Method of Measurement:

This item shall be measured as a unit for each foundation furnished and installed.

Basis of Payment:

The accepted quantities of this work, measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work complete in place as described and specified herein at the locations shown on the project plans.

ITEM 7310650 – MAST ARM (24” LONG, TRANSIT STYLE POLE)

Description:

The work under this item consists of furnishing and installing new pole top clamp mounted mast arm for luminaire mounting. The mast arm is to be mounted on the roadway side of the pole. The unit is to be black in color to match the new Transit poles and existing units installed in a previous project.

Construction Requirements:

The mast arm shall be steel, black in color, and suitable to be mounted to a 6 inch round pole. The unit shall be capable of supporting the luminaire. The mast arm shall meet the requirements indicated in the APS Standard detail 1945, shown on the plan.

Method of Measurement:

This item shall be measured as a unit for each mast arm furnished and installed.

Basis of Payment:

The accepted quantities of this work, measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work complete in place as described and specified herein at the locations shown on the project plans.

ITEM 7310812 – REMOVE AND SALVAGE EXISTING LIGHT POLES:

Description:

The work under this item consists of removal and disposal of existing lighting poles at the locations shown in the project plans and these Special Provisions.

Construction Requirements:

All removed roadway lighting poles and features, to include mast arms, luminaires, all electrical wiring and conductors, shall be salvaged to APS. The contractor shall transport all equipment to APS in the same condition as it was removed. The contractor shall, through the engineer, contact APS to coordinate delivery.

Method of Measurement:

This item shall be measured as a unit for each pole removed and delivered to APS. Poles are direct bury and removal includes filling the void with compacted soil and shall be considered as incidental cost of pole removal.

Basis of Payment:

The accepted quantities of this work, measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work complete as described and specified herein at the locations shown on the project plans.

SECTION 732 – ELECTRICAL UNDERGROUND MATERIAL:

732-3.01 Installation of Electrical Conduit and Pull Boxes: of the Standard Specifications is modified to add:

732-3.02 (A) General: of the Standard Specifications is modified to add:

1. When required, splices for the street lighting wire and/or ground wire shall be by crimp connection only.
2. Poles and standards shall be grounded. A continuous ground system shall be incorporated with wire extending to the end of each conduit run terminating with a ground rod.
3. The installation shall be free from short circuits. Tests shall be made in the presence of the Project Inspector. The entire system shall have an insulation test with a 500 Volt "megger" system (supplied by the contractor). In no case shall the insulation test be less than five megohms.
4. Ground bushings shall be used on all steel conduit ends. Conduits shall be bonded together and incorporated into the ground system.
5. Insulated conductors shall be type THW, 600 V.A.C.
6. The sum of the deflection angles in any conduit run shall not exceed 360 degrees between junction points.
7. Pull all unused conductors out of conduits.

732-3.03 Bonding and Grounding: of the Standard Specifications is modified to add:

Electrical service installations shall have two (2) copper-plated ground rods, installed six feet apart. All new controller cabinets shall have one ground rod installed in addition to the service ground rods.

ITEM 7320055 – ELECTRICAL CONDUIT (2") (PVC)(DIRECTIONAL BORE)

ITEM 7320060 – ELECTRICAL CONDUIT (2 1/2") (PVC):

Description:

The work under these items shall consist of furnishing and installing conduit, including horizontal directional drilling, horizontal directional boring, excavation, backfilling, compacting, warning tape, detectable pull tape, connector and fittings, locating existing conduit when new is to be intercepted with existing, and restoration of the surface to existing condition, including but not limited to the replacement of concrete slabs, decomposed granite, irrigation and other landscaping items where appropriate, in

accordance with the ADOT Standard details and as shown on the project plans and these project Special Provisions.

The contractor shall replace or adjust, as requested by the Engineer and based upon the inventory, existing conduit sweeps into pull boxes, conduit orientation and alignment, unusable conduit, bell ends or fittings within the project limits as called for on the project plans and as resulting from an inventory of existing conduit.

Materials:

Conduits are constructed of various materials, including, but not limited to, Polyvinyl Chloride (PVC), conforming to Subsection 732-2.02.

Unless otherwise shown on the Plans; bends, conduit fittings, expansion joints, 36-inch sweeps and other conduit accessories not specifically mentioned shall be manufactured from a material similar to the connecting conduit.

(A) Conduit Warning Tape:

Conduit warning tape shall be a minimum four-mil composite reinforced thermoplastic, with a minimum width of 3 inches and minimum length of 5 feet. Warning tape shall be highly resistant to alkalis, acids, and other destructive agents found in the soil.

Warning tape shall have a continuous printed message warning of the location of underground conduits. The message shall be in permanent ink specifically formulated for prolonged underground use and shall bear the words "CAUTION – ELECTRIC LINE BURIED BELOW" in black letters on a red (electric) background.

(B) Detectable Pull Tape:

Detectable pull tape shall be constructed of fiber and have an imbedded No. 22 S AWG conductor. The tape shall be low-stretch and moisture-resistant. The tape shall have nominal pull strength of 2,500 pounds. The tape shall include distance markings at intervals not to exceed two feet.

Construction Requirements:

Construction Requirements shall conform to Section 732, unless otherwise on the project plans, or these Special Provisions. Conduit installation shall conform to Subsection 732-3.01, with the exception of the following requirements and revisions.

(A) Conduit Routing and Underground Obstructions:

The contractor shall restore, repair or replace, as directed by the Engineer, and damaged or contaminated vegetation and/or landscaping features, decomposed granite and irrigation facilities, walkways, utilities, other existing electrical items resulting from its construction activities.

The contractor shall contact the Engineer to arrange and coordinate work in the vicinity of any irrigation lines. Spaghetti lines to vegetation, and feeder hoses may not be Blue Staked, but shall be repaired or replaced if damaged during construction, at no additional cost to the Department.

Excavations shall not be left open over 48 hours unless a plan has been submitted and approved by the Engineer to allow for open excavation. Safety devices used for the protection of excavations shall not be considered as traffic control items.

Conduit shall be placed accordance with the lines, grades, details and dimensions as shown on the project plans and these Special Provisions, unless otherwise approved by the Engineer.

Conduit runs shown on the plans are depicted to indicate the intended path from point to point. The actual pathway shall be staked prior to any excavation and shall be modified as necessary, as approved and directed by the Engineer, to avoid obstacles and obstructions that will prevent ease of installation, obstacles and future maintenance or conformance with appropriate codes and specifications. Final conduit locations shall be documented and submitted to the Engineer in the form of a record drawing.

(B) Conduit Size:

Changes in the size of the conduit shall, prior to construction, be submitted to the Engineer for approval. All changes in conduit size shall be documented by the contractor in the form of a record drawing.

(C) Conduit Bends and Deflection:

Except for factory bends, conduit bends shall have a radius of not less than that specified in the NEC. Conduit shall be bent without crimping or flattening, using the longest radius practicable. Conduit shall not deflect more than 1 inch vertically or horizontally per 12 inches of linear travel.

(D) Conduit Ends and Connections:

New runs of conduit shall be continuous from pull box to pull box, unless otherwise shown on the project plans. HDPE conduit shall not be joined to PVC conduit in the length of the run.

(E) Conduit Expansion Fittings:

Expansion fittings shall be installed in conduit runs which cross an expansion joint in a structure. Approved expansion fittings shall be as shown in the ADOT Standard

Drawings. Conduit encased in a structural member shall be installed in accordance with the National Electrical Code, or an approved by the Engineer.

A minimum of three feet shall separate any expansion coupling on any conduit from the pipe sleeve the conduit enters. Expansion couplings shall be staggered to keep the conduit entering the pipe sleeve as straight as possible.

Where bonding is not continuous, expansion fittings shall be provided with a bonding jumper of No. 6 AWG conductor. Allow enough slack conductor to accommodate the range of expansion supported by the expansion coupling.

Where it is not possible to use expansion fittings, sleeves of sufficient size shall be installed to provide a minimum 0.5 inch clearance between the conduit and the inside wall of the sleeve. The sleeve shall be discontinuous at the expansion joints.

(F) Conduit Depth:

Conduits shall be at a minimum cover depth of 30 inches, or as indicated in the project plans. Backfill compaction shall be in accordance with Subsection 203-5.03 (B) (4).

When conduit in protected and open areas cannot be installed at the minimum depths, it shall be encased in Class B concrete, as defined in Section 1006.

(G) Conduit in Trenches:

Immediately after conduits are installed, they shall be sealed to prevent the intrusion of water, mud, gravel, vermin, etc. The conduits shall be sealed after mandrelling, tracer wire and/or pull tape, cable and/or fiber, installation. Taping the ends of the conduit is not allowed.

All unoccupied conduits on which work is performed shall be sealed with a water-tight corrosion-proof, removable, reusable, and vermin resistant conduit plug or cap. Prior to use, the conduit plug or cap shall be submitted to the Engineer for approval.

Occupied conduits on which work is performed shall be sealed with a conduit cap, as approved the Engineer. The conduit cap must be water-tight, corrosion-proof, removable, and vermin resistant.

A three inch "Y" shall be cut into the face of the curb directly over conduit located under rolled or vertical curbs.

The contractor shall place warning tape in all trenches in which new PVC conduit is placed. Warning tape is not required in conduit segments where trenchless methods are used for installation. All warning tape shall be buried at a depth of six to eight inches below the finished grade.

(H) Conduit by Trenchless Methods:

Conduit under existing pavement, curbs and gutters, sidewalks, concrete flatwork, textured or decorative surfaces, and at other specified location, shall be installed by Horizontal

Directional Boring (HDB) or Horizontal Directional Drilling (HDD) methods. Use of either method is allowed, subject to approval of the Engineer.

Conduit installation in areas where trenching would typically be allowed may be installed by trenchless method. If preapproved by the Engineer as a means of facilitation installation or mitigating potential damage to existing surface and subsurface elements.

The proposed profile shall be submitted to the Engineer, after the contractor has completed the necessary potholing, and approved prior to beginning the operation at each location.

Directional boring/drilling shall be used to install all conduits along a prescribed path from the surface with minimal impact to the surrounding area. Installation shall be performed in accordance with industry standards and as directed by the Engineer.

The contractor's installation process shall utilize the "walkover" locating system, or other Engineer approved equivalent, for determining the installation profile. The installation equipment shall register the depth, angle, rotation and directional data. At the surface equipment shall be used to gather the data and relay the information to the equipment operator.

Excavation and backfill of excavated pits shall be in accordance with the requirements of Subsection 203-5.03 (B) (4).

When enlargement of an installation hole is necessary, the hole shall be a least 25 percent larger than the conduit to be installed, unless otherwise specified by the Engineer. Pulling equipment such as grips, pulling eyes, and other attachment hardware external to the conduit will be permitted as long as a wooden dowel is placed inside the conduit to prevent it from collapsing at the point of attachment when pull tension is at its peak. A swivel shall be used with all pulling hardware when pulling back the conduit into the installation path.

Drilling fluid shall be pumped down the hole to provide lubrication for the conduit as it is pulled in. The pulling tension for installing conduit into the installation path shall not exceed 75 percent of the conduit manufacturer's tensile strength rating in order to prevent the conduit from "necking down" or deforming.

All final installation profiles shall be submitted the Engineer.

(I) Detectable Pull Tape:

The contractor shall install detectable pull tape with a minimum of 2,500 pounds pulling tension in all new and existing empty conduits and all conduits with new fiber optic cable.

For all conduits that require detectable pull tape, the detectable pull tape shall terminated at the end of the conduit with a minimum of 2 feet of coiled slack in each pull box. The detectable pull tape traveling through conduit that terminates in a pull box, shall have its wire ends connected together to allow for a continuous locating signal to be used for the entire conduit run.

(J) Conduits Embedded in Concrete Structures or Attached to Concrete Structures:

Attachment or embedding conduit in any concrete structure shall require advance approval of the Engineer.

For bridges over 1,000 feet in length, or as indicated on the project plans, intermediate junction boxes should be evenly spaced.

(K) Utility Conduits:

Installation of conduit for underground utility service shall conform to the utility company requirements, local codes and the Special Provisions.

(L) Conduit Entering Pull Boxes:

Conduit entering pull boxes shall be installed in accordance with the details shown on the project plans and the ADOT Standard Drawings.

Conduit ends shall be capped with conduit end cap or plug fittings until wiring or cabling is installed. When end caps or plugs are removed, all new conduit ends in pull boxes shall be provided with an approved conduit end bell, as shown in the ADOT Standard Drawings. End bells shall be installed prior to the installation of the conductors or cables.

Method of Measurement:

Electrical conduit will be measured by the linear foot for each diameter size, regardless of method of installation; from center to center of pull boxes, from edge of foundation to center of pull box, from end of conduit to center of pull box or foundation, from end to end of conduit when no pull boxes are used.

No measurement will be made for conduit that is below ground in vertical conduit stub-ups, or field equipment cabinets.

No measurement or direct payment will be made for furnishing or installing detectable pull tape, the cost being considered as included in the cost of the contract items.

Basis of Payment:

The accepted quantities of conduit, measured as provided above, will be paid for at the contract unit price linear foot, which price shall be full compensation for the work, complete in place, including warning tape, excavation, backfill, detectable pull tape, connectors, fittings, horizontal directional drilling, horizontal directional boring, removal of spoil, compaction of trenches and directional drill/boring pits, restoration of the surface to existing condition, including concrete, pavement, decomposed granite and other landscaping items where appropriate, repair of irrigation facilities, locating of existing conduit when new is to be intercepted with existing, and all incidentals necessary to complete the work.

No direct payment will be made for conduit bends or bends at pull boxes, expansion fittings and coupling fittings, the cost being considered as included in the contract price for the conduit items.

ITEM 7320410 – PULL BOX (NO. 5):

Description:

The work under this item consists of furnishing, installing and leveling of pull boxes where shown on the project plans.

Materials:

The pull box shall be equal in size to a no. 5 pull box. The box is to be constructed of heavy duty polymer concrete with the lid constructed of the same material and held down with 2 bolts per lid.

Construction Requirements:

The contractor shall coordinate the installation of the pull box with the installation of the equipment requiring the pull box and in accordance with the construction sequencing plan and with the approval of the Engineer.

Method of Measurement:

ITEM 7320410 PULL BOX will be measured by the unit each installed.

Basis of Payment:

The accepted quantity of ITEM 7320410 PULL BOX, measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work complete in place as described and specified herein at the locations shown on the project plans.

ITEM 7320531 – CONDUCTOR (NO. 6) (SOLID):

Description:

The work under this item consists of furnishing, installing and terminating the conductors as shown on the project plans.

Materials:

The conductors (No. 6) shall be copper, multi strand, type XHHW-2 insulation rated 600 Volts.

Construction Requirements:

The contractor shall coordinate the installation of the conductors with the installation of the equipment requiring the wire in accordance with the construction sequencing plan and with the approval of the Engineer.

Method of Measurement:

ITEM 7320531 CONDUCTOR (NO. 6) (SOLID) will be measured by the unit linear feet of conductor installed.

Basis of Payment:

The accepted quantity of ITEM 7320531 CONDUCTOR (NO. 6) (SOLID), measured as provided above, will be paid for at the contract unit price per linear feet, which price shall be full compensation for the work complete in place as described and specified herein at the locations shown on the project plans.

ITEM 7320740 – REMOVE EXISTING CONDUCTORS:

Description:

The work under this item consists of the removal of existing conductors serving existing lighting equipment as shown on the project plans.

Construction Requirements:

The contractor shall coordinate the removal of the existing conductors with the removal of the lighting equipment in accordance with the construction sequencing plan and with the approval of the Engineer.

All existing conductors to be removed, including removed wires, shall become the property of the contractor.

Method of Measurement:

ITEM 7320740 REMOVE EXISTING CONDUCTORS will be measured by the linear feet of conductors removed.

Basis of Payment:

The accepted quantity of ITEM 7320740 REMOVE EXISTING CONDUCTORS, measured as provided above, will be paid for at the contract unit price per linear feet, which price shall be full compensation for the work complete in place as described and specified herein at the locations shown on the project plans.

ITEM 7340115 - PEDESTAL (ELECTRICAL) (LIGHTING AND IRRIGATION METER)

Description:

The work under this item consists of furnishing all materials, equipment, and labor necessary, to install new conduit, and pull boxes between the existing power source, and the new electrical meter cabinet for lighting and irrigation, including excavation and backfill, at the locations designated on the project plans and in accordance with the details shown and the requirements of these Special Provisions.

The required work shall also include complete testing, installation of the electrical meter cabinet, concrete base and distribution panel for the electrical service, at the location designated on the project plans.

Materials:

The electrical meter pedestal shall be a rain proof Type 3A enclosure, 120/240V. Cabinet, hood and cover shall be fabricated from 304D stainless steel. The hinged door shall be vandal resistant. Meter socket shall be 100 amp with test blocks, and jaws shall be compatible with APS meter requirements. Main breaker shall be 100 amp. Factory wiring shall be 600 volt rated.

A concrete foundation shall be provided in accordance with the detail shown in the plans and detail T.S. 2-6 and T.S. 3-5 of the ADOT Traffic Signals and Lighting Standard Drawings. The base shall include the conduit stub outs and rigid metal conduit risers as shown.

All conduit shall be 2 1/2 inch DB 120 APS approved.

All services shall be 120 volt, single phase, two wire with ground.

Provide all electrical meter cabinets with 2 inch x 4 inch brass address tags. Tags shall have ¼ inch tall stamped letters and numbers.

All materials shall be in accordance with the requirements of Section 731 and 732 of the Standard Specifications

All materials shall be in accordance with the requirements of Section 731, and 732 of the ADOT Standard Specifications for Road and Bridge Construction, 2008 edition.

Construction Requirements:

Immediately following the award of contract and prior to the beginning of work, the Engineer will contact Arizona Public Service: Bob Garza at (602) 371-7989 advising of approximate startup date. The advisory shall be completed for the purpose of arranging for the pre-designed MCDOT electrical facilities for irrigation services.

The contractor shall construct the new electrical meter cabinets at the locations shown on the plans or as directed by the Engineer. The electrical meter cabinet shall be installed using a pad mounting base and anchor bolts. Concrete pad shall be 24 inch x 24 inch x 18 inch and shall be utility concrete as per Section 922 of the Standard Specifications.

The contractor shall install new conduit runs with pull boxes between the APS power sources and the new ADOT electrical meter cabinets at the locations shown on the plans and as directed by the Engineer in consultation with APS. The contractor shall install a new J-Box approximately 5 feet from the power source then run 2 1/2 inch DB 120 conduit and sweeps from the J-Box towards the power source. The contractor shall provide a 3 feet x 3 feet bull hole and leave one conduit sweep for APS crews to connect to the power source. The contractor shall install 2 1/2 inch DB 120 APS approved conduit and sweeps from the J-Box adjacent to the power source to the electrical meter cabinets. The contractor shall be responsible for all necessary pull line in all conduit runs.

APS will pull the conductor for the ADOT services from the electrical meter cabinets to the J-Boxes and power sources after receiving a clearance from ADOT and the APS meter department. APS will install the conductors with this project. APS will install the meters during a future landscape construction project.

Pull boxes shall be installed at the maximum 350 foot intervals, at major changes in direction, at junctions, as detailed and as directed by the Engineer.

The services shall be installed per APS Electric Service Requirements (available at http://www.aps.com/files/_files/pdf/ESPServices/ESRM.pdf).

All trench and conduit will need to be inspected by an APS inspector prior to closing the trench. Contact Bob Garza (602) 371-7989 to arrange for inspections and meter clearances. Contractor shall provide a minimum of two weeks (10 working days) notice to APS to schedule the required inspection

Construction details shall conform to the applicable requirements of the ADOT Standard Specifications 2008 edition, the ADOT Traffic Signal and Lighting Standard Drawings, 2004 edition, and the latest revisions, the National Electric Code, latest edition, and as herein specified and detailed.

All electrical meter cabinets shall have brass address tags riveted to their surface in a readily visible position. Addresses shall be stamped upon the brass tag so it will be legible as normal weathering occurs.

Method of Measurement:

Pedestal (Electrical) (Lighting and Irrigation Meter) will be measured on a per each basis for each pedestal installed, including coordination with APS.

Basis of Payment:

The accepted quantities of Pedestal (Electrical) (Lighting and Irrigation Meter), measured as provided above, will be paid at the contract unit price per each, which price shall be full compensation for the work required at each location, complete in place, as described herein and on the project plans, including excavation, backfill, pull boxes, conduit with pull line, pedestal cabinets with distribution panels, concrete bases, testing, identification tags and any required coordination with APS and ADOT.

SECTION 736 – HIGHWAY AND SIGN LIGHTING:

736-2.01(B) (7) Performance: is hereby added to the Standard Specifications:

The illumination provided by the specified wattage, height, type and spacing of the poles and other details provided herein and on the project plans for a far side curb edge to right shoulder line shall meet or exceed the following maintained illuminance criteria for:

- Poles offset from edge of pavement per plans
- Pole spacing per plans
- Mounting height per poles being analyzed
- 150 watt led units mounted on a 24 inch long mast arm; type III distribution.
- 14,896 initial lumens
- Luminaire tilt - zero degrees upward or spin
(R3 pavement, Qo of 0.07)

ILLUMINANCE STATISTICS:
AVERAGE FOOT-CANDLES = 0.60 TO 0.80 min.
MINIMUM FOOT-CANDLES = 0.20
AVG./MIN. RATIO = 4.00:1 max.

The contractor shall submit to the Engineer two copies of a computer printout which verifies compliance to the specified illuminance levels. The metric number, IES/ANSI distribution Type III, Full Cutoff, lamp lumen rating, and maintenance factor of 0.81. The luminaire candela tables used for the calculations shall be created by an independent testing laboratory and included in the submittal in IES format, ASCII format. The maximum grid size shall be 5 feet transverse and 30 feet longitudinal.

The contractor shall provide the manufacturer with a complete set of project plans and cross sections so the compliance calculations can be achieved with accuracy. Once the compliance calculations have been completed to the satisfaction of the contractor and manufacturer, the contractor shall notify the Engineer that he is ready for a meeting to review the luminaires' performance. This meeting shall include the representatives from the contractor, manufacturer, the Department's Traffic Electrical Design, and the Engineer. All compliance meetings will be coordinated by the Engineer.

ITEM 7360104 – LUMINAIRE (TRANSIT STYLE)(LED):

Description:

The work under this item consists of furnishing, installing an LED full cutoff luminaire. The unit is to be mounted to the 24 inch long mast arm and interconnected to the 240 volt system per pole. The LED luminaire is to be rated 150 watt, enclosed in a 30 inch diameter by 22.0 inch tall “bell shaped” housing painted black to match the pole and mast arm, and limited in weight to 60 lbs. The unit is to match existing units installed in a previous project.

Construction Requirements:

The contractor shall coordinate the installation of ITEM 7360104 – LUMINAIRE (TRANSIT STYLE)(LED) with the installation of the roadway lighting poles accordance with the construction sequencing plan and with the approval of the Engineer. Refer to APS Standard detail 8048, shown on the plan.

Method of Measurement:

ITEM 7360104 – LUMINAIRE (TRANSIT STYLE)(LED) shall be measured a unit furnished and installed.

Basis of Payment:

The accepted quantity of ITEM 7360104 – LUMINAIRE (TRANSIT STYLE)(LED) measured as provided above, and will be paid for at the contract unit price each, which price shall be full compensation for the work complete as described and specified herein at the locations shown on the project plans.

ITEM 7370455 – MISCELLANEOUS ELECTRICAL (AS-BUILT DRAWINGS):

Description:

The contractor shall provide “redline” drawings of all installed electrical equipment on project plan sheets. All measurements made for dimensioning shall be to the nearest 0.1 feet. All as-built drawings shall be 34" x 22" in size with red ink used to indicate dimensions or electrical items that are not as shown on the original plan sheets. As-built drawings shall be made in such a manner that clear and legible copies can be made. Underground conduit shall be dimensioned from edge of roadway, starting and ending point station number. All pull boxes and foundations shall indicate station number, offset from edge of roadway. Distance from pull box to pull box, and/or pull box to foundation shall be dimensioned.

Loop detectors shall be dimensioned from edge of roadway to center of loop with station number at front of loop. Homerun conduits should be dimensioned from pull box showing length and direction.

The contractor shall attach a five character decal 42 inches above the base plate at 45 degrees in the direction of oncoming traffic. The number represents the maintenance unit device. Each electrical cabinet, signal and lighting pole, and sign structure shall receive a maintenance unit number. The pole schedule in the project plans will contain a column to indicate the number/letter combination that will be installed on each specific electrical device. The supervisor at the Department Electrical Operations will provide the numbers for the column at the preconstruction meeting. The contractor shall not install any decal until the device has been installed in its final configuration and inspected and approved by the project electrical inspector. Any existing device that is relocated will require a new device number as indicated on the project plans or as provided by the Department's Electrical Operations.

The decals will be provided by the Department Electrical Warehouse. Pickup of decals by the contractor can be arranged by contacting the Department's Electrical Inspector. Plan sheet conductor and pole schedule shall reflect any changes made, such as phase number, number of conductors, size of conductors, circuit number, type of signal head or mount or maintenance unit number.

Six complete sets of as-built electrical plan sheets consisting of three full size sets and three half size sets shall be submitted to the Engineer prior to final acceptance of electrical equipment on the entire project. Distribution of as-built drawings shall be the following: one full size set to the Field Office, one full size set to Electrical Design, one half size set to Electrical Inspections, one half size set to the Traffic Operations Section and one half size set to Electrical Blue Stake.

Method of Measurement:

Miscellaneous Electrical (As-built Drawings) will be measured on a lump sum basis.

Basis of Payment:

Miscellaneous Electrical (As-built Drawings), measured as provided above, will be paid for at the contract lump sum price, which price shall be full compensation for the work, complete, including installation of maintenance unit numbers, as specified and described herein.

ITEM 7378916 – GROUND ROD (5/8 X 8'):

Description:

The work under this item consists of furnishing and installing a 5/8 X 8 foot copper clad ground at each pull box location.

Construction Requirements:

The contractor shall coordinate the installation of each pull box with the installation of the lighting equipment in accordance with the construction sequencing plan and with the approval of the Engineer.

All existing conductors to be removed, including removed wires, shall become the property of the contractor.

Method of Measurement:

ITEM 7378916 Ground Rod (5/8 x 8') will be measured by the unit each installed complete in place.

Basis of Payment:

The accepted quantity of ITEM 7328916 Ground Road (5/8 x 8'), measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work complete in place as described and specified herein at the locations shown on the project plans.

SECTION 803 - LANDSCAPE PLATING MATERIALS:

803-1 **Description:** of the Standard Specifications is revised to read:

The work under this section includes furnishing, grading, placing and compacting decomposed granite at the locations shown on the project plans. The work also includes all excavation and backfilling; eradicating existing grasses and weeds with application(s) of an approved herbicide, and by mechanical methods; furnishing and applying herbicide mixed in water, which is placed on the cleared ground and on the decomposed granite /granite mulch; grading surfaces upon which imported material shall be placed, to ensure proper drainage and maintaining areas free of weeds and trash/debris during construction all in accordance with these specifications.

803-2.02 **Decomposed Granite and Granite Mulch:** of the Standard Specifications is modified to add:

Decomposed granite shall be 1/2" screened.

The salvage and reuse of existing decomposed granite from the project area will not be allowed. All decomposed granite shall be new.

The colors for the decomposed granite shall be as shown in the tables below. No decomposed granite or substitute decomposed granite shall be used on the project until the color and source have been approved by the Landscape Architect. Each decomposed granite type shall come from a single source to ensure uniformity of color.

Decomposed granite color selections acceptable for use are as follows:

Decomposed granite:

COLOR	GRANITE NAME	SOURCE
Dark Brown	Express Brown	Granite Express
Dark Brown	Saddleback Brown	Custom Landscape Materials
Dark Brown	Baja Brown	Kilauea Crushers

Decomposed Granite supplied for use on the project shall meet the gradation requirements as shown in the following tables:

1/2" Screened	
Sieve Size	Percent Passing
3/4"	90 to 100
1/2"	65 to 95
3/8"	35 to 65
#4	0 to 20

This decomposed granite shall match the size and color decomposed granite installed under the adjacent project, No. EM12-ST03, Thunderbird Road, 127th Avenue to El Frio Street. The contractor shall coordinate with Wayne Smith, City of El Mirage Parks Supervisor, at (623) 876-4237.

Representative samples of decomposed granite and granite mulch color types for this project may be observed at the following facility during 7:00 a.m. to 3:00 p.m., Monday through Friday:

ADOT Landscape Construction Field Office
2505 W. Georgia Avenue, Phoenix, AZ
602.712.3780
Kirk Kiser, RLA

803-3 Construction Requirements: of the Standard Specifications is modified to add:

The contractor shall receive approval from the Engineer for granite color before installation.

Decomposed granite to be used on the project must meet the following additional requirements, in addition to providing documentation from the contractor to the Engineer:

Copy of Environmental Permit for granite pit.

Written acknowledgement from the granite supplier that the material can be provided with the quantity of decomposed granite needed for the project.

Written acknowledgement that granite supplier material will be provided within the contract construction time frame.

Decomposed granite to be placed shall be spread and leveled on jobsite away from any traffic recovery areas.

Labeling of decomposed granite shall first list on line one the name of the product, and on the second line shall appear the name of supplier. Text for labeling shall be waterproof, clearly legible, printed, and 1-inch capitalized text.

Contractor shall provide a 0.25-ton material sample spread over an area 2-inches deep for review.

All decomposed granite samples provided shall be clean, leveled covering an approximate spread area of 5-feet x 5-feet, and signed identifying the product and source.

Remove all non-planted vegetation from all areas designated to receive decomposed granite (by chemical or mechanical means) and maintain the designated areas "vegetation-free" prior to placement of the decomposed granite, or as specified by the Engineer.

Prior to placement of the decomposed granite, designated areas to receive decomposed granite shall be made completely free of all grass, weeds, or other miscellaneous vegetation growth and have an approved herbicide applied. The herbicide shall be followed by an application of water for activation.

When using herbicides, the contractor shall comply with all applicable portions of Subsection 803-3.02 of the Standard Specifications. All dead vegetation (grass and weeds) shall be removed and properly disposed of. The contractor shall be responsible for all erosion repairs on project site that may occur during decomposed granite color review and approval process at no additional expense to the Department.

803-3.02 Decomposed Granite and Granite Mulch: of the Standard Specifications is modified to add:

The sub-grade upon which the decomposed granite shall be placed, shall be graded and compacted to promote proper drainage, as approved by the Engineer. The sub-grade shall be compacted to between 85 to 90-percent of the maximum proctor density, as determined in accordance with the requirements of Arizona Test Methods 230 or 235, depending on the test method used to determine the compaction density (Sand Cone or Nuclear Method).

All vehicles used for spreading, grading and raking the decomposed granite shall have one set of wheels with floatation tires having a minimum width of 18-inches to allow equal compaction of the decomposed granite.

Decomposed granite shall be placed to a depth of 2-inches. After rough spreading and rough grading of the decomposed granite within the designated areas, the decomposed granite shall be raked evenly and thoroughly to blend the different gradation sizes.

The use of conveyor belt type equipment for placing decomposed granite shall not relieve the contractor from the requirements of compacting the granite much.

After placement, the decomposed granite shall be saturated with water to an optimum moisture level as recommended by the supplier. The Engineer will approve the amount of water necessary to aid in the compaction of the decomposed granite, prior to application.

During the final spreading and final grading operations, all surfaces within the decomposed granite areas shall be passed over by the spreading and grading equipment a minimum of 2-times.

Equipment operations for spreading, grading, raking, chemical application, water settling, and any other operations shall be done in a manner that uniformly maximizes the vehicle(s) wheel compaction over the surface area.

The pre-emergent herbicide shall be utilized in the manner recommended by the manufacturer to prevent germination of weeds/undesirable plant species, and shall be Gallery, Pendulum AquaCap, Surflan, Dimension, or an approved equal, and shall be applied at a rate based on product information/data for best control effects. Pre-emergent herbicide shall also be employed to the designated decomposed granite and granite mulch area, prior to the final water settling operation. Selection of pre-emergent herbicide products shall be based on the type of weeds or undesirable plant species to be treated as evaluated by a Construction Professional Landscape Architect and approved by the Engineer. The first application of pre-emergent herbicide and each subsequent application shall be from different products to optimize the lasting result of designated decomposed granite and granite mulch area.

After placing, spreading and grading the decomposed granite, the contractor shall water settle the total thickness of the decomposed granite, to remove the fine material from the surface. The water settling operation, noted above, shall be completed by applying water at minimum depth of 1/2-inch over the decomposed granite placed or as approved by the Engineer.

803-4 **Method of Measurement:** of the Standard Specifications is modified to add:

Decomposed granite will be measure by the square yard of material in place at the specified thickness. The quantity shown in the Bid Schedule will be used for payment of Item 8030104 – Decomposed granite (1/2" Screened), unless both the contractor and the Engineer mutually agree that a variation in excess of 10 percent of this quantity exists. If a variation exists, the Engineer will determine the variation based on the project plans and evidence provided by the contractor. Acceptable form of evidence can be construction survey – such as making field measurements for verification as approved by the Engineer.

803-5 Basis of Payment: of the Standard Specifications is modified to add:

Payment for the accepted quantities of decomposed granite measured as provided above will be made at the contract unit price per square yard, which price shall be full compensation for the work complete in place.

There shall be no separate measurement or direct payment for required or requested samples, grading, compaction, pre-emergent herbicide. The cost for this work is considered to be included in the cost of the contract item.

SECTION 806 - TREES, SHRUBS, AND PLANTS:

806-1 Description: of the Standard Specifications is modified to add:

All landscape items shall be completed within the number of days identified for the project.

The provisions of Subsection 108.09 - Failure to Complete the Work on Time will apply to all items of the landscape work under Section 806. The original amount, as used in Subsection 108.09 of the Standard Specifications, will mean the original contract amount of all items of work as described herein.

The backfill (prepared soil) for planting plant materials shall conform to the requirements of Subsection 806-2.05 and these Special Provisions.

806-2 Materials: of the Standard Specifications is modified to add:

Unless otherwise specified, Certificates of Compliance conforming to the requirements of Subsection 106.05 shall be submitted to the Engineer for all contractor furnished materials.

Amendments shall consist of two pounds of water soluble, powdered or granulated elemental sulfur. Elemental sulfur shall be 85 to 95 percent sulfur and 5 percent iron as produced by Tiger, Fertizona, Dispur-Sul or approved equivalent water degradable sulfur product with iron. Chemical fertilizer shall be a blended mixture of one part sulfur-coated urea 25-4-8, one part monammonium phosphate 11-52-0, and one part methylene urea 38-0-0. The sulfur-coated urea blended fertilizer shall have 80 percent of the nitrogen defined as slow release, and contain 5 percent iron, 10 percent sulfur and trace amounts of zinc and manganese.

To ensure quality control, amendments shall be inspected separately before adding to soil conditioning compost. The chemical fertilizer shall be furnished from the supplier as a blended mixture.

Amendments shall be inspected separately before adding to soil conditioner to ensure quality control. PRE-PACKAGING OF AMENDMENTS IS PROHIBITED.

Within 30 calendar days of the Notice of Award, the contractor shall furnish a complete Plant Availability List of all the plantings needed for this project. The list shall include the confirmed nursery source for the planting stock, assuring the availability of each plant material and the size specified herein. The list shall include the species name, size and quantity of the plant material, the confirmed source for the plant material as evidenced by an invoice or contract with the confirmed source and the approximate date the plant material will be delivered to the job site. The Plant Availability List shall be submitted in triplicate to the Landscape Architect.

Approval of the Plant Availability List by the Landscape Architect does not relieve the contractor of the responsibility for providing plantings that will pass the inspection required elsewhere in the Standard Specifications or these Special Provisions.

The Landscape Legend shown on the Landscape Summary sheet identifies trees that are to be multi-trunk. Multi-trunk formation shall consist of two to five trunks originating from the soil line at the base of the tree.

Prior to planting, the selection of multi-trunk trees shall be approved by the Landscape Architect.

Water used during landscape construction to properly plant, maintain and care for the plant material, shall be furnished by the City of El Mirage at the designated water meter sources, from within the project limits, at no cost to the contractor.

All trees shall be free of scars and damage considered unsightly or unhealthy, as determined by the Landscape Architect.

806-2.05 Prepared Soil: of the Standard Specifications is modified to add:

It is the intent of this Special Provision to utilize existing soil removed from the plant pit. The Prepared Soil shall consist of the following amendments blended with the on-site soil:

- 1) Ratio of Soil Conditioner to Soil: 1 part conditioner: 3 parts excavated soil by volume.
- 2) Weight of Soil Sulfur: ½ Pound per cubic yard of prepared soil material.
- 3) Weight of Agricultural Gypsum: 20 Pounds per cubic yard of prepared soil material.
- 4) Weight of Superphosphate: 1 Pound per cubic yard of prepared soil material.
- 5) Weight of Slow-Release Fertilizer: 3 Pounds of blended mixture as described in 806-2 per cubic yard of prepared soil material.

The Landscape Architect may waive minor variations in the prepared soil requirements if such action is of benefit to the Department.

806-2.07 Water: of the Standard Specifications is modified to add:

Water used during landscape construction and for landscape establishment as described herein to properly plant, maintain and care for the plant material throughout the term of the contract shall be furnished by the City of El Mirage. Water shall be delivered to the installed plants as described in Section 808 of these Special Provisions.

806-2.13 Insecticide:

Insecticide shall be a commercially-prepared product suitable for the intended purpose and as approved by the Landscape Architect.

806-3 Construction Requirements: of the Standard Specifications is modified to add:

806-3.01 General: of the Standard Specifications is modified to add:

All applicators of pesticides and herbicides shall have a current and valid applicator's card from the State of Arizona Structural Pest Control Commission.

806-3.02 Excavation: of the Standard Specifications is modified to add:

The contractor shall lay out the planting pits in accordance with the project plans and control stationing along the curb edge using a starting location, methods, and markings approved by the Landscape Architect. The planting layout shall be according to the project plans.

Prior to plant layout, all grasses and weeds shall be removed from the planting areas.

All trees shall be located in accordance with the ADOT Clear Zone Requirements, as approved by the Landscape Architect.

The contractor shall flag for the approval of the Landscape Architect all plant locations prior to the excavation of plant pits and installation of soil conditioner. Flag colors shall be consistent with the requirements of the Arizona Corporation Commission rules for landscape flagging.

Location and positioning of all plant materials need prior approval from the Landscape Architect before planting commences. A minimum of 1-week notice is required for inspection of flagging, prior to planting. The flagging shall remain in the center of the planting pit until the plant is planted.

All extra work that is required to achieve proper drainage in planting pits after the drainage test will be designated as part of the price of furnishing the plant material.

After the planting pits are refilled with amended soil and the irrigation system has been installed, automatically programmed from the controller, and accepted, the planting pits shall be pre-watered by the irrigation system for a minimum duration of 12 hours. Planting shall be accomplished during a 3-day period starting 2 days following the pre-wetting as specified. Areas not planted during the 3-day period shall be re-watered and allowed to dry as heretofore specified.

806-3.04 Planting: of the Standard Specifications is modified to add:

All trees shall be planted at the same depth as originally planted and grown. No old root system shall be visible.

Planting pits for trees shall be three times the diameter of the root ball in width. The root ball shall be placed level on undisturbed soil. Plant pits for shrubs and groundcover shall be three times the diameter of the root ball in width. The root ball shall be placed level on a minimum of six inches of prepared soil.

Water catchment basins shall be provided around the planting pits for all trees, shrubs, and groundcover. Water catchment basin widths shall be four inches deep for trees and two inches deep for shrubs and shall extend six inches beyond the width of the planting pit.

If the existing material removed from the plant pit results in a deficient soil quantity to fulfill the backfill quantities as required, the contractor shall collect and prepare additional existing surface soil to fulfill the quantities necessary to complete the work under the terms and conditions of the Standard Specifications and these Special Provisions, at no additional cost to the Department. The additional soil shall be collected from within the clearing limits of the project site as approved by the Landscape Architect.

Soil from sites with noxious and invasive weeds shall not be used.

The soil for backfilling the planting pits shall be per Subsection 806-2.05 of these Special Provisions. Clods or stones exceeding 2 inches in diameter and foreign matter deemed objectionable by the Landscape Architect will not be allowed. All excess soil excavated from the plant pits that has stones objectionable to the Landscape Architect shall be disposed of off the project site, in a manner acceptable to the Landscape Architect.

Immediately after planting, all plants shall be irrigated with the irrigation system until the backfill soil is brought to 100 percent water holding capacity. Plant pits shall not be allowed to be flooded and totally saturated. Water shall not be used to accomplish soil compaction around the root ball.

The contractor shall adequately water plants to maintain a healthy and vigorous growing condition during the planting period, as determined by the Landscape Architect.

Trees shall be maintained in a straight vertical position during the project. The contractor shall be responsible for the care of the trees and damage caused by improper support of the trees. Staking and bracing of trees shall be completed as detailed on the project plans and in accordance with the approved "Staking and/or Guying, Pruning and Irrigation Plan" submitted at the Preconstruction Conference for this project.

Apply prepared soil in lifts not exceeding more than half of the planting pit depth for material compacted by compaction equipment, and not more eighteen inches for material compacted by hand-operated tampers. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

806-3.06 Care and Protection of Trees, Shrubs and Plants: of the Standard Specifications is modified to add:

Plants shall be staked and/or guyed as detailed on the project plans by the specified and approved "Staking and/or Guying, Pruning and Irrigation Plan" or through the use of 1" wide woven straps and 2" diameter lodge pole wooden posts, as determined by the Landscape Architect. All woven straps used on the plant staking shall be stapled to stakes in a manner acceptable to the Landscape Architect. Stakes shall be driven into undisturbed soil below the bottom of the planting pit, as detailed on the project plans. Woven straps used on the plant staking shall be wrapped once around each tree trunk and secured to posts with wire or guying line in a manner acceptable to the Landscape Architect. The second strap at the same level shall be attached to the first strap and not to the tree. Alternate strap attachment to the tree at each strap level. A minimum of four straps shall be used per tree (two at each level). Each nylon strap shall be 1 inch wide and a minimum of 12 inches in length. Posts shall be driven into undisturbed soil below the bottom of the planting pit in a manner acceptable to the Landscape Architect.

The contractor shall pay special attention to the infestation of weeds and grasses. Either of these items found in the planting pits shall be grounds for immediate removal and disposal. The planting pit shall be excavated and inspected to assure complete eradication of any roots or rhizomes that may have grown into the area. This work and all materials associated shall be the responsibility of the contractor, and shall be completed by the contractor at no additional cost to the Department.

All planting areas shall be graded as specified and required to facilitate proper watering of the plant materials and the planting areas shall be graded so as to leave a generally smooth appearance after the completion of planting, as approved by the Landscape Architect.

806-5 Basis of Payment: of the Standard Specifications is modified to add:

No measurement or direct payment will be made for eradication of unwanted plant growth, and maintenance of plants during construction phase, the cost being considered included in the price of Section 806 items.

SECTION 807 - LANDSCAPING ESTABLISHMENT:

807-2 Materials: of the Standard Specifications is modified to add:

The water used during Landscaping Establishment to properly maintain the plant material will be furnished by the City of El Mirage Water Department, at designated sources from within the project limits, at no charge to the contractor. The contractor shall be responsible for all equipment, materials and labor necessary to load, transport and unload water for watering purposes. The Landscape Establishment phase for this project is **180** calendar days from the date of substantial completion.

During the second half of the Landscaping Establishment period, the contractor shall provide, where required, plant replacements as follows:

<u>Original Size</u>	<u>Replacement Size</u>
5 gallon	15 gallon
15 gallon	24 inch box
24 inch box	36 inch box
36 inch box	48 inch box

The plant material replacement shall be considered as included in the work for Landscape Establishment, and shall be made at no charge to the Department.

807-3.01 General: of the Standard Specifications is modified to add:

The prime contractor shall be the only contractor that performs the work under the Landscaping Establishment Phase. Subcontracting of the Landscaping Establishment Phase work shall not be permitted except for weed eradication with herbicides, because of the special licensing required as covered under Subsection 807-3.02 of the Standard Specifications.

The Landscape Architect will perform visual inspections in the presence of the contractor once every 30 days during the landscaping establishment period, unless the Landscape Architect and the contractor agree to other arrangements in writing.

The contractor shall maintain all non-planted areas within the freeway right-of-way and project limits, including the freeway median, drainage basins, cross-street medians, shoulder areas, and all other areas as depicted on the project plans.

807-3.02 Planted Stock and Seeding Establishment: of the Standard Specifications is modified to add:

The tree ties and stakes shall be removed at the end of the Landscaping Establishment period per the approved "Staking and/or Guying, Pruning and Irrigation Plan" and as directed by the Landscape Architect.

All trees shall stand erect on their own without stakes when brought to this site. If the tree cannot stand on its own when nursery stakes are removed, the tree shall be removed and replaced.

The contractor shall apply approved pre-emergent herbicide according to manufacturer recommendations on all unpaved or landscaped areas of the project area including the freeway median, maintenance pathways, areas of decomposed granite, granite mulch, rock mulch, and granite maintenance roads as depicted on the project plans, and as directed by the Landscape Architect.

The application shall first be completed midway through the Landscaping Establishment period and the second application shall be completed 30 days prior to completion of The Landscaping Establishment Phase of the project. Watering shall be completed in

accordance with the manufacturer's recommendations, as included and as related to each application.

The pre-emergent herbicide shall be applied in accordance with the requirements of Subsection 803-3.02 of these Special Provisions and the recommendations of the pre-emergent herbicide manufacturer, as approved by the Landscape Architect.

The control of weeds shall be accomplished by the use of herbicides or manual removal. Manual removal of weeds shall be required in the seeded areas, and in the decomposed granite and granite mulch areas after herbicides have taken effect.

807-5 Basis of Payment: is modified to add:

Landscape Establishment measured as provided above, will be paid for at the contract lump sum price, which price shall be full compensation for the work, complete in place, including application of pre-emergent herbicide, plant material replacement if required, control of weeds, and traffic control required during Landscape Establishment phase and as described and specified herein.

No separate measurement or direct payment will be made for white marking flags, two dozen master locks with keys, and two dozen 24-inch long chain link chains, it will be considered included in the price of Landscape Establishment.

SECTION 808 – WATER DISTRIBUTION:

808-1 Description: of the Standard Specifications is modified to add:

Sub-main and lateral pipe sections downstream of control valves with hydraulic flows of less than 0.5 gallons per minute as shown on the project plans shall be thoroughly flushed and have the remote control valve's flow control stem properly adjusted, all to the satisfaction and approval of the Engineer. The cost for this work shall be included in the cost of contract items.

The number of emitters per riser circuit, as shown on the project plans, is approximate. The contractor shall add no more than two multi-outlet emitters per circuit, as detailed. Any additional emitters required and exceeding the above indicated amount must be approved by the Engineer prior to installation. The opening of additional ports on the emitters shall be done during Phase I or Phase II of the project in accordance with the contractor's approved "Staking and/or Guying, Pruning and Irrigation Plan" and with written permission of the Landscape Architect.

Controllers shall be programmed to operate the valve groups, in terms of time and flow, as designated by the Wire Schedule detail of the project plans, with an expected flow per program line prior to the final inspection or at the completion of Phase 1 of the contract.

Utility connections, both water and electrical, are existing as shown on the project plans and shall be preserved in place.

Emitter lateral pressures shall be measured once during Phase 1, and at 60-day intervals throughout Phase 2 of the contract. In addition, a test of the lateral pressures, along with a test of the pressure regulators, shall be accomplished prior to planting operations and prior to Phase 2 acceptance. Copies of the reports shall be delivered to the Engineer, for immediate distribution to the ADOT field inspectors for their review and comment during regularly scheduled project inspections.

All materials and fittings shall be new and of the manufacturer's most current design. Plastic pipe and fittings shall be installed in accordance with the requirements specified herein and the manufacturer's recommendations.

All piping and 24 volt wire shall be installed as detailed on the project plans and shall have a minimum cover as shown.

At the completion of the landscaping establishment period, the contractor shall deliver the following to the Engineer: two copies of the Operations & Maintenance manual, and one copy of each controller irrigation schedule.

Plastic pipe and fittings or nipples showing application of any device other than a strap wrench for tightening shall be removed and replaced with a new component.

All systems or portions of the irrigation system pressure tested prior to replacement shall be retested as specified herein.

No emitter laterals or piping shall be installed through or beneath plant pits. Minimum distance between plant pit perimeter and piping shall be 18 inches. The maximum distance between the plant pit and piping shall be governed by maximum emitter supply tubing lengths as specified on the project plans.

The contractor shall measure the static water pressure on site at each point of connection as soon as practical and report the results in writing to the Engineer.

A pull box shall be provided at each end of sleeves where control wires cross the roadway. The exact location shall be field approved by the Engineer.

All trenches excavated for the irrigation systems shall be backfilled within five working days from the day they are excavated. Barricades shall be placed by excavated ditches located within 30 feet of the traveled way in a manner acceptable to the Engineer. Open ditches beyond 30 feet from the traveled way shall be delineated in a manner acceptable to the Engineer. No measurement or direct payment will be made for barricading or delineating open ditches beyond 30 feet from the traveled way.

The Engineer will advise the contractor when additional flushing of the irrigation system is required in addition to those specified, in order to ensure proper operation of system components.

Valve boxes shall be installed as detailed and as directed by the Engineer. All valve boxes shall be equipped with bolt down or locking lids and all lids shall be in place and locked when work is not in progress on the respective unit.

The project requires various sensors, flow meters and safety devices which will transmit back-indication signals to the automatic controller at the locations shown on the project plans and in accordance with the plans details and these Special Provisions.

Conductors to the sensors and safety devices shall be AWG No. 14 THW copper rated not less than 600 volt AC. A grounding cable sized to NEC requirements shall be included in the conduit. There shall be no splices between terminals.

All wire connections for No. 10 gauge or larger and for voltages greater than 24 volt, shall be wrapped in accordance with the requirements of Subsection 732-3.02(B) of the Standard Specifications.

All control valve boxes and pressure regulator boxes shall be labeled with a brass tag screwed to the lid as shown in the irrigation details and as approved by the Engineer.

All wire shall be tagged in accordance with the requirements of Subsection 732-3.02(C) of the Standard Specifications.

Flexible conduit shall be supported within 12 inches of cabinet or fitting in accordance with the requirements of NEC 350-4.

Flush end caps shall be installed as shown on the project plans or as directed by the Engineer to promote good flushing of the entire irrigation system.

808-3.04 Bedding and Cover Material: the first paragraph of the Standard Specifications is revised to read:

Bedding and cover material for PVC piping, flexible emitter hose and 24-volt wiring shall conform to the following gradation requirements when tested in accordance with Arizona Test Method 201:

Sieve Size	Percent Passing
No. 4	100
No. 16	30 - 80
No. 50	0 - 30
No. 100	0 - 25
No. 200	0 - 20.0

808-3.07 Water Distribution System Testing of the Standard Specifications is modified to add:

Testing of the system mainline, sub-mains, and remote control valves shall be performed at a hydrostatic pressure of 150-pounds per square inch (psi) for a minimum of 2- hours.

808-5 Basis of Payment: of the Standard Specifications is modified to add:

No measurement or direct payment will be made for gravel sumps, 120/240 volt conductors, back indicator wire and conduit, barricading or delineating open ditches, pressure gauges or appurtenances, the cost being considered as included in the price of related contract items.

ITEM 8080032 – BACKFLOW PREVENTION UNIT (REDUCED PRESSURE) (1”)

1.0 Description:

The work under these items consists of furnishing and installing the backflow prevention unit assemblies for City of El Mirage complete, to include all grading, excavation and backfill, the backflow preventer unit, required pipe and fittings, concrete slab, and enclosure, and the removal and disposal of all excess materials off-site. Separate enclosures as described in these Special Provisions are required at all locations.

The work shall also include the provision and installation of pipe and fittings from the water meter to the backflow prevention unit and all other miscellaneous labor, equipment and materials required to construct the backflow prevention assembly as detailed in the plans, and according to the requirements of these Special Provisions.

2.0 Materials:

The backflow preventer shall conform to the requirements of Subsection 808-2.01(A) (3) of the Standard Specifications.

The copper pipe and fittings in the bid items shall be as detailed and in accordance with the following:

1. The copper pipe shall be Type “K” conforming to the requirements of ASTM B-88 for backflow prevention assemblies.
2. The copper or cast bronze fittings shall conform to the requirements of ANSI STD B 16.22 and ANSI STD B 16.18.

All backflow prevention assembly conduit, reinforcing, anchor bolts and other embedded items shall be in place and inspected by the Landscape Architect prior to placing the concrete slab.

The concrete pad shall be as shown on the plans and concrete shall be 3,000-psi at 28 days and shall conform to the requirements of Section 922, Utility Concrete for

Miscellaneous Construction, of the Standard Specifications. Reinforcing steel shall conform to the requirements of Section 1003, Reinforcing Steel of the Standard Specifications.

The steel enclosure for the backflow prevention unit shall be pre-manufactured. A commercial grade lock with two keys, compatible with the City of El Mirage Maintenance Department locking system and approved by the Landscape Architect, shall be provided for each enclosure. The pre-manufactured enclosure shall meet the following material requirements:

- The enclosure shall be welded to the pipe and angle frame at 4-inch-on center and shall be coated with heat applied powder-coated finish color, Desert Tan.
- The enclosure shall be manufactured for lift off access. The enclosure shall be secured to the concrete slab with eyebolts, brackets and lock hasps provided by the manufacturer.
- The enclosure shall be secured to the concrete slab on both ends by an eyebolt staple and a steel strap designed to fit over the eyebolt with protective shield.
- The enclosure shall be constructed of bent 1-¼ inch Schedule 40 pipe, 1 x 1 x 1/8 inch angle steel bottom rail and ½ -inch-13 gauge rolled, expanded steel.
- The enclosure shall be the size recommended by the enclosure manufacturer for the model of backflow preventer used and shall be a minimum of 10 inches wide, 24 inches high and 22 inches long and large enough to accommodate the backflow preventer as detailed. The same enclosure shall be used for ADOT and City of El Mirage applications.
- A lock shield shall be provided to protect the lock from vandalism. The lock shield shall be constructed of 3/16 inch thick steel and shall measure approximately 2 inches by 4 inches. The lock shield shall be an integral part of the enclosure.

3.0 Construction Requirements:

The concrete slab shall be constructed at the locations and in accordance with the details shown on the project plans, these Special Provisions and shall be approved by the Landscape Architect.

The Contractor shall excavate and grade the area of the enclosure as shown on project plans and as directed by the Landscape Architect.

The surfaces upon which the enclosure slab is to be placed shall be fine graded and compacted to a density of not less than 95 percent of the maximum density in accordance with the requirements of the Material Testing Manual of the Materials Section.

Concrete work shall conform to the applicable requirements of Section 601 of the Standard Specifications. Unless otherwise detailed or specified all exposed concrete slabs shall have a light, broom finish.

The enclosure shall be installed according to the manufacturer's installation recommendations which describe how to set the enclosure on a partially hardened slab, while still embedding the eyebolt in the slab using slab pour voids and a wetter, more plastic concrete. Eyebolts, with nuts attached near the end of the threads shall be wrapped in multiple layers using electrician's vinyl tape. Tamper-proof bolts provided by the manufacturer shall be used to prohibit removal of brackets.

No penetrations shall be located within eight inches of the edge of the concrete slab.

The Contractor shall provide the conduit and stub-ups through the enclosure concrete slab at the locations shown for in coming and out-going supply lines.

Maximum length of copper pipe run from the water meter to the backflow preventer shall not exceed 12', or as approved by the water provider and the Landscape Architect.

Contractor is responsible for obtaining all permits necessary for the backflow preventer installation and the performance of all required testing and certification. The tester shall be State Certified to perform the required tests. Backflow preventer installation shall be approved by a certified backflow inspector. Contractor shall provide a copy of the backflow preventer certification to City of El Mirage representative.

4.0 Method of Measurement:

The Backflow Prevention Unit will be measured on a per each basis.

5.0 Basis of Payment:

The accepted quantities of Backflow Prevention Unit, measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work, complete in place, as described and specified herein and as shown on the project plans including any coordination required with city and water service provider, and furnishing and placing steel enclosure and concrete pad.

ITEM 8080045 - FLOW METER:

Description:

The work under this item shall consist of furnishing and installing the flow meter complete in place, including , flow monitor, conductors, wire connectors, piping, fittings, valve box at the locations designated on the project plans, in accordance with the details shown on the project plans and these Special Provisions.

The work under this item shall provide for a properly functioning and calibrated flow meter with flow monitor, fully integrated to the irrigation controller, as specified herein and as approved by the Engineer.

Materials:

The flow meter shall be capable of monitoring the flow rate, transmitting the flow rate to the irrigation controller.

The flow meter shall be constructed of a brass alloy that resists corrosion and feature 1" female pipe thread connections. The unit shall be rated for 400 psi maximum pressure. The flow shall be metered by a six bladed impeller.

The flow meter shall be installed in a 30 ½" x 17 ½" x 18" tan color valve box with bolt down T-cover, 1" schedule 40 piping, schedule 80 unions, schedule 80 TOE nipples, schedule 80 fittings valve box leveling bricks, and 6-inch depth of Number 57 aggregate rock sump over geotech fabric per plan details.

Gravel sump shall be as indicated on project plans and shall conform to the requirements of Subsection 808-3.04 of the Standard Specifications.

Geotech fabric shall meet the requirements of ADOT standard specification 1014-4.02 (A) for moderate survivability non-woven fabric.

Construction Requirements:

The flow meter shall be installed in a valve box directly downstream of the master valve at the locations shown on the plan in accordance with the details on the plans.

The flow sensor shall have 10 lengths of the pipe diameter on the inlet side of the meter with 5 lengths of the pipe diameter on the outlet side of the meter.

Wire the flow monitor to the hydrometer and the controller with 14 AWG UF-600 solid copper jacketed conductors, red and black in color.

Calibrate hydrometer, flow monitor and controller to operate and sense flow to 1 gallon per minute level.

Method of Measurement:

Flow Meter will be measured per each furnished and installed, as specified herein.

Basis of Payment:

The accepted quantities of Flow Meter, measured as provided above, will be paid for at the contract unit price per each, which price shall be full compensation for the work, complete in place. Flow Meter shall include flow meter, pipe, pipe fittings, valve box, geotech fabric, rock, unions, required conductors, all wiring and programming with the controller.

ITEM 8080049 - EMITTER (ASSEMBLY)(MULTI OUTLET):

Description:

The work under this item consists of furnishing and installing the emitter assemblies, emitter boxes, multi-outlet, pipe, fittings, including excavating and backfilling, at the locations designated on the project plans and in accordance with the details shown and these Special Provisions.

Materials:

Multi-outlet emitters shall consist of the emitter unit, the ½" PVC lateral pipe, the ½" flex PVC nipple riser, flexible vinyl distribution tubing, emitter valve box, geotextile filter fabric, pea gravel sump and PVC fittings necessary to connect the emitter to the ¾" PVC supply lateral pipe.

The emitter case shall be made of durable black, heat resistant acetyl plastic material. It shall be resistant to temperature variation, ultraviolet radiation, smog, (ozone), and common liquid fertilizer and weed spray. The case shall completely encompass the silicone diaphragm, protecting it from potentially harmful environmental factors.

The emitters shall be of the non-compensating, continuous flushing type, based on the pressure cascade principal using a series of flexible orifices.

The emitter shall be capable of continuous, clog free operation with 30- mesh (minimum) filtration. The emitter shall be capable of being installed in any position and maintain its given flow characteristics. The emitter shall be non-adjustable and the flow regime shall be maintained by flexible orifice silicone diaphragms.

The emitter shall function with a system pressure range of 15 PSI minimum to 30 PSI maximum. The emitter flow variation of the one G.P.H emitter shall not exceed 1.06 G.P.H at 120 degrees F. or 1.07 G.P.H at 150 degrees F. Emitter manufacturing variability shall not exceed 0.05 G.P.H.

The multi-outlet emitter shall be capable of delivering one of the following quantities from each of the six outlets of the emitter regardless of the number of outlets open:

G.P.H.	at	P.S.I.
0.6		20
0.7		25
0.8		30
	or	
1.00		20
1.15		25
1.34		30
	or	
2.00		20
2.30		25
2.68		30

The flexible distribution tube for use with multi-outlet emitter shall be a black vinyl blend suitable for use as emitter outlet tubing with the following physical characteristics:

I.D.	0.160 inches
O.D.	0.220 inches
Wall Thickness	0.030 inches

The distribution tube shall be capable of being bent around a 7/8-inch mandrel without kinking.

Multi-outlet emitters shall consist of the emitter unit, the ½" PVC lateral pipe, the ½" flex PVC nipple riser, flexible vinyl distribution tubing, emitter valve box, geotextile filter fabric, pea gravel sump and PVC fittings necessary to connect the emitter to the ¾" PVC supply lateral pipe.

The emitter valve box shall be constructed of tan colored HDPE (high-density polyethylene) in a round conical shape with a 4 ¾" top diameter, 7 ¾" bottom diameter and an overall height of 10". The lid shall snap in place and have an outside diameter of 5 ¼".

The geotextile fabric for use beneath the pea gravel sump shall conform to ADOT Standard Specification section 1014-4.02 Moderate Survivability Fabric (B) Woven.

The supply pipe from the ¾" PVC lateral for multi-outlet emitters shall be ½ inch Class 315 PVC with Schedule 40 PVC 90 degree elbows.

Construction Requirements:

The multi-outlet emitter shall be placed in an emitter valve box below grade with the distribution tube extending to the plants as detailed on the project plans.

The supply pipe shall be ½” Class 315 PVC. The ½” PVC shall enable placement of the emitter so that the distribution tubing can be placed per the Irrigation Emitter Layout detail included in the project plans. The supply pipe shall be placed at 12” depth.

The flexible vinyl distribution tubing shall be placed in mini-trenches from the emitter to the locations at the plants as shown on the Emitter/Emission Point Placement detail shown on the project plans. The trenches shall be 4” deep – 2” below finish grade plus 2” below top of granite to ensure that the tubing doesn’t “surface” over time.

All emitter assemblies shall be installed in an emitter box with geotextile fabric and gravel sump as shown on the project plans. The emitter box shall be manufactured of rugged UV-resistant thermoplastic construction. The emitter box, body and cap shall be black in color.

Geotextile fabric and gravel shall be as specified under Item 8080168 - Control Valve (Remote) (Electric) (1 inch).

Two slots in the bottom of the box shall be provided to allow for installation of distribution tubing onto the emission device. The dimensions of the box shall be as follows:

Height-10.25 inch, Top Diameter-5.0 inch, Base Diameter-7.75 inch

Method of Measurement:

Emitter (Assembly) (Multi Outlet) will be measured on a per each basis.

Basis of Payment:

The accepted quantity of Emitter (Assembly) (Multi Outlet), measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work, complete in place, as described and specified herein and on the project plans.

No separate payment will be made for ½” PVC supply pipe, emitter valve box, geotextile fabric, pea gravel sump, or distribution tube, as these items are considered to be included in the cost of the contract item.

ITEM 8080087 - PRESSURE REGULATOR (WITH FILTER):

1.0 Description:

The work under this item consists of furnishing and installing the City of El Mirage pressure regulator riser assembly complete, including excavating, backfilling, valve box, pressure regulator, wye filter and other appurtenances, at the locations designated on the project plans and in accordance with the details shown and these special provisions.

2.0 Materials:

Each regulator shall meet the following minimum requirements:

Each regulator shall have a flow range from 0.1 GPM to 8 GPM with a regulated nominal outlet pressure of 30 PSI with an inlet pressure range of 0 to 150 PSI.

Inlet fittings shall be $\frac{3}{4}$ inch Female Pipe Threaded (FPT) inlet and outlet for installation, as detailed on the project plans.

The pressure regulator shall be of the non-adjustable pre-set type consisting of a two-piece, sonic welded body molded from acrylonitrile butadiene styrene containing a valve housing of acetyl plastic and a rolling diaphragm of ethylene propylene (EPDM) material. The internal spring shall be stainless steel.

The wye filter shall be 1 inch and shall be with a two piece threaded housing of non-corrosive acetal plastic. The filter shall be accessed by unscrewing the cap from the body. The cap to body seal shall be made with an "O" ring. The filter cartridge shall be 200 mesh stainless steel with a gross filter area of 16.9 square inches. The filter unit shall have a ball flush valve at the end with the cap having a male hose thread connection. The pressure rating of the filter shall be 150 psi.

Valve box shall be of the size, type, and configuration as specified under Item 8080168 - Control Valve (Remote) (Electric) (1 inch).

Geotextile fabric shall be as specified under Item 8080168 - Control Valve (Remote) (Electric) (1 inch).

3.0 Construction Requirements:

Each pressure regulator riser shall be constructed per detail shown on the project plans.

The pressure regulator riser shall be completely exposed and accessible within the valve box.

4.0 Method of Measurement:

Pressure Regulator Riser will be measured on a unit each basis.

5.0 Basis of Payment:

Payment will be made at the contract unit price each, which price shall be full compensation for the work, complete in place, as described and specified herein and shown on the project plans.

ITEM 8080141 - CONTROLLER (AUTOMATIC) (TWO WIRE)

Description:

The work under this item consists of furnishing and installing the automatic irrigation controller complete, including the concrete base, the stainless steel enclosure, conduit, grounding rod, and transient grounding system, 24 volt control wire and common wires, pull boxes, excavation and backfilling and all wiring to give a complete operational system, and any necessary excavating and backfilling, at the designated location, in accordance with the requirements of these Special Provisions and as shown on the project plans.

Materials:

Controller shall be a Calsense 3000 stand-alone, decoder-based, 2-wire controller supporting from 1-128 Stations. The electronic automatic controller shall include the following features and be compatible with the other City of El Mirage's irrigation control system:

- The irrigation controller shall have a 10-year, limited warranty.
- The irrigation controller shall have a large 5.7 inch backlit, ¼ VGA, LCD, sunlight readable display where information can be viewed on the same screen, and with a scrolling side menu design that makes programming intuitive and easy to follow.
- The controller shall support up to 128-stations when using 2-Wire. This can be either 128, 2-Wire stations or a combination of up to 48 conventional-wired stations plus 80, 2-Wire stations.
- Controller software upgrades shall occur via the internet transparently and at no charge.
- The controller shall have unlimited programs known as Station Groups which can water individually or concurrently to maximize irrigation system capacity and reduce watering time.
- The controller shall have the ability to assign landscape details as plant material, head type, soil type and exposure to each Station Group to simplify programming of stations with similar characteristics. Each group shall include a variety of other settings including irrigation schedule, percent adjust factor, line-fill times and on-at-a time rules.
- The controller shall support up to four mainlines simultaneously for managing flow
- The controller shall support up to 12 points of connection shared among controllers.
- The controller shall support up to 3 flow sensors and 3 master valves in a by-pass configuration so as to accurately measure and read the overall range of station flow rates from the lowest flowing station in GPM to the highest flowing station in GPM, using the 2- Wire option and the 2-Wire, POC decoders for all 3 flow devices and master valves.
- The controller shall automatically calculate cycle and soak scheduling to water each station for a fixed cycle time and allow the water to soak in between cycles, maximizing infiltration and minimizing runoff.

- The controller shall have a water budget feature that displays monthly water volume allotments in either HCF or gallons for each of the 12 calendar months labeled as January thru December. This monthly guideline shall be calculated three ways, either directly entered, calculated by the controller using a yearly budget and dividing that out to the 12 months proportionately using built-in historical ET, or by calculating the monthly numbers using total square footage and a user selected percent of historical ET.
- The water budget shall be available per POC controlled and programmed for either every month or every other month pre-programmed as date ranges. If the expected water use for the period exceeds the water volume budget, the user shall be notified with an alarm before the period ends so changes to the program can be made. The controller shall not terminate irrigation automatically in this process, or if selected as an option, the controller shall proactively and automatically decrease the scheduled irrigation for each station group using the percent reduction programmed, when approaching the set water budget limit with notification of said action.
- The controller shall have a wide range of water reports and diagnostics available directly at the controller and shall include:
 - A summary of all usage for each irrigation mainline
 - Usage for each point of connection connected to the mainline
 - Station-by-station usage
 - A complete station-by-station history which includes the date and start time of each cycle, programmed minutes, programmed inches, number of cycles, actual flow rate, expected flow rate, and any alerts or issues that occurred during irrigation.
 - Unscheduled water usage and non-controller water usage including quick coupler use and bleeding valves manually
- The irrigation controller shall have three separate mainline break settings available for proper flow detection of catastrophic issues without interfering with standard irrigation practices and shall be programmed for 1.) 'during irrigation', 2.) 'master valve override' functions, and 3) 'all other times'
- The controller shall have flow management capability as a standard feature whereas the controller shall learn each station's expected GPM flow rate automatically at night over several irrigations, and use the mainline GPM capacity programmed, to operate up to six (6) valves at the same time to shorten the water window.
- The controller shall have the ability to accommodate multiple types of irrigation schedules including irrigating even days, odd days, prescribed days of the week, and interval scheduling ranging from every other day up to every four weeks.
- The controller shall provide permanent memory stores of all controller programming and setup data, including date and time, in non-erasable memory.
- The controller shall have the ability to create and program an unlimited number of manual programs which allow the user to schedule stations to run for a preset time, up to 6 – times per day, for hydro-seeding, new planting and fertilization scheduling.
- Electrical alerts, such as short circuits and no currents, shall be standard to help the user troubleshoot field wiring and solenoid problems.

The enclosure shall be of a vandal and weather resistant nature manufactured entirely of 304-grade stainless steel, and the top shall be 12 gauge and the body 14 gauge. The main housing shall be louvered upper and lower body to allow for cross flow ventilation. A stainless steel backboard shall be provided for the purpose of mounting electronic and various other types of equipment. The stainless steel backboard shall be mounted on four stainless steel bolts that will allow for easy removal of the backboard.

The 38-inch height with flip top shall provide easy access for programming from a standing position under normal installations.

The pre-assembled vandal resistant enclosure factory pre-assembled and supplied by controller manufacturer shall come complete with 24 VAC lightning and surge protection and all terminals shall be factory labeled. The pre-assembled enclosure shall come provided with an On/Off switch to isolate the controller along with a GFI receptacle. Specific radio antenna(s) shall be pre-mounted and connected on enclosure. The enclosure shall include 2-7/8", 1-1/2" thick, 6-pin cylinder, die-cast steel padlock with unique shackles design.

Factory pre-assembled enclosure with controller shall carry a full UL listing.

The factory pre-assembled enclosures shall carry a ten (10) year limited warranty.

The 2-Wire cable shall either be Paige P7354D or Regency's Hunter® Decoder cable with a maximum length of 7,000 ft.

A ground rod, 5/8 inch x 8-ft solid copper shall be required every 300-feet along the 2- Wire path as well as a single ground rod at the end of the cable run.

The station decoder shall be a 2-station decoder and shall be able to operate up to 2-solenoids using unique colored wires for each.

A single controller shall be able to operate up to 70, 2-station decoders and it shall be intended that all wire runs between valves and 2-Wire decoders shall be direct pulls and have no splices except at the decoder location.

All electrical connections must be waterproof and moisture-resistant and shall be done with 3M™ Scotchcast™ 3570G Connector Sealing Packs.

The 2-Wire decoders shall use #14 AWG direct burial wires to connect to remote control valves and the maximum wire run between the decoder and the valve shall be 100-feet.

The POC decoder shall operate a single master valve and flow meter (model FM). A single controller shall be able to operate up to six POC decoders with a maximum of 12- POC's in a chain, controllers using FLOWSENSE™ technology.

The maximum wire run between the POC decoder and flow meter shall be 20-feet while the maximum wire run between the decoder and the master valve shall be 100-feet.

The flow sensor used shall be supplied by the same manufacturer as the irrigation controller.

The flow sensor shall be wired back to the irrigation controller using two #14 AWG wires, one red, and one black in 1" PVC conduit to connect to the irrigation controller. The maximum wire run between flow meter and controller shall be 2000 ft. The flow meter shall send low voltage digital pulses back to the controller and therefore all electrical connections must be waterproof and be resistant to any moisture entry.

It is intended that all wire runs between the controller and flow meter shall be direct pulls and have no splices. If wire splices are unavoidable, they must be installed in a valve box with Spears DS-100 connectors with Spears sealant or 3M Scotchlok No. 3570 connector sealing pack used.

Surge protectors shall be installed at 600' intervals along and at the ends of the two wire path.

Controller shall be equipped with a 2-watt, narrowband UHF 450-470 MHz radio modem and an omnidirectional, low-profile transit antenna.

Provide a hand held radio remote capable of communicating remotely with the controller and turning valves on & off. Include 1-year pre-paid plan and a 3-year comprehensive warranty.

Construction Requirements:

The controller enclosure shall be secured to the concrete pad as detailed on the project plans and as recommended by the manufacturer.

The wire path to the flow sensor and the controller shall be a separate two wire path not shared with any other circuitry.

Wire connections at remote control valves, surge protectors and at field splices shall be made with 3M DBY/R type wire connectors installed as recommended by the manufacturer. No field splices of 24 volt wiring shall be made unless length between controller and valve exceeds 2,500 feet. Necessary splices shall be made at remote control valve boxes, or separate splice boxes. Valve or junction boxes shall be of type specified in Item 8080168 - Control Valve (Remote)(Electric)(1Inch).

Install 2-wire cable in 1-1/4" Schedule 40 electrical conduit.

Control and ground wire placed through pipe sleeves shall be encased in one inch (minimum) PVC electrical conduit for full length of the sleeve and shall extend one foot past existing sleeve to terminate in a pull box. Conduit shall be increased in size as may be necessary for additional wires.

Grounding shall consist of one 5/8-inch x 8-foot copper rod installed per irrigation controller and where multiple controllers are not connected to the same ground rod.

The top of each rod shall be installed inside a 10-inch round valve box, with the rod installed as close as practical to the controller. If a pedestal enclosure is used, the ground rod may be installed through the pedestal base. Under no circumstances shall the rods be shortened.

A #6 AWG solid copper wire shall be used to connect from the ground lug of the transient protection board to the copper rod. Brass clamps specifically designed to secure the copper wire to the grounding rod shall be used. There shall be no kinks or sharp bends in the wire.

Each wire may be wrapped around the rod and brazed in place as an alternative to clamping. Braze the wire to the rod for at least one circumference of the rod.

No separate payment will be made for 24 volt wire, installation, splice boxes or conduit.

No separate payment shall be made for the surge protectors, wire connectors or valve boxes.

Contractor shall demonstrate controller and internet operation prior to substantial completion.

Method of Measurement:

The Controller (Automatic) (Two Wire) will be measured on a per each basis.

Basis of Payment:

The accepted quantities for Controller (Automatic) (Two Wire), measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work, complete in place, as described and specified herein and on the project plans.

ITEM 8080168 - CONTROL VALVE (REMOTE) (ELECTRIC) (1"):

Description:

The work under this item consists of furnishing and installing integrated assembly containing low flow remote control valves, all necessary pipe and fittings, ball valve, pressure regulating filter, valve box valve decoder, two-wire cable, surge protector and other appurtenances, excavation, and backfilling as required at the locations designated on the project plans and in accordance with the details shown and these Special Provisions.

Materials:

Each remote control valve shall conform to the requirements of Subsection 808-2.01 (D) (1) of the Standard Specifications with the following exceptions:

The remote control valve shall have a self-cleaning stainless steel screen that cleans itself continuously during flow/operation, as provided by ordering the optional automatic filter system. The remote control valve body shall be constructed of glass filled nylon and shall have a working pressure rating of minimum 150 psi and an operational flow range of 0.2 to

5.0 gallons per minute. The solenoid plunger and the bonnet bolts shall be captive.

The pressure regulating, quick-check basket filter shall provide for continuous filtration and pressure regulation of the drip zone when connected to the valve and controller. The filter shall be pressure rated to 150 psi and be capable of flow rates of 3.0 gallons per minute to 20.0 gallons per minute.

For optimum filtration and system performance the filter shall incorporate a stainless steel screen element and a built-in 40 psi pressure regulator. The stainless steel screen element will be a basket design to capture debris and prevent the debris from falling into the downstream line during routine maintenance. The screen element shall be reinforced with polypropylene ribs to increase durability and the screen element shall be color-coded for easy identification of mesh size. The body of the unit shall be constructed of impact resistant glass-filled polypropylene and the cap of glass-filled nylon with a UV resistant polyurethane indicator window. The unit shall incorporate an indicator window that shows when the filter needs to be cleaned.

Each remote control valve assembly shall be provided with a 1/8-inch MPT Schrader type pressure-check valves, located after the pressure regulating filter that shall be used in conjunction with the specified pressure gauge/tire chuck to verify system performance.

All remote control valves and automatic controllers shall be compatible and fully functional in all modes.

The contractor shall provide an in-line, full port, dual blocked, true union, PVC ball valve type shutoff valve with the following characteristics:

Pressure rating	150 PSI
O-rings	EPDM
Seat	EPDM or PTFE
Connections	Slip socket (solvent weld)

The valve box shall be rectangular in configuration, measuring approximately 24 inches X 18 inches on the bottom by 12 inches in height and shall be integrally colored tan. Box extensions shall be of the top extension type with integral locking clips, and when installed shall provide minimum 6-inch height extension. Valve box lids shall be integrally colored tan.

Valve boxes shall include a 2" round brass tag with the valve number as detailed in the project plans.

The valve decoder shall be compatible with the manufacturer of the irrigation controller on the adjacent project. The decoder shall be a dual valve decoder.

Wire for use with two wire systems shall be AWG 14 Control Cable. All splice connectors to valves, decoders, surge protectors and controller shall be 3M DBY/R as recommended by irrigation manufacturer.

Use continuous wire between controller and remote control valves, unless the single run length exceeds 2500 feet. Under no circumstances shall splices exist without prior approval. Any splices allowed shall be installed in a pull box.

Surge protection shall be installed at the end of the wire path and at 500' intervals. Surge protection shall consist of a SP-100 line surge protector, 5/8" x 8' copper ground rod and DBY/R wire splice. Surge protectors shall be located within valve boxes meeting the requirements for 8080168 Remote Control Valves.

Geotextile fabric shall be as indicated on the project plans details and conform to the following minimum material requirements:

Manufacturing process:	Spunbound
Material:	Polypropylene
Bonding process:	Thermal
Weight:	3.0 ounce minimum
Puncture resistance:	30 lbs. minimum
Mullen burst:	140 pounds per square inch
Trapezoidal tear	40 pounds minimum
Permeability-vertical water flow	85 feet per minute per square foot

Gravel for sumps shall be ¾" crushed aggregate.

Construction Requirements:

The control valve, ball valve, filter, and pressure regulator shall be completely exposed and accessible within the valve box. Box extensions shall be installed as necessary to expose valves and appurtenances as required.

Method of Measurement:

Control Valve (Remote) (Electric) (1") will be measured on a unit each basis.

Basis of Payment:

The accepted quantities of Control Valve (Remote) (Electric) (1") measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work, complete in place, as described and specified herein and on the project plans.

ITEM 8080182 - MASTER VALVE:

Description:

The work under this item consists of furnishing and installing integrated assembly containing master control valves, all necessary pipe and fittings, valve box, gravel sump, geotextile fabric, valve decoder, two-wire cable and other appurtenances, excavation, and backfilling as required at the locations designated on the project plans and in accordance with the details shown and these Special Provisions.

Materials:

The master valve shall conform to the requirements of Subsection 808-2.01 (D) (1) of the Standard Specifications with the following exceptions:

The valve shall be 1" size.

The valve shall feature a cast iron body with bronze bonnet.

Normally Open: Energize Solenoid to Close Valve, De-energize to Open Valve
On/Off Solenoid Control Valve

Watertight Epoxy Molded Solenoid Coil

Slow Closing

"No Surge or Hammer" Operation

Will Throttle Against Flow Without Chatter

Diaphragm-Disc Assembly Guided by Stainless Steel Stem in all Positions

Completely Serviceable Without Removing Valve Body from the System

The valve box shall be rectangular in configuration, measuring approximately 24 inches X 18 inches on the bottom by 12 inches in height and shall be integrally colored tan. Box extensions shall be of the top extension type with integral locking clips, and when installed shall provide minimum 6-inch height extension. Valve box lids shall be integrally colored tan. Requirements for the valve box shall match that of 8080168 Control Valve (Remote) (Electric) (1 Inch).

Valve boxes shall include a 2" round brass tag with the valve number as detailed in the project plans.

The valve decoder shall be compatible with the manufacturer of the irrigation controller. The decoder shall be a dedicated POC decoder.

Wire for use with two wire systems shall be AWG 14 Control Cable. All splice connectors to valves, decoders, surge protectors and controller shall be 3M DBY/R as recommended by irrigation manufacturer.

Use continuous wire between controller and remote control valves, unless the single run length exceeds 2500 feet. Under no circumstances shall splices exist without prior approval. Any splices allowed shall be installed in a pull box.

Geotextile fabric shall be as indicated on the project plans details and conform to the following minimum material requirements:

Manufacturing process:	Spunbound
Material:	Polypropylene
Bonding process:	Thermal
Weight:	3.0 ounce minimum
Puncture resistance:	30 lbs. minimum
Mullen burst:	140 pounds per square inch
Trapezoidal tear	40 pounds minimum
Permeability-vertical water flow	85 feet per minute per square foot

Gravel for sumps shall be rounded washed pea gravel conforming to AASHTO M-43 #8.

Construction Requirements:

The master control valves, valve decoder, two-wire cable shall be completely exposed and accessible within the valve box. Box extensions shall be installed as necessary to expose valves and appurtenances as required.

Method of Measurement:

Master Valve will be measured on a unit each basis.

Basis of Payment:

The accepted quantities of Master Valve measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work, complete in place, as described and specified herein and on the project plans.

ITEM 8080263 - VALVE (BALL) (1 1/2"):

Description:

The work under this item consists of installing ball valves, including valve box, excavation and backfilling at the locations designated and in accordance with the details shown on the project plans and in accordance with the requirements of these special provisions.

Materials:

Ball valves shall be constructed of bronze conforming to ASTM B 584. Valves shall be full port featuring a chrome plated brass ASTM 16 ball. Valve seats, stem packing and thrust washer shall be TFE virgin Teflon. Handle shall be stainless steel.

Valve shall be rated to 600 psi WOG.

The valve box shall match the requirements of item, 8080168 control valve. ID tag for box shall be stamped BV.

Ball valves shall be line size as indicated by the mainline on the project plans.

Install geo-textile fabric and gravel sump per item 8080168.

Gravel for sumps shall be rounded washed pea gravel conforming to AASHTO M-43 #8.

Construction Requirements:

Install ball valves at the location shown on the plans in accordance with the plan details.

Ball valves shall be installed within 12" of the top of the finished grade of the granite mulch or decomposed granite to allow operator to reach the valve handle.

Method of Measurement:

Valve (Ball) (1 1/2") will be measured on a per each basis.

Basis of Payment:

The accepted quantities of Valve (Ball)(1 1/2"), measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work complete in place, as described and specified herein and on the project plans. No separate payment will be made for the aggregate sump.

ITEM 8080264 - VALVE (QUICK COUPLER):

Description:

The work under this item consists of installing Valves (Quick Coupler), including valve box, swing joint, re-bar and angle iron stake, pipe and fittings, excavation and backfilling at the locations designated and in accordance with the details shown on the project plans and in accordance with the requirements of these special provisions.

Materials:

Valve (Quick Coupler) shall be constructed of bronze conforming to ASTM B 584. Valves shall be full port featuring a stainless steel spring, and locking cover.

Install on a $\frac{3}{4}$ " inlet x 1" outlet 12" long swing joint.

Brace shall be #4 x 24" long rebar connected to 1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{8}$ " angle iron with stainless steel radiator clamps.

Valve shall be rated to 125 psi WOG.

The valve box shall be 10" round x 10" deep with a bolt down lid. Box color shall be tan.

Install geo-textile fabric and gravel sump per item 8080168.

Gravel for sumps shall be rounded washed pea gravel conforming to AASHTO M-43 #8.

Construction Requirements:

Install valve (Quick Coupler) at the location shown on the plans in accordance with the plan details.

Valve (Quick Coupler) shall be installed with bracing as shown on the plan detail. The angle iron brace shall be cut into the valve box to provide support

Method of Measurement:

Valve (Quick Coupler) will be measured on a per each basis.

Basis of Payment:

The accepted quantities of Valve (Quick Coupler) measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work complete in place, as described and specified herein and on the project plans. No separate payment will be made for the aggregate sump.

ITEM 8080288 - PIPE (PVC) (6") (SLEEVE):
ITEM 8080378 - PIPE (PVC) (3") (SLEEVE):

Description:

The work under this item shall consist of furnishing all materials, labor and equipment necessary to install the 3 inch and 6 inch pipe Sleeve as shown on the project plans and in accordance with the requirements of Section 501 of the Standard Specifications and these Special Provisions.

The work shall also include all barricades, warning tape, potholing, locating of buried utilities during excavation and shoring required or specified by the Landscape Architect.

Materials:

3 inch and 6 inch pipe Sleeve shall be PVC Schedule 40, belled ends, solvent weld. Pipe and fittings shall conform to the requirements of Subsection 808-2.01 (I) (1) of the Standard Specifications.

Construction Requirements:

All Sleeves construction shall conform to Standard Detail C-16.40 Irrigation Sleeves with the exception that the sleeve markers will not be required.

Sleeves shall be installed through the use of open trench.

Trenches shall be barricaded in accordance with ADOT's standard requirements.

The contractor shall locate all existing utilities prior to the installation of the sleeve.

The contractor shall repair any existing utilities damaged during the sleeve installation.

Method of Measurement:

Pipe (PVC) (6") (Sleeve) and Pipe (PVC) (3") (Sleeve) will be measured by the linear foot of pipe furnished and installed.

Basis of Payment:

The accepted quantities of Pipe (PVC) (6") (Sleeve) and Pipe (PVC) (3") (Sleeve) measured as provided above, will be paid at the contract unit price per lineal foot, which price shall be full compensation for the work, complete in place, as described and specified herein and/or on the project plans including pipe, and all trenching, bedding, backfill, compaction, trench shoring, potholing, utility locating and incidentals as specified herein and as shown on the plans.

No measurement or direct payment will be made for supplying the sand bedding material or in coordinating the efforts with the Landscape Architect in verifying all sleeve locations the cost being considered included in the cost of the pipe sleeve items.

ITEM 8080312 - PIPE (PVC) (3/4") (SDR 21) (CLASS 200):
ITEM 8080344 - PIPE (PVC) (1 1/2") (SCHEDULE 40):

Description:

The work under these items consists of furnishing and installing Polyvinyl Chloride Pipe (PVC) and fittings of the various sizes complete, including excavation and backfilling, lateral end caps, lateral end cap boxes at the locations designated on the project plans and in accordance with the details shown and these Special Provisions.

Materials:

Pipe and fittings shall be PVC conforming to the requirements of Subsection 808-2.01 (I) (1) of the Standard Specifications.

Bedding and cover material shall meet the requirements of Subsection 808-3.04 of the Standard Specifications.

All PVC pipe 3 inches and smaller shall be bell-end solvent weld PVC pipe, unless otherwise noted.

All mainline fittings shall be Schedule 80 solvent weld, except for integral extruded pipe end coupling fittings or as described and specified herein and on the project plans.

All lateral line fittings shall be schedule 40, except for integral extruded pipe end coupling fittings or as described and specified herein and on the project plans.

PVC solvent weld primer shall be Christy's purple primer, IPS P-70, Oatley Purple Primer or approved equal.

PVC solvent weld cement shall be heavy body, medium set, Christy's Gray, IPS 711, Oatley Heavy Duty Gray or approved equal. Clear, fast setting, regular body cements such as IPS 705, Chrisy's clear, Oatley clear or Red Hot cements are not acceptable.

The end cap assembly shall be installed in a valve box manufactured of rugged UV-resistant thermoplastic construction. The end cap valve box shall be tan in color. Box lids shall be boltable. The assembly box shall be constructed of HDPE with a static vertical load rating of 350 PSF. The dimensions of the unit shall be as follows: Height - 10.25 inches, Top Diameter - 10.0 inches, Base Diameter - 13.0 inches.

The end cap riser piping shall be flexible PVC hose shall be manufactured from 100 percent virgin polyvinyl chloride resin and shall have the following physical characteristics:

O.D.	0.840 inches
I.D.	0.546 inches (min.)
Wall	0.147 inches (min.)

Gravel for sumps shall be rounded washed pea gravel conforming to AASHTO M-43 #8.

Construction Requirements:

Installation of polyvinyl chloride plastic pipe and fittings shall conform to the requirements of Subsection 808-3.03 of the Standard Specifications.

The contractor shall furnish to the Engineer, at no additional expense to the Department and prior to pipe installation, all installation instructions as published by the plastic pipe and fitting manufacturers. Installation of PVC piping and fittings shall be in accordance with the published instructions, the ADOT Standard Specifications, these Special Provisions, and as directed by the Engineer.

All pipe shall be primed and cemented per manufacturer's recommendations.

All pipe shall be completely clean of all dirt and debris prior to solvent weld operations.

All pipe shall cure for 24 hours before being subjected to hydraulic pressure.

The emitter lateral end cap assembly shall be installed at the locations indicated on the project plans and in accordance with the requirements of the special provisions.

Locate end caps within valve boxes at the locations shown on the project plans.

The end plug unit with resilient-sealed, unscrewing cap shall be of the socket, solvent-weld type, constructed of glass-filled polypropylene. The PVC lateral-to-riser fitting shall be a socket, solvent-weld, Schedule 40, 90 degree elbow fitting.

Method of Measurement:

Pipe will be measured per linear foot.

Basis of Payment:

The accepted quantities of Pipe, measured as provided above, will be paid for at the contract linear foot price, which price shall be full compensation for the work.

There shall be no separate measurement or direct payment made for pipe fittings, end caps, or other required incidental hardware necessary for installation of PVC Pipe, those costs are considered included in the cost of the PVC pipe contract items.

No additional payment will be made for lateral end cap assemblies or cutting and patching, or end cap assembly box, the cost being included in the pipe contract items.

ITEM 8080617 - PROVIDE WATER SERVICE (1"):

Description:

The work under this item consists of furnishing and installing new water service connections for City of El Mirage landscape irrigation, including meter, tap, corporation stop, curb stop, appurtenant fittings, water meter box and cover, copper service pipe and pavement replacement (if required) at the locations shown on the project plans or as directed by the Engineer. The work shall also include coordination with City of El Mirage Water Department staff for inspections of the completed service lines prior to backfill.

The work includes of applying and securing all permits and paying all installation fees charged by the City of El Mirage Water Department for the designated water meter installations as follows:

12515 N.W. Grand Avenue	El Mirage Water	1 inch size meter
12027 NW. Grand Avenue	El Mirage Water	1 inch size meter

The City of El Mirage shall waive all water meter impact and development fees for this project.

Materials:

All materials shall conform to City of El Mirage Water Department Guidelines and Supplements.

Construction Requirements:

Immediately following the award of contract and prior to the beginning of work, the contractor shall contact City of El Mirage Water Department (623) 935-6405 advising of approximate startup date. The advisory shall be completed for the purpose of coordination for the pre-designed City of El Mirage water facilities for irrigation services.

Water service construction shall conform to the Details as shown in the project plans.

The contractor shall tap the water line, place corporation stops, extend 1" copper type K pipe to the meter locations shown on the plans, and place individual 1" curb stops in concrete water meter boxes with steel lids for the water services. The contractor shall contact the City of El Mirage Water Department to inspect and approve the installation prior to backfill operations. The City of El Mirage Water Department will install the water meters after the service installation is completed and approved.

The water meter account shall be established in the contractor's name. Once the project is complete, the Landscape Establishment period is complete and the project is accepted the account shall be transferred into the City of El Mirage's name.

Method of Measurement:

Provide Water Service will be measured by the unit each for each location specified, complete in place.

Basis of Payment:

The accepted quantities of Provide Water Service (1"), measured as provided above, will be paid for at the contract unit price each, complete and in place.

Water meters will be installed by the City of El Mirage Water Department after all permits, fees are paid and the service installation is completed and approved. No payment will be made to the contractor for work performed by the El Mirage Water Department forces.

No separate payment will be made for coordination necessary with the El Mirage Water Department forces, the cost is considered included in the cost of the Provide Water Service (1") items.

The contractor shall obtain all permits and pay for all fees associated with the water service and meter installations.

ITEM 8080658 - FIRE HYDRANT (SPECIAL) (COEM STD 360, DETAIL C5):

Description:

The work under this item consists of furnishing all material, equipment, tools and labor to install new fire hydrants, including pipe, reducer, restrained joint connections, excavation and backfilling, bedding and cover material, thrust blocking, and all miscellaneous pipe hardware complete in place and tested at the location designated on the project plans and in accordance with the requirements of these Special Provisions. The work shall also include coordination with City of El Mirage Water Department staff for inspections of the completed fire hydrants prior to backfill.

The work includes of applying and securing all permits and paying all installation fees charged by the City of El Mirage Water.

Materials:

All materials shall conform to the requirements described in City of El Mirage Water Department Guidelines and Supplements.

Construction Requirements:

The contractor shall construct the fire hydrants per Detail C5 shown on plans and per Section 808 of the Standard Specifications.

Prior to performing any water service shut downs necessary to install fire hydrants which cause water service interruption to businesses, medical facilities, schools and residents, the following prerequisites must be performed:

1. Contractor must locate and expose valves, Water operations staff will operate and mark valves.
2. Requests cannot be made more than two weeks in advance.
3. Same day multiple shutdowns at separate locations will not be approved.
4. Night time shutdowns must be preapproved by Public Works Department head.
5. Fire Department must be notified in advance for any shutdown lasting longer than 1 hour.
6. Shutdown requests lasting longer than 6 hours must be preapproved by the City Fire Department head and Public Works Department head.
7. Shutdown requests lasting longer than 24 hours must be preapproved by the City Fire Department head and Public Works Department head. The contractor must also provide water service by approved fly lines to all affected parties.

Shut down procedures shall be as follows:

1. A contractor will request a scheduled water main shutdown through a City Inspector
2. The City Inspector will email the Public Works Department Head and Water Division Supervisor a request for a water main shutdown. The request should include; project name, contractor, project inspector, purpose for shutdown and area location
3. The Water Division Supervisor acknowledges the request and discusses shutdown with staff within a 24 hour time frame. (Day 1)
4. The Water Distribution Foreman will contact the City Inspector to schedule a field visit and to create a shutdown map. (Day 2)
5. Water Distribution Foreman performs a field visit, valve inspection and if needed, a test shutdown is practiced. Once approved, the requested shutdown may be scheduled. (Day 3) Inspector to notify the Water Division Supervisor of affected fire hydrants by their designated hydrant tag number
6. The City Inspector and contractor will coordinate the scheduling of the shutdown by having the contractor hand out the City of El Mirages 48 hour water service interruption notice.(Day 4 & 5)
7. The City Inspector must be present during the duration of the water main shutdown.
8. Shutdowns shall be performed between 9:00 AM – 3:00 PM, Monday – Thursday.
9. Once the shutdown is complete, the Water Operations staff will flush air and sediment from area hydrants before restoring water services.
10. Water Operations staff will verify all valves are placed back to their original position.
11. The Contractor must notify customers that water service has been restored.
12. The City Inspector will be responsible for reporting all water loss amounts to the Water Supervisor.

Shut downs are performed five to seven working days after receiving a shutdown request. The contractor is responsible for supplying bottled water to those residents affected by shutdowns going beyond the six hour time frame and for those residents with special needs.

Method of Measurement:

FIRE HYDRANT (SPECIAL) (COEM STD 360, DETAIL C5) will be measured by the unit each for each location specified, complete in place.

Basis of Payment:

The accepted quantities of FIRE HYDRANT (SPECIAL) (COEM STD 360, DETAIL C5), measured as provided above, will be paid for at the contract unit price each, complete and in place.

No separate payment will be made for coordination necessary with the El Mirage Water Department forces, the cost is considered included in the cost of the FIRE HYDRANT (SPECIAL) (COEM STD 360, DETAIL C5).

The contractor shall obtain all permits and pay for all fees associated with the fire hydrant installations.

SECTION 810 – EROSION CONTROL AND POLLUTION PREVENTION:

810-2.06 (A) General: the first paragraph of the Standard Specifications is revised to read:

Sediment logs, sediment wattles, and fiber rolls shall be manufactured or constructed rolls of fiber matrix, secured with netting, and used for the purpose of controlling erosion by slowing high flow water velocity and trapping silt sediments. Netting for fiber rolls and sediment wattles shall have a minimum durability of one year after installation, and shall be tightly secured at each end of the individual rolls. All wheat straw used in sediment logs, sediment wattles, and fiber rolls shall comply with the requirements of Subsection 810-2.05 (B).

The unit weight for wattles shall be 0.144 pounds per inch of diameter per linear foot. Sediment log unit weight shall be 0.167 pounds per inch of diameter per linear foot. The minimum weight per linear foot for sediment logs and wattles shall be determined by multiplying the specified diameter of the device by the appropriate unit weight, in pounds per inch of diameter per linear foot per, as specified above.

Netting at each end of sediment logs and wattles shall be secured with metal clips or knotted ends to assure fiber containment.

810-3.06(A) Sediment Logs: of the Standard Specifications is revised to read:

Sediment logs shall be installed in channel bottoms, around catch basins, as check dams, or on slopes, as directed by the Engineer in accordance with the manufacturer's instructions. Sediment logs shall be secured with one inch by one inch by 46 inch hardwood stakes placed with a maximum spacing of two feet on center, or as directed by the Engineer. Each stake shall be intertwined with the netting on the downstream side of the log and driven approximately two feet below finished grade. Unless otherwise specified, soil shall be tamped against the upstream side of the log to assure that storm water is forced to flow through the log rather than under it.

Sediment logs installed in drainage channel bottoms shall be perpendicular to the flow of the water, and shall continue up the channel side slope two feet above the high water flow line. Spacing of the logs shall be as specified by the Engineer.

When sediment logs are used to construct check dams, the logs placed on the ground shall be buried four to six inches deep, or as directed by the Engineer.

Logs placed on slopes shall be installed in a two-inch deep by five-inch wide anchor trench. The ends of adjacent logs shall be abutted tightly together so that water cannot undermine the logs.

810-3.06(B) Sediment Wattles: of the Standard Specifications is revised to read:

Sediment wattles shall be installed on slopes as directed by the Engineer, and in accordance with the manufacturer's instructions. Sediment wattles shall be secured with wooden stakes as shown on the plans. The ends of adjacent wattles shall be abutted tightly together.

810-5 Basis of Payment: of the Standard Specifications is modified to add:

No additional measurement or payment will be made for the maintenance of any erosion control item necessary to keep it in good working order during the entire project period, the cost being considered included in the price of erosion control items.

No additional measurement or payment will be made for cleanup and disposal of the erosion control devices at the end of the project period, the cost being considered included in the price of erosion control items.

No measurement or direct payment will be made for filter fabric placed under rock mulch placed, the cost being considered as included in the cost of the rock mulch paid by the cubic yard.

ITEM 8101018 – EROSION CONTROL (CONSTRUCTION ENTRANCE / EXIT GRAVEL PAD):

Description:

The work under this item consists of furnishing, installing, maintaining, removing and disposing construction entrance and/or exit gravel pads in accordance with the details shown on the project plans and at locations to be determined in the field by the Engineer and the contractor.

Construction entrance and/or exit gravel pads are required for controlling and minimizing the transportation of debris from the site onto the adjacent roadways and surfaces.

Materials:

Gravel material shall conform to the requirements of Subsection 810-2.03 for gradation C. Filter fabric material shall conform to the requirements of Subsection 1014-4.04(A).

Construction Requirements:

The rocks bed shall be shaped and trimmed to provide even surfaces and at a depth to accommodate the stone size and minimum depth of rocks specified on the project plans.

The contractor, in conjunction with the Engineer, shall determine the locations of the construction entrance/exit gravel pads. As the project progresses, multiple gravel pads may be utilized or relocated as approved by the Engineer.

The contractor shall remove and legally dispose from the site all rocks and fabrics associated with this item of work at the time approved by the Engineer.

Method of Measurement:

Construction entrance / exit gravel pad will be measured by the square yard of gravel pad placed.

Basis of Payment:

The accepted quantities of construction entrance / exit gravel pad, measured as provided above, will be paid for at the contract price per square yard, which price shall be full compensation for the work, complete in place, including grading, excavating, backfilling, maintaining, removing and disposing.

No additional payment will be made for the geotextile fabric, the cost being considered included in the contract item.

ITEM 8101050 – EROSION CONTROL (CURB INLET PROTECTION):

Description:

The work under this item consists of furnishing, installing, maintaining, removing and disposing curb inlet protection for curb inlets without grates pads in accordance with the details shown on the project plans and at locations to be determined in the field by the Engineer and the contractor.

Curb inlet protection is required for controlling and minimizing the transportation of debris from the site into the roadway drainage systems and into subsequent area drainage systems.

Materials:

Provide a low profile curb inlet protection device:

Size: Furnish “L”-shaped low profile curb inlet protection device with a maximum vertical height of 8 inches and a maximum horizontal anchor/seal flap dimension of 8 inches. The vertical and horizontal components shall not protrude horizontally from the curb surface or vertically from the gutter pan surface by more than 0.5 in.

Structure: Furnish low profile curb inlet protection device manufactured from non-biodegradable materials. It shall be UV stable, resist cracking or performance deterioration from sunlight for 4 years. System shall be made from recyclable material. Filter material shall be laminated between and protected by semi-rigid layers of a polymeric matrix made from high density polyethylene (HDPE recyclable as #2) or polyethylene terephthalate (PET recyclable as #1). Service temperature shall be from -30 to 160 deg F.

Flow Rate: Furnish low profile curb inlet protection device containing an integrated filter fabric with a minimum clean water flow-through rate between 130 and 180 gallons per square foot per minute and a percentage-open-area of 9% to 13%.

High-Flow-Bypass / Debris Screen: Furnish low profile curb inlet protection device with a high-flow-bypass/debris-screen. The high-flow-bypass/debris-screen area should be greater than 2.5 square feet per unit and allow a minimum clean water flow-through rate greater than 1000 gallons per square foot. The high-flow-bypass/debris screen should be made from a semi-rigid layer of a polymeric matrix made from either high density polyethylene (HDPE recyclable as #2) or polyethylene terephthalate (PET recyclable as #1).

Single unit Construction: Furnish low profile curb inlet protection device with the horizontal anchor flap/seal and vertical curb opening filter/cover constructed as a single unit.

Underflow Seal: Furnish low profile curb inlet protection device with an underflow seal gasket to prevent sediment laden water from flowing under the filtering system.

Reinforcement brackets: Furnish low profile curb inlet device with a bracketing system to prevent the device from getting pushed into the storm drain system during high flow events.

Provide brackets that can be extended vertically to the top of the curb opening fascia if the curb opening height is higher than 7.0”.

Construction Requirements:

Install low profile curb inlet protection device with the anchor flap facing upstream toward the street. Place small gravel bags containing clean, pea-sized graded gravel on each end of the flap and butt the bags tightly against the curb to keep water in the gutter from flowing behind the filter. Additional bags can be placed on the flap as necessary; however, bags shall be kept in the gutter pan, and off the street (asphalt) for safety reasons. The bag shall be durable enough to last the period of intended use. If the storm inlet opening exceeds 5.0' in length, overlap first module by 6" over end of adjoining module for a continuous run until the desired length is achieved. When overlapping, note the gasket material under the flap is cut-out where the flap of top module sits on flap of bottom module. Tie segments together with black UV resistant zip ties or 16 gauge galvanized wire as shown in the installation instructions. Reuse low profile curb inlet protection device when allowed by the engineer.

Perform maintenance as required. Inspect following rainfall events and at least daily during prolonged rainfall. Maintain to provide an adequate sediment holding capacity. Trash shall be removed daily and sediment shall be removed when the sediment accumulation reaches 1 inch. Removed sediment shall be incorporated in the project at designated locations or disposed-of outside the project or in conformance with requirements. Remove the device after final stabilization has been achieved.

The contractor shall locate the curb inlet protection as shown on the plans or as directed by the Engineer.

The contractor shall remove and legally dispose from the site curb inlet protection materials associated with this item of work at the time approved by the Engineer.

Method of Measurement:

Curb inlet protection shall be measured by the lineal foot of curb inlet protection installed.

Basis of Payment:

The accepted quantities of curb inlet protection measured as provided above, will be paid for at the contract price per lineal foot, which price shall be full compensation for the work, complete in place, including installation, maintaining, removing and disposing.

No additional payment will be made for the gravel bags, the cost being considered included in the contract item.

(901MOBE, 09/18/12)

SECTION 901 MOBILIZATION:

901-5 Basis of Payment: of the Standard Specifications is revised to read:

Payment for mobilization, measured as provided above, will be made at the contract lump sum price, which shall be full compensation for supplying and furnishing all materials, facilities and services and performing all the work involved as specified herein.

Partial payments under this item will be made in accordance with the following provisions. Reference herein to the adjusted contract shall mean the original contract amount exclusive of mobilization:

The first payment of the lump sum price for mobilization will be paid after the Preconstruction Conference provided that all submissions required under Subsection 108.03 are submitted by the contractor at the Preconstruction Conference to the satisfaction of the Engineer. The amount paid for the first partial payment will be in accordance with Table 901-1.

The second payment of the lump sum price for mobilization will be made when the Engineer has determined that a significant amount of equipment has been mobilized to the project site which will be used to perform portions of the contract work. The amount paid for the second partial payment will be in accordance with Table 901-1.

The third payment of the lump sum price for mobilization will be made on the first estimate following completion of five percent of the adjusted contract. Such percentage determination will not include partial payments for material on hand. The amount paid for the third payment will be in accordance with Table 901-1.

The fourth payment of the lump sum price for mobilization will be made on the first estimate following completion of 10 percent of the adjusted contract. Such percentage determination will not include partial payments for material on hand. The amount paid for the fourth payment will be in accordance with Table 901-1.

The total sum of all payment shall not exceed the original contract lump sum price for mobilization, regardless of the fact that the contractor may have, for any reason, shut down its work on the project or moved its equipment away from the project and back again.

TABLE 901-1 AMOUNT ALLOWED FOR MOBILIZATION DURING THE LIFE OF THE CONTRACT		
Contract Amount: \$	% Of Contract	Basis Of Payment
0 - 5,000,000	12% *	25% of the lump sum price for mobilization or 3% of the original contract amount, whichever is less.
5,000,000 +	10% *	25% of the lump sum price for mobilization or 2.5% of the original contract amount, whichever is less.
* If the price bid for mobilization exceeds this percentage, any excess will be paid to the contractor upon completion of the contract.		

The adjustment provisions in Section 104 and the retention of funds provisions in Section 109 shall not apply to the item of mobilization.

When other contract items are adjusted as provided in Section 104, and if the costs applicable to such items of work include mobilization costs, such mobilization costs will be considered as recovered by the contractor in the lump sum price paid for mobilization, and will be excluded from consideration in determining compensation under Section 104.

When mobilization is not included as a contract item, full compensation for any necessary mobilization required will be considered as included in the prices paid for the various contract items involved and no additional compensation will be made.

ITEM 9030008 – FENCE (8' WROUGHT IRON)

Description:

The work under this item shall consist of furnishing and installing a new wrought iron fence, in accordance with Detail A at the locations shown on the project plans and the requirements specified herein..

Materials:

Furnish materials in accordance with the details shown on the plans. The materials for the fence include posts, pickets, rails, foundations, footings, post caps and all necessary fittings and appurtenances required for proper installation. The contractor shall provide the Engineer with the specifications of all items for the fence for approval before installation. Use only new materials.

Construction Requirements:

Before work commences in the area, the contractor shall inform and inspect the site with the Engineer. After the construction is complete, the contractor shall again inspect the site with the Engineer for approval.

All the material for the new fence panels shall be first approved by the Engineer. The new fence shall include but not limited to posts, pickets, rails, foundations, footings, post caps shall be installed at locations shown on the plans and/or as directed by the Engineer. The concrete footing for the new posts shall be as shown on the plans and/or as directed by the Engineer.

Painting shall be by hand or spray. Two coats shall be required on all parts. The final surface shall be of even color without streaks, drips, bubbles, incomplete coverage or any other surface imperfection. Paint finish shall be powder coated for ease of long-term maintenance. Paint shall be black in color.

If necessary, the fence shall be reinforced at the joints with either welding or welded on metal that will not detract from the decorative appeal of the fence. All welding shall be performed in a workman-like manner with solid joints of minimum protrusion. The completed fence shall be solid and have minimal flexure. Any excessive splatter of the weld shall be ground off.

Method of Measurement:

FENCE (8' WROUGHT IRON) will be measured by the linear foot of fence furnished and installed.

Basis of Payment:

FENCE (8' WROUGHT IRON), measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place.

(905GRDRL, 01/25/18)

SECTION 905 GUARDRAIL: of the Standard Specifications is revised to read:

905-1 Description:

The work under this section shall consist of furnishing all labor, equipment, and materials to install guardrail, guardrail transitions, guardrail terminals, and end anchors, constructed new, reconstructed, or constructed guardrail from salvage in accordance with the locations and details shown on the plans and the requirements of these specifications, including all necessary components and delineation.

905-2 Materials:

Materials for guardrail, guardrail transitions, and end anchors shall conform to the requirements of Section 1012 and the plans.

Materials for guardrail terminals shall conform to the requirements of the approved manufacturer's drawings and specifications. Only those guardrail terminals referenced in the plans will be allowed.

Flexible guardrail markers shall be made of a high quality, impact- and ultraviolet-resistant, flexible, white-colored plastic or similar material with a minimum thickness of 3/16 inch. This material shall be configured into a rectangular body that is flat, curvilinear or tubular with a width of between three and four inches. The minimum reflective area for L-shaped and T-shaped markers, attached to the top of wooden posts, and U-shaped markers, attached to the top of steel I-beam posts, shall be ten square inches. The reflectorized surface for flexible vertical guardrail markers attached to the approach side of posts shall be three inches wide by five inches long.

Adhesive materials for applying reflective sheeting to guardrail terminals and flexible guardrail markers shall be in accordance with the sheeting manufacturer's recommendations.

Guardrail delineator material shall be specifically manufactured to provide roadside delineation. All delineators shall consist of complete units that are pre-cut, pre-drilled as applicable, and ready to be installed in the field. The delineators shall be packaged in such manner as to prevent damage and deterioration during shipping and storage.

Reflective sheeting for object markers on guardrail terminals, and reflective sheeting used for all other guardrail markers, including flexible guardrail markers shall conform to the requirements of Section 1007.

Transparent colors, inks and paints used in fabrication shall be of the type and quality recommended by the sheeting manufacturer. Transparent colors shall be applied with screen mesh P.E. 157 using fill pass.

Approved guardrail terminals, flexible guardrail markers, and reflective sheeting products are shown on the Department's Approved Products List (APL). Copies of the most current version of the APL are available on the internet from the Arizona Department of Transportation Research Center, through its Product Evaluation program.

905-3 Construction Requirements:

905-3.01 General:

The construction of the various types of guardrail, guardrail transitions, guardrail terminals, and end anchors shall include the assembly and erection of all component parts complete at the locations shown on the project plans or as directed by the Engineer. All materials shall be new except as provided for under Subsections 905-3.04 and 905-3.05.

The various types of guardrail shall be constructed with wood or composite blockouts on either wood or steel posts, at the option of the contractor, except where the post materials to be used are specified on the plans. Excluding guardrail transitions, terminals, long span, box culvert posts, and end anchors, the same type of post shall be used in any one continuous length of guardrail.

All metalwork shall be fabricated in the shop. No punching, drilling, cutting or welding shall be done in the field, except as provided for under Subsections 905-3.04, 905-3.05, and 905-3.06.

Where field cutting or boring of wood posts and blockouts is permitted, the affected areas shall be treated in accordance with the American Wood Preservers Association Standard M4.

Where wood posts with rectangular sections are used, the posts shall be set so that the longest dimension is perpendicular to the rail.

All bolts shall extend beyond the nuts a minimum of two threads, except that all bolts on posts adjacent to pedestrian traffic shall be cut off 1/4 inch from the nut.

All bolts shall be securely tightened unless torque requirements are specified on the plans or manufacturer's drawings.

Guardrail elements shall be spliced by lapping in the direction of traffic in the nearest adjacent lane.

Rail height of guardrail, transitions, terminals, long span, box culvert posts, and end anchors shall be within ± 1 inch of the control height shown on project plans.

When guardrail is being constructed, or reconstructed under traffic, the contractor shall conduct its operations so as to constitute the least hazard to the public and construction personnel. Traffic control shall be provided in accordance with the requirements of Section 701.

905-3.02 Roadway Guardrail:

Guardrail posts shall be set to the line, grade, and spacing shown on the plans. Earthwork placement, grading, compacting, and bituminous surfacing shall be completed prior to installation of the guardrail posts.

Wood posts shall be placed in pre-punched or pre-drilled pilot holes. Steel posts shall either be driven, or placed in manually or mechanically dug holes. New post holes, and existing post holes to be reused shall contain well compacted material under the post, and shall be backfilled with moist soils placed in compacted lifts as approved by the Engineer. Pre-punched post holes, or full depth post driving shall not be used at locations where damage to the curb, gutter, sidewalk, buried items, shoulders or pavement might occur. The Engineer will be the sole judge as to whether driving of posts will be allowed.

Driving of posts shall be accomplished in a manner which will prevent battering, burring, separation of the galvanizing from the steel or distortion of the post. Any post which is bent or otherwise damaged to the extent it is unfit for use in the unfinished work, as determined by the Engineer, shall be removed and replaced at no additional cost to the Department.

Where curb, gutter, sidewalk, buried items, shoulders, or pavement are disturbed in the construction of guardrail, the damage shall be repaired as approved by the Engineer.

Where the top surface of a culvert or other utility is at an elevation which would interfere with full depth post placement, the post shall be eliminated and long span guardrail shall be placed in accordance with the requirements of subsection 905-3.09. Where the top surface of a box culvert is at an elevation which would interfere with full depth post placement, and long span guardrail cannot be used, the post shall be placed and anchored in accordance with the requirements of Subsection 905-3.06.

Where rock prevents the full depth placement of posts, the rock, post, and backfill shall be treated in accordance with Standard Drawings.

Wood blockouts shall be toe-nailed to the wood posts with one 16-penny galvanized nail on each side of the top of the blockout. Blockouts shall be set so that the top of the blockout is no more than 1/2 inch above or below the top of the post, unless otherwise shown on the project plans.

Rail elements shall be spliced at 25-foot intervals or less. Rail elements shall be spliced halfway between adjacent posts unless otherwise shown on the project plans. When the radius of curvature is 150 feet or less, the rail elements shall be shop curved.

905-3.03 Guardrail End Anchors:

End anchors shall be installed in accordance with the plans. Foundation tubes shall be supplied as part of the end anchor. Foundation tubes shall be driven with an approved driving head, or placed in manually or mechanically dug holes. The tubes shall not be driven with the wood post in place. When foundation tubes are placed in holes, the space around and under the tubes shall be backfilled with moist soils placed in compacted lifts, as approved by the Engineer. The foundation tube shall not protrude more than four inches above the ground as measured along a five foot chord.

905-3.04 Construct Guardrail from Salvage:

Salvaged guardrail, guardrail transitions, end anchors, and other guardrail systems shall be constructed at the locations shown on the project plans and in accordance with the provisions specified herein for new construction.

If any salvaged materials are deemed by the Engineer, to be unsuitable for reuse or if the quantities of salvaged materials are insufficient to complete the work, the contractor shall furnish new materials in sufficient quantities to complete the work and the cost of furnishing such materials will be paid for in accordance with the provisions of Subsection 109.04.

Salvage foundation tubes for end anchors shall not be reused.

Where new bolt holes in rail elements are permitted and approved by the Engineer, the holes shall be made by drilling or punching. Flame-cut bolt holes will not be permitted. All metal cut in the field shall be cleaned and painted with two coats of zinc paint in accordance with Section 1002.

905-3.05 Reconstruct Guardrail:

(A) General:

Existing guardrail, guardrail transitions, guardrail terminals, end anchors, and other guardrail systems shall be reconstructed at the locations shown on the project plans, and in accordance with the provisions specified herein for new construction.

Guardrail shall be reconstructed in accordance with either Subsection 905-3.05(B) or 905-3.05(C).

For reconstructed guardrail transitions, guardrail terminals, end anchors, and other guardrail systems, all components shall be completely removed and then reconstructed in place using existing posts, blockouts, and hardware, unless otherwise specified herein.

Reconstructed end anchors shall be installed with new foundation tubes.

Unless otherwise specified herein, where existing posts include a concrete foundation, the concrete foundation shall be fully removed and the hole backfilled with moist soil in compacted lifts, as approved by the Engineer. No separate payment will be made for removal of concrete foundations, or the subsequent backfill and compaction, the cost being considered as included in the contract item.

All guardrail components to be re-used shall be removed in such a manner as to prevent damage to and minimize the loss of the components.

Where new bolt holes in reused rail elements are permitted and approved by the Engineer, the holes shall be made by drilling or punching. Flame-cut bolt holes will not be permitted. All metal cut in the field shall be cleaned and painted with two coats of zinc paint in accordance with Section 1002.

Items designated to be reused which are lost, damaged or destroyed as a result of the contractor's operations shall be repaired or replaced by the contractor at no additional cost to the Department.

If any materials designated for reconstruction are deemed by the Engineer to be unsuitable for reuse or if the quantities of existing materials are insufficient to complete the work, the contractor shall furnish new materials in sufficient quantities to complete the work and the cost of furnishing such materials will be paid for in accordance with the provisions of Subsection 109.04.

Existing posts, blockouts, rail elements, or hardware which are not required for guardrail reconstruction or which the Engineer deems unsuitable for reconstruction, shall be removed and disposed of as directed by the Engineer.

(B) Reconstruct Guardrail With Existing Materials:

When reconstruct guardrail with existing materials is specified, all guardrail components shall be completely removed and then reconstructed in place using existing rail elements, posts, blockouts, and hardware for posts and blockouts.

(C) Reconstruct Guardrail With New Posts, Blockouts, and Hardware:

When reconstruct guardrail with new posts, blockouts and hardware is specified, all guardrail components shall be completely removed and then reconstructed in place using existing rail elements, and new posts, blockouts, and hardware for posts and blockouts.

905-3.06 Box Culvert Guardrail Posts:

Box culvert guardrail posts for low fill culverts shall be constructed in accordance with plans.

Where field-cutting of steel posts is required, the affected areas shall be cleaned and painted with two coats of zinc paint in accordance with Section 1002.

905-3.07 BLANK

905-3.08 Guardrail Transitions:

Guardrail transitions to concrete barriers shall be constructed in accordance with the plans.

905-3.09 Long Span Guardrail:

This work shall consist of furnishing and constructing long span guardrail, including all materials, in accordance with the requirements of the project plans.

905-3.10 Guardrail Terminals:

Guardrail terminals shall be installed in accordance with the manufacturer's specifications and approved drawings. Prior to starting work, the contractor shall submit the current version of the manufacturer's approved drawings and installation manuals for each type of guardrail terminal to be installed on the project. In case of discrepancy or conflict, the current manufacturer's specifications and approved drawings shall govern. Manufacturer's dimensions relative to the finished surface shall be measured along a five-foot chord.

Earthwork placement, grading, compacting, and pavement surfacing shall be completed prior to installation of posts for guardrail terminals. The contractor shall install the posts in a manner that prevents heaving or other damage to the surface material. If the Engineer

determines that heaving or other damage has occurred, the contractor shall remove and replace surface material at no additional cost to the Department.

905-3.11 Guardrail Delineation:

(A) General:

Flexible guardrail markers shall be either L-shaped, U-shaped (for steel I-beam posts), or T-shaped delineators, or flexible vertical delineators. Flexible L-shaped, U-shaped, and T-shaped delineators shall be installed on the top of the posts, and shall be placed as close as possible to the roadway edge of the post with the retroreflective surface facing oncoming traffic of the nearest traveled lane. Flexible vertical delineators shall be installed on the side of the post facing oncoming traffic, level and true, with the retroreflective sheeting 38 inches above the roadway surface.

When nails are used to secure delineation to the top of wood posts, a minimum of two nails shall be driven at an angle to prevent the post from splitting. Side-mounted flexible vertical delineators shall be secured to wood posts with two 1/8-inch diameter by two-inch long galvanized lag screws and flat washers. Side mounted delineation shall be secured to metal posts by drilling two holes through the post and attaching with two galvanized 1/8-inch diameter by 3/4-inch long bolts, flat washers, and lock nuts. Self-tapping 1/8" screws may be used as permitted by the Engineer.

The color of the retroreflective portion of the barrier markers and flexible delineators shall conform to the color of the adjacent edge line. Field application of retroreflective sheeting will not be allowed. The manufacturer shall apply all sheeting in the factory.

The contractor shall remove and replace damaged delineation at no additional cost to the Department.

(B) Guardrail Delineation:

Flexible guardrail markers shall be installed at every sixth post. On radial sections of guardrail, the flexible guardrail markers shall be placed at every other post.

(C) Guardrail Terminal Delineation:

Delineation for guardrail terminals shall be compatible with the average project elevation and traffic direction shown on the plans. The contractor shall maintain consistency within the project limits by selecting the same type of delineation for all similar installations.

For guardrail terminals, the contractor shall use L-shaped, T-shaped, or U-shaped markers, or flexible vertical delineators on the posts shown in Standard Drawings.

The configuration of reflective sheeting object markers on the approach and departure faces of the guardrail terminal.

905-4 Method of Measurement:

The limits of measurement for the various guardrail items are shown on the plans.

Guardrail, of the type shown on the project plans, will be measured by the linear foot along the face of the rail element from center to center of splices, exclusive of guardrail terminals, end anchors, and guardrail transitions. Lengths of tapers required for connecting to existing guardrail and the long span guardrail will be included in overall guardrail length.

Guardrail terminals will be measured by the unit each, including all components and delineation required for a complete installation as shown on the plans and in the approved manufacturer's drawing and installation manual.

Guardrail end anchors will be measured by the unit each, including delineation and all other components required for a complete installation as shown on the plans.

Guardrail transitions will be measured by the unit each, including delineation and all other components required for a complete installation as shown on the plans.

Box culvert guardrail posts will be measured by the unit for each post anchored as shown on the plans. One unit will consist of the cut and fitted guardrail post, anchor plate, and hardware.

Constructing the various types of guardrail, guardrail transitions, and end anchors from salvage will be measured by the linear foot, or by the unit each, using the limits of measurement specified for new construction.

Reconstructing the various types of guardrail, guardrail transitions, guardrail terminals, and end anchors will be measured by the linear foot, or by the unit each, using the limits of measurement specified for new construction.

905-5 Basis of Payment:

The accepted quantities of guardrail, measured as provided above, will be paid for at the contract unit price per linear foot for the types of guardrail installation designated in the bidding schedule, complete in place, including all guardrail delineation, excavation, backfill and disposal of surplus material.

The accepted quantities of guardrail terminals, measured as provided above, will be paid for at the contract unit price each, complete in place, including all components and delineation as required, excavation, backfill and disposal of surplus material.

The accepted quantities of guardrail end anchors, measured as provided above, will be paid for at the contract unit price each, complete in place, including all guardrail components and delineation as required, excavation, backfill, disposal of surplus material, and installation of foundation tubes.

The accepted quantities of guardrail transitions to concrete barriers, measured as provided above, will be paid for at the contract unit price each, complete in place, including guardrail posts, blockouts, hardware, terminal connection, excavation, backfill and disposal of surplus material. Concrete barrier that is constructed with a guardrail transition shall be measured and paid for in accordance with the requirements of Section 910 for concrete barrier transition.

Payment for furnishing and placing earthwork and surfacing material for pavement widening associated with new guardrail and at the flares of guardrail terminals will be measured and paid for under the respective contract items.

The accepted quantities of box culvert guardrail posts, measured as provided above, will be paid for at the contract unit price each, and shall be full compensation for the work, complete in place, including anchor plates, hardware, excavation, backfill, removing and replacing surfacing, cutting and fitting steel beam posts, drilling anchor bolt holes in steel posts and box culverts, and disposal of surplus materials.

The accepted quantities of construct guardrail, guardrail transitions, and end anchors from salvage, measured as provided above, will be paid for at the contract unit price, complete in place, including all new guardrail delineation, removal of existing delineation as necessary, excavation, backfill and disposal of surplus or unusable materials.

The accepted quantities of reconstruct guardrail with existing materials, measured as provided above, will be paid for at the contract unit price, complete in place, including all new guardrail delineation, removal of existing delineation as necessary, excavation, backfill and compaction, and disposal of surplus or unusable materials.

The accepted quantities of reconstruct guardrail with new posts, blockouts, and hardware, measured as provided above, will be paid for at the contract unit price, complete in place, including all new posts, blockouts, and hardware, new guardrail delineation, removal of existing delineation as necessary, excavation, backfill and compaction, and disposal of surplus or unusable materials.

The accepted quantities of reconstruct guardrail transitions, guardrail terminals, and end anchors, measured as provided above, will be paid for at the contract unit price, complete in place, including new guardrail delineation, removal of existing delineation as necessary, excavation, backfill and compaction, and disposal of surplus or unusable materials. Payment for reconstructing end anchors will include all costs for providing and installing new foundation tubes.

The contractor will be paid in accordance with the provisions of Subsection 109.04 for furnishing new posts, blockouts, rail elements or hardware to replace components deemed by the Engineer unsuitable for reuse, or to supplement insufficient existing quantities for reconstructing the various types of guardrail, or for constructing the various types of guardrail from salvage.

Reconstruct guardrail does not include stockpiling or relocating guardrail. Guardrail requiring stockpiling or relocating will be compensated under two separate bid items: 1) remove and salvage guardrail, and 2) construct guardrail from salvage.

ITEM 9050003 – GUARD RAIL, W-BEAM, SINGLE FACE (EXISTING GUARD RAIL CONNECTION)

Description:

The work under this item shall consist of constructing new guardrail connections to existing guardrail in accordance with the locations and details shown on Plans and these Special Provisions, including all necessary components and delineation.

Materials:

Materials shall conform to the requirements of Section 905 and Section 1012 of the Standard Specifications.

Construction Requirements:

Guardrail connections shall be constructed in accordance with the requirements of Subsection 905-3 of the Standard Specifications.

W-Beam guardrail shall be lapped in the direction of adjacent traffic and field drilled for connection to existing w-beam and posts. Standard length w-beam guardrail shall be used. Cutting of guardrail will not be allowed. Field drilled holes shall be cleaned and painted with two coats of zinc paint, in accordance with Section 1002.

Method of Measurement:

Guard Rail, W-Beam, Single Face (Existing Guard Rail Connection, Detail W), will be measured by the linear foot along the face of the rail element from center to center of end posts acceptably constructed within the limits shown on the plans.

Basis of Payment:

Guard Rail, W-Beam, Single Face (Existing Guard Rail Connection, Detail W), measured as provided above, will be paid for at the contract unit price per linear foot, which price shall be full compensation for the work, complete in place including guardrail posts, blocks, hardware, guardrail delineation, excavation, backfill and disposal of surplus material.

ITEM 9080094 – CONCRETE CURB AND GUTTER (TRANSITION, TYPE A TO C MAG DET. 221, DETAIL M2)

Description:

The work under this item shall consist of constructing concrete curb and gutter transitions in accordance with Detail M2 at the locations shown on the project plans and the requirements specified herein.

Materials:

Materials shall conform to the requirements of Subsection 908-2 of the Standard Specifications.

Construction Requirements:

The contractor shall construct the concrete curb and gutter transitions per Detail M2 shown on plans and per Subsection 908-3 of the Standard Specifications.

Method of Measurement:

Concrete Curb and Gutter (Transition, Type A to C MAG DET. 221, Detail M2) will be measured by the unit each for each location specified, complete in place as shown on the plans or ordered by the Engineer.

Basis of Payment:

Concrete Curb and Gutter (Transition, Type A to C MAG DET. 221, Detail M2), measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place. The contract price shall include furnishing and placing embankment material, excavating, removing unsuitable material, backfilling and compacting, and surface finishing.

ITEM 9080134 – CONCRETE VALLEY GUTTER (MAG DET. 240, DETAIL M6)

Description:

The work under this item shall consist of constructing concrete valley gutter in accordance with Detail M6 at the locations shown on the project plans and the requirements specified herein.

Materials:

Materials shall conform to the requirements of Subsection 908-2 of the Standard Specifications.

Construction Requirements:

The contractor shall construct the concrete valley gutter per Detail M6 shown on plans and per Subsection 908-3 of the Standard Specifications.

Method of Measurement:

Concrete Valley Gutter (MAG DET. 240, Detail M6) will be measured by the unit square foot for each location specified, complete in place as shown on the plans or ordered by the Engineer.

Basis of Payment:

Concrete Valley Gutter (MAG DET. 240, Detail M6), measured as provided above, will be paid for at the contract unit price square foot, which price shall be full compensation for the work, complete in place. The contract price shall include furnishing and placing embankment material, excavating, removing unsuitable material, backfilling and compacting, and surface finishing.

SECTION 912 SHOTCRETE:

912-1 Description: of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing all materials and applying shotcrete on prepared surfaces at the locations and in accordance with the details shown on the plans and the requirements of the specifications.

Shotcrete shall be mortar or concrete conveyed through a hose and pneumatically applied using either the dry mix process or the wet mix process.

The dry mix process shall consist of thoroughly mixing a proportional combination of dry fine aggregate and Portland cement; conveying the mixture through a delivery hose to a special nozzle where water is added and mixed with the other materials immediately prior to its discharge from the nozzle.

The wet mix process shall consist of premixing by mechanical methods a proportional combination of Portland cement, supplementary cementitious material, aggregate, and water required to produce mortar or concrete; conveying the mortar or concrete through the delivery hose to the special nozzle where additional compressed air is added at the nozzle prior to its discharge.

912-2.01 Portland Cement and Water: of the Standard Specifications is revised to read:

Portland cement and mixing water shall conform to the requirements of Subsections 1006-2.01 and 1006-2.02, respectively.

912-2.02(A) Fine Aggregate: of the Standard Specifications is revised to read:

Fine aggregate shall conform to the requirements of Subsection 1006-2.03(B).

912-2.03 Admixtures: of the Standard Specifications is revised to read:

Admixtures shall conform to the requirements of Subsection 1006-2.04.

Air-entraining admixtures will be required for shotcrete placed at an elevation of 3,000 feet or above. Air content will be measured in accordance with AASHTO T 152.

When the wet-mix process is used, the air content will be measured just prior to pumping, and shall not be less than seven percent nor more than ten percent.

When the dry-mix process is used, the air content will be measured from the in-place material that has been shot, and shall not be less than four percent nor more than seven percent.

912-2.05 Equipment: the last paragraph of the Standard Specifications is revised to read:

Equipment for use with the wet mix process shall be the pneumatic feed type; however, a positive displacement type may be used if permitted in writing by the Engineer. The pneumatic feed type shall be capable of discharging the concrete or premixed mortar accurately, uniformly, and continuously through the delivery hose and to the gunning nozzle. The nozzle shall be fitted with an air ring for injecting additional compressed air into the flow of material. The size of the delivery hose shall be within the range of 1-1/4 to 2-1/2 inches.

912-3.01 Proportioning and Mixing: of the Standard Specifications is revised to read:

(A) Dry Mix Process:

Dry mix material shall consist of one part Portland cement to not more than four parts fine aggregate, measured either by weight or by volume. The fine aggregate shall contain not less than three percent nor more than six percent moisture by weight.

The cement and fine aggregate shall be thoroughly mixed before being charged into the delivery equipment. If the contractor uses a drum-type mixer, the mixing time shall be not less than one minute. The mixed material shall be utilized promptly after mixing. Any unused material that stands more than 45 minutes will be rejected and removed from the work site.

(B) Wet Mix Process:

(1) Premixed Mortar:

Premixed mortar shall consist of not less than 564 pounds of combined Portland cement and supplementary cementitious material per cubic yard, fine aggregate, chemical and/or air-entraining admixtures, and water mixed to a desired consistency, generally to a slump in the range of 1-1/4 to four inches.

The material may be mixed at a central mixing plant or at the project site. If mixing is done at the project site, the mixer shall be capable of thoroughly mixing the specified materials in sufficient quantity to maintain continuous placing of the mortar.

(2) Concrete:

The contractor shall determine the mix proportions and shall furnish concrete for pneumatic placement which contains a minimum of 658 pounds of combined Portland cement and supplementary cementitious material per cubic yard of concrete and which attains a minimum 28-day compressive strength of 3,000 pounds per square inch, unless otherwise specified. Fine aggregate and coarse aggregate shall conform to the requirements of Subsection 912-2.02. The total mix shall contain 15 to 20 percent coarse aggregate, by weight. The water/cementitious material ratio shall not exceed 0.50. In no case shall the slump be greater than four inches.

If ready-mixed concrete is used, it shall conform to the requirements of ASTM C 94.

912-3.04 Steel Reinforcement: the first paragraph of the Standard Specifications is modified to add:

Steel reinforcement supports shall have a minimum compressive strength of 4 ksi.

912-3.05 Placement: the title and first paragraph of the Standard Specifications is revised to read:

912-3.05 Placement of Shotcrete:

The velocity of the shotcrete as it leaves the nozzle shall be maintained uniform and at a rate approved by the Engineer for the given job conditions. The nozzle shall be held perpendicular to the working surface and at a proper distance, generally between two and five feet, to ensure maximum compaction with minimum rebound of the shotcrete.

912-3.06 Testing: the last paragraph of the Standard Specifications is revised to read:

The three cores will be tested by the Engineer for 28-day compressive strength in accordance with Arizona Test Method 317. Unless otherwise specified, the cores shall have an average compressive strength of at least 3,000 pounds per square inch.

912-3.07 Construction Joints: of the Standard Specifications is revised to read:

Construction joints shall be tapered to a shallow edge of one inch thick over a width of one foot, except where the joint will be subjected to compressive loading. If such is the case, or if joints are at slab intersections, full depth vertical joints shall be constructed and special care taken to avoid or remove trapped rebound at the joint. The entire joint shall be thoroughly cleaned and wetted prior to the application of additional shotcrete.

912-3.08 Finishing: the second paragraph of the Standard Specifications is revised to read:

Unless otherwise specified, the surface of the shotcrete shall have a natural gun finish.

912-4 Method of Measurement: the second paragraph of the Standard Specifications is revised to read:

No measurement will be made of unexposed surfaces such as support slabs at joints, integral curb faces, or cut-off walls.

912-5 Basis of Payment: of the Standard Specifications is revised to read:

Payment for shotcrete will be made at the contract unit price per square yard, complete in place, including excavating, backfilling, fine grading, compaction, and reinforcement.

ITEM 9210012 - MEDIAN PAVING (CONCRETE PAVER STD. DET C-5.40):
ITEM 9210012 - MEDIAN PAVING (STAMPED CONCRETE STD. DET C-5.40):

The work under this item consists of constructing the median paving with Portland cement concrete at the locations and in accordance with the details shown on the project plans and these special provisions.

The surfaces upon which the base material is to be placed shall be fine graded and compacted to a density of not less than 95 percent of the maximum density as determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual, as directed and approved by the Engineer.

Aggregate base shall conform to the requirements of Section 303 of the Specifications for Class 1, 2 or 3. Aggregate base shall be compacted to a density of not less than 95 percent of the maximum density in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual, as directed and approved by the Engineer. The final surface need not be finished with a leveling device.

Portland cement concrete shall conform to the requirements of Section 1006 of the Specifications for Class B concrete. Curing shall be as specified under Subsection 1006-6 of the Specifications, except that any method that will permanently discolor the concrete shall not be used. The concrete shall be scored for a depth of one inch transversely to

match the joints in concrete curb and longitudinally when the width of the concrete exceeds 15 feet.

Joint filler shall conform to the requirements of Subsection 1011-6 of the Specifications.

Finish on the slab shall be a transverse coarse broom finish.

Measurement of this work will be made by the square yard of concrete placed.

Payment for this work will be made at the contract price per square yard, which price shall be full compensation for the item complete, in place, including the furnishing and placing of aggregate base, as described and specified herein and on the project plans.

ITEM 9240010 – FORCE ACCOUNT WORK (APS ELECTRICAL SERVICE):

Description:

This item is established to compensate the contractor for acquiring electrical service from Arizona Public Service (APS) at the locations shown on the project plans for streetlight electrical service and irrigation electrical service. The contractor shall contract with APS and submit the request letter with initial payment to provide required service and be billed for all APS construction charges (extension fees, inspection, etc.) and any required applications and/or agreements necessary to obtain the electrical service. The work shall include all fees, entering into agreements, labor, permits, coordination, materials and equipment incurred by the contractor in arranging for electrical service as required by the plans and specifications. The contractor shall be responsible for contacting APS, signing and paying for agreements and fees and then making arrangements necessary to establish electrical services, as indicated on the plans. The contractor shall pay monthly electrical charges until project acceptance, at which time the Department will assume responsibility for monthly charges.

The addresses of each service are listed as follows:

- 12463 NW Grand Ave
- 12119 NW Grand Ave
- 12025 W Grand Ave
- 12525 NW Grand Ave

Upon final project acceptance by the Department, the contractor shall make arrangements to transfer the monthly billings for all electrical services to the Department (Contact Bryce Christo at the City of El Mirage at 623-876-2974 to obtain facilities new billing address).

Materials:

Load centers and meter pedestals for electrical services shall be submitted to and approved by APS prior to procurement to ensure proposed devices meet specific APS requirements. This requirement is in addition to the equipment submittal process imposed by the Department, and approval by both APS and Department is required.

Materials shall be in accordance with the requirements of Sections 731 and 732 of the Standard Specifications.

Construction Requirements:

The contractor shall provide conduit, weatherheads, attachment hardware, conductors, pull ropes and other elements according to the project plans and in accordance with APS requirements. Installation procedures, backfill procedures, conduit depths and other elements of construction related to the power services installation shall conform to APS requirements, even if they exceed ADOT standard requirements and the project plans and specifications.

Power will be provided by APS for this project. The contractor will provide coordination of the power supply with APS, Bobby Garza at (602) 371-7989.

Field revisions to specific arrangements shown on the plans may occur in the field only if approved by the Engineer after being appraised of the impact on cost, accessibility, voltage drop accommodation and other factors deemed pertinent.

The contractor shall determine the inspection requirements and process during initial contact with APS and schedule activities accordingly. APS will also test the connections and install the electric meter and activate the account.

The Electric meter pedestal, conduit, and pull boxes shall be installed under Item 7340115 Pedestal (Electrical) (Irrigation Meter). APS will install the necessary conductors between the electrical power source and the electrical meter cabinets.

Construction details shall conform to the applicable requirements of the ADOT Standard Specifications 2008 edition, the ADOT Traffic Signals and Lighting Standard Drawings, 2012 edition, and latest revisions, the National Electrical Code, latest edition, and as detailed and specified herein.

Method of Measurement:

ITEM 9240010 – FORCE ACCOUNT WORK (APS ELECTRICAL SERVICE) will be measured in accordance with Subsection 109.04(D) of the Standard Specifications.

Installation of the meter head into the utility meter cabinet and establishment and activation of the ADOT account for the power service will also be included as part of the work item.

Basis of Payment:

Payment for ITEM 9240010 – FORCE ACCOUNT WORK (APS ELECTRICAL SERVICE) will be the actual cost as shown on the invoice(s) submitted by the contractor plus a five percent mark-up, as follows:

$$\text{Sub-total} = \text{Invoice} \times 1.05$$

Also, an amount equal to 65 percent of the Sub-total, as determined above, multiplied by the applicable sales tax rate will be added to the Sub-total. Finally, an amount equal to 0.50 percent of the Sub-total will be added for the Performance and Payment Bond. The total contractor payment (TCP) will be as follows:

$$\text{TCP} = (\text{Sub-total}) + (0.65 \times \text{Sub-total} \times \text{sales tax rate}) + (0.005 \times \text{Sub-total}).$$

Such payment shall be full compensation for the *utility service*, complete in place as specified herein.

The Department will reimburse the contractor for all direct expenses billed to the contractor by APS in support of initiating electrical services, and monthly billings (minimum and consumption), upon receipt of billings and payments. No additional costs, such as labor and time for coordination with APS, handling charges or administrative costs charged by the contractor will be paid to the contractor.

All permits and inspections required for service establishment are the responsibility of the contractor, at no additional cost to the Department.

ITEM 9240119 – MISCELLANEOUS WORK (CONCRETE ENCASE PER MAG STD. DET. 404)

Description:

The work under this item shall consist of furnishing all labor, materials, and equipment necessary to concrete encase the existing waterline per MAG Std. Det. 404.

Materials:

The waterline encasement shall be class C 2000 psi concrete. The encasement shall have reinforcing as shown on MAG Std. Det. 404. The encasement shall comply with all requirements shown on MAG Std. Det. 404.

Construction Requirements:

Comply with MAG Uniform Standard Specifications and Details for Public Works Construction Section 610 in its entirety except as modified herein. The construction shall include all necessary repairs required to the existing infrastructure that was modified as a result of these removals and relocations.

Method of Measurement:

Concrete encasement of existing waterline per MAG Std Det. 404 shall be measured per each specified on plans.

Basis of Payment:

The accepted quantities of concrete encasement waterline shall be measured as provided above, will be paid for at the contract unit price per each which price shall be full compensation for the work, complete in place.

No additional payment will be made for all fittings, reducers, flanges, restraint system, testing, etc. the cost being considered included in this bid item.

ITEM 9240120 – MISCELLANEOUS WORK (GABION BASKET PILASTER)

Description:

The work of this item shall include constructing the Gabion Basket Pilasters, including the warranting of workmanship, preparing the sites, excavating, supplying all materials including mesh frame, river rock cobble; concrete footings, cleaning of the area, constructing the spread footings, and removing and disposing of unwanted and deleterious materials.

Materials:

Gabions shall meet the requirements of manufacturer recommendations, and the project plans.

The gabion foundation shall be a 4 feet square by 1.5 feet deep square 3000 psi concrete foundation installed in undisturbed soil or recompacted soil to a minimum of 95% of the maximum density as determined by ASTM D698. The foundation is to have horizontal steel reinforcing as shown on plans. The gabion foundations shall comply with additional requirements indicated on the plans.

Rock for gabions shall be river rock cobble and shall be well graded, varying in size from six to twelve inches. No river rock cobble or substitute river rock cobble shall be used on the project until the color and source have been approved by the Engineer.

Welded wire fabric shall be galvanized and shall conform to the requirements of AASHTO M 55, except that the minimum weight of the zinc coating shall be 0.15 ounces per square foot of actual surface. Wire fabric shall be of the diameter, spacing, pattern, and dimensions shown on the plans.

Construction Requirements:

Pilasters are to be constructed at the locations shown on the plans, unless otherwise approved by the Engineer.

Gabion Basket Pilasters are to be placed after Item 9030008 FENCE (8' WROUGHT IRON) construction is complete. Gabion Basket mesh frame is to be bolted in place and then filled with river rock cobble.

Method of Measurement:

Miscellaneous Work (Gabion Basket Pilaster) will be measured on an each basis, complete in place as shown on the plans, including spread footing.

Basis of Payment:

The accepted quantities of Miscellaneous Work (Gabion Basket Pilaster), measured as provided above, will be paid for at the contract unit price each to construct the gabion basket pilaster complete in place, which shall include all materials, excavation, embankment, compaction, and final grading.

- ITEM 9240129 – MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS)
(MANUAL /MECHANICAL METHODS):**
**ITEM 9240182 – MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS)
(HERBICIDE):**

Description:

The work under these items shall consist of controlling noxious and invasive plant species, manually /mechanically or with the application of herbicides, in the areas designated by the Engineer, and throughout the duration of the contract, as required in a Noxious Species Control Plan (NSCP) prepared by the contractor as specified herein. When noxious or invasive plant species are determined to be present within the project limits or all anticipated construction zones, the control procedures in the NSCP shall be implemented with the approved weed management measures achieved prior to earth moving activities of infested areas. The weed control procedures in the NSCP shall also be implemented during all stages of construction and in advance of seeding. In addition, all construction related equipment, materials, and personnel moving in and/or out of project site shall be inspected and treated for noxious and invasive plant species (seeds, seed heads / pods) at no additional cost to the Department.

For projects that include Landscape Establishment, as specified in Section 807 of the Standard Specifications and these Special Provisions, control of noxious and invasive plant species will also be required throughout the landscape establishment phase, and shall be included in the contractor's NSCP.

The control of plant species not on the State or Federal Noxious or Invasive lists - especially Forest Service Regional/BLM lists noted below will be paid only when control is directed by the Engineer based on the original or amended NSCP approved by the ADOT construction Professional Landscape Architect (PLA) licensed in the State of Arizona.

The areas to be designated by the Engineer for Control of Noxious Plants shall be coordinated with ADOT construction PLA.

Materials:

General

The types of herbicide to be used and the methods of application shall conform to U. S. Environmental Protection Agency (EPA), and/or Arizona Department of Environmental Quality (ADEQ) requirements, and the product's label instructions, as approved by the Engineer. When applicable, the contractor shall file a Notice of Intent (NOI) and Notice of Termination (NOT) to EPA and/or ADEQ for compliance with the National Pollutant Discharge Elimination System (NPDES) and/or Arizona Pollutant Discharge Elimination System (AZPDES) Pesticide General Permit.

All materials to be used shall be listed and protocol information provided in the Noxious Species Control Plan, as specified below. The contractor shall provide the container with the original chemical label for inspection and confirmation of the chemicals used. All containers shall be disposed of as recommended by the manufacturer.

Herbicides proposed in the plan for use on projects adjacent to BLM and/or USFS Lands shall be in conformance with the following current environmental documents including: "Final Vegetation Treatments Using Herbicides Programmatic Environmental impact Statement for BLM" available electronically at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html or the "Environmental Assessment for Management of Noxious Weeds and Hazardous Vegetation on Public Roads on National Forest System Lands in Arizona" is available at: <http://azmemory.azlibrary.gov/cdm/ref/collection/feddocs/id/486> . Additionally, Tonto National Forest Herbicide Application Information is available at: http://www.fs.usda.gov/detail/tonto/landmanagement/resourcemanagement/?cid=fsbdev3_018789 . The Environmental Documents include a list of approved Herbicides, Mitigations and Best Management Practices, which as appropriate, should be included by the contractor in the submitted NSCP.

Web links of noxious weeds and invasive plant species environmental analysis for the six (6) National Forests within Arizona:

1. Final EIS (Environmental Impact Statement) and Record of Decision for Noxious Weed Treatment on the Coconino, Kaibab, and Prescott National Forests:
<http://www.fs.usda.gov/project/?project=30>

2. Coronado National Forest EA (Environmental Assessment) for Noxious Weed Treatments:
<http://www.fs.usda.gov/detail/coronado/landmanagement/resourcemanagement/?cid=stelprdb5123160>
3. Apache-Sitgreaves National Forest EIS for Noxious Weed Treatments:
http://data.ecosystem-management.org/nepaweb/nepa_project_exp.php?project=4967
4. Tonto National Forest EA for Treatment of Noxious Weeds:
http://data.ecosystem-management.org/nepaweb/nepa_project_exp.php?project=4454

All materials used shall also be in accordance with the approved NSCP and Pesticide Use Proposal (PUP).

Construction Requirements:

The contractor shall develop a NSCP for state and federal listed noxious and invasive plant species, and other undesirable plant species shown on the Roadside Development web site (<http://www.azdot.gov/business/engineering-and-construction/roadway-engineering/roadside-development>) for approval by ADOT construction PLA. Four copies of the proposed NSCP in standard three (3) ring binders shall be submitted to the Engineer within seven (7) calendar days after the Execution of Contract. ADOT construction PLA shall review and respond to the proposed NSCP within 14 calendar days upon receiving the submittal. If requested, additional copies may be submitted for review and comments by Native American Community designated representative as approved by the Engineer. Native American Community designated representative shall also review and comment the proposed NSCP within 14 calendar days upon receiving the submittal. The contractor proposed NSCP shall include as minimum the following information applicable to the project area, location and conditions listed below:

- (1) A list of Noxious and Invasive Species and other Roadside Development approved plant species that would be anticipated for control based on existing vegetation and the project biotic communities. The weed species shall include but not be limited to the TABLE - I listed below:

TABLE - I	
Scientific Name	Common Name
<i>Brassica tournefortii</i>	Sahara Mustard / Mediterranean Mustard / Prickly Turnip
<i>Cynodon dactylon</i> (syn. <i>Capriola dactylon</i>)	Bermudagrass / Devilgrass
<i>Pennisetum ciliare</i> (syn. <i>Cenchrus ciliaris</i>)	Buffelgrass / African Foxtail Grass
<i>Salsola kali</i> subsp. <i>tragus</i> (syn. <i>Salsola iberica</i>)	Russian Thistle / Tumbleweed
<i>Tamarix sp.</i>	Saltcedar

- (2)** The methods of control of noxious and invasive plant species shall be determined based on the species present within the project limits prior to earth moving activities as well as subsequent project construction phases before seeding. Pre-emergent herbicide shall NOT be applied for all project seeding areas. The contractor shall provide information / resolutions on how the application of herbicides will NOT harm the expected seed germination and establishment as specified in the Section 805 of these Special Provisions.
- (3)** The proposed method(s) of control, either manual / mechanical control or herbicide application, to be used for each anticipated plant species at each of stage of plant development.
- (4)** The herbicides, method and frequency of application, and rates to be used for each listed plant species.
- (5)** Copies of herbicide and surfactant labels and Material Safety Data Sheets (MSDS) for all chemicals proposed for use.
- (6)** Procedure for collection, removal and disposal of noxious and invasive plants.
- (7)** Methods and procedures to be followed to protect existing, transplanted, and new emerging vegetation in seeded areas.
- (8)** Responsible Applicator and required Office of Pest Management Applicator Licensing information, as specified in Section 806.
- (9)** Record procedures to be followed for control work completed.
- (10)** Record procedures to be followed for reporting all chemicals used annually within the project right of way adjacent to BLM or USFS Lands within two (2) months to ADOT construction PLA.
- (11)** Projects on right of way adjacent to BLM Lands shall include a completed Pesticide Use Proposal (PUP) form for all proposed herbicide uses prepared for submittal to BLM for approval.
- (12)** Projects on right of way adjacent to USFS Lands shall include the USFS, ADOT approved PUP.
- (13)** When applicable, other information and explanations required in the PUP or to implement the NSCP.
- (14)** Process to be used for amending the NSCP to add additional plants or treatments that may be required as the project progresses.
- (15)** A copy of the original Special Provisions for Control of Noxious Plants that the contractor bid shall be attached to the NSCP.

The NSCP submitted to the Engineer shall not be implemented until it is approved by ADOT construction PLA and the contractor is so directed by the Engineer.

The contractor shall keep a copy of the approved NSCP and furnish to the Engineer a copy of the approved NSCP for record keeping. The NSCP copy of the contractor and Engineer shall be maintained up-to-date with the contractor providing submittals of completed work activities within five (5) working days following completion of the work for each area directed by the Engineer for control. The NSCP shall be maintained up-to-date with submittals of the above completed NSCP information for the duration of the project.

The Engineer will designate the location of the areas to be treated, and when required the frequency of treatment as per the NSCP. Payment will be made for the initial treatment of each area, whether with manual / mechanical methods or using herbicides, and for each subsequent treatment ordered and approved by the Engineer.

The contractor shall begin control of the designated areas within five (5) working days of the Engineer's notice, and complete the treatment within ten (10) working days of the notice unless otherwise approved by the Engineer.

If other plant species listed in the Arizona Noxious Weed List, the Forest Service Regional/BLM lists, or the Arizona Invasive Non-Native Plants' Categorized List <http://www.swvma.org/InvasiveNon-NativePlantsThatThreatenWildlandsInArizona.pdf> occur within the project area that are not included in the NSCP, the contractor shall modify the Noxious Species Control Plan to add such species, including acceptable control measures and where applicable a PUP, and submit this information as an amendment of the NSCP to the Engineer and ADOT construction PLA for acceptance.

ADOT Invasive and Noxious Plant Species Lists are available electronically at the following Roadside Development web address:

<http://www.azdot.gov/docs/business/adot-invasive-noxious-plant-species-list-for-construction-projects.pdf?sfvrsn=0>

The project areas will be surveyed by ADOT construction PLA, with the approval of the Engineer, prior to earthmoving activities and following rainfall events and during plant germination and growth periods for listed noxious and invasive plant species. When surveys determine that noxious, invasive or other designated plants species listed in the NSCP for control are found to be present within the project right-of-way, the contractor shall treat the areas designated by the Engineer in accordance with the approved NSCP. Such treatments shall be completed and approved by the Engineer before ground disturbing or earthmoving activities occur from those areas.

The contractor shall mark those areas receiving manual / mechanical control with an application of a photosensitive dye. Herbicides shall be mixed with a photosensitive dye which will produce a contrasting color when sprayed upon the ground. The color shall disappear between three (3) and five (5) days after being applied. The dye shall not stain any surfaces nor injure non-target plant or animal species when applied at the manufacturer's recommended application rate.

Application of herbicide shall be in accordance with the manufacturer's instructions and the approved NSCP. Responsible herbicide applicator shall be licensed under the appropriate category as required by the State Law.

Mowing shall be allowed if it is proven to be a successful permanent control method of annual noxious /invasive plant species as approved by the Engineer. If approved, mowing shall be performed before the annual noxious /invasive plant species are able to set seed. Mowing shall NOT be operated in areas where there are perennial noxious /invasive plant species. Mowing shall NOT be utilized for noxious /invasive plant species that carry existing seeds (seed heads /pods). All project areas and plant species to be mowed shall be carefully evaluated / identified by ADOT construction PLA with approval from the Engineer.

The contractor shall remove the identified noxious /invasive woody vegetation to finished grade level without uprooting it (flush cutting). In order to stop stump regrowth, the applicable remaining stumps shall be promptly treated with suitable herbicide so the identified noxious /invasive woody vegetation will not sprout new growth from the stumps. Such process shall be evaluated by ADOT construction PLA with approval from the Engineer.

Removal of soil seed bank that has been contaminated by the natural storage of seeds from noxious /invasive plant species shall be required for projects involving soil / ground disturbance from roadway / drainage excavations or as designated by the Engineer. The contractor shall remove top three (3) inches of the existing undisturbed surface soil from the project areas infested with noxious /invasive plant species as evaluated / identified by ADOT construction PLA with approval from the Engineer. All removed contaminated soil seed bank shall be properly disposed of or placed (buried) below the top two feet (2'-0") of the final finished grade as directed by the Engineer. The removal, stockpile, burial, or disposal of contaminated soil seed banks shall be well contained / concealed during construction. The contractor shall then return all soil-seed-bank removal disturbed area, to an acceptable surface condition (finished grade), as approved by the Engineer.

No earthmoving activities to the treated areas shall be approved until the employed weed management measures have been inspected to be successfully achieved as per the approval of the Engineer.

For projects on right of way within BLM jurisdiction, PUPs shall be prepared and submitted to the Engineer and ADOT construction PLA as required in the NSCP. The PUPs will be submitted by the Department to BLM and must be approved by the BLM before being approved by the Engineer.

For projects on right of way within Forest Service jurisdiction, application of the herbicide shall be in accordance with the USFS, ADOT approved PUPs for the chemicals to be used.

The contractor shall keep records of all herbicide applications. A copy of this record shall be added to the NSCP and also submitted to the Engineer after each application. The

contractor shall be responsible for the proper transport, storage, and application of all materials necessary for herbicide control treatments.

Method of Measurement:

Control of noxious and invasive plant species, either manually (mechanically) or with herbicides, will be measured by the square yard (SQ.YD.) of each treated area, as directed and approved by the Engineer.

Basis of Payment:

The accepted quantities of control of noxious and invasive plant species, either manually (mechanically) or with herbicides, measured as provided above, will be paid for at the contract unit price for each soil treatment directed and approved by the Engineer. Such price will be considered to include all labor, materials, equipment, and mobilization costs required to complete the work as specified herein.

No measurement or payment will be made for treatment of those areas, manually / mechanically or with herbicides, not authorized and approved by the Engineer. No measurement or payment will be made for the removal and proper disposal of waste materials, the cost being considered is included in contract items.

No measurement or payment will be made for preparation of the NSCP and, when applicable, the PUP, including the initial submittal and modifications, or for monitoring, the costs being considered is included in contract items.

No separate measurement or direct payment will be made for Control of Noxious Plants under Landscape Establishment as specified in Section 807 of the Standard Specifications and these Special Provisions; the cost being considered is included in the respective contract item of Landscape Establishment.

For projects engaging roadway / drainage excavations, no separate measurement or direct payment will be made for the removal, stockpile, burial, or disposal of contaminated soil seed banks, as well as returning all soil-seed-bank removal areas to an acceptable surface condition (finished grade); the cost being considered is included in the respective contract item of roadway / drainage excavations.

(924CQC, 03/02/09)

ITEM 9240170 - CONTRACTOR QUALITY CONTROL:

1.0 Description:

The work under this section shall consist of furnishing all personnel, materials, supplies, facilities and equipment necessary to perform all certification of test equipment, sampling, testing, and other control actions. The work shall also include the preparation of linear control charts, Weekly Quality Control Reports, and other reports and records as described in Subsection 106.04(C) of the Specifications.

2.0 Method of Measurement:

Contractor Quality Control will be measured for payment on a lump sum basis as a single unit of work.

3.0 Basis of Payment:

3.1 General:

The accepted quantities of Contractor Quality Control, measured as provided above, will be paid at the contract lump sum price, which price shall be full compensation for the work, complete, as described and specified herein.

Partial payments under this item will be made in accordance with the following provisions:

(a) The first partial payment price will be the lesser of twenty five percent of the contract lump sum price for Contractor Quality Control, or one percent of the original total contract bid amount.

(b) The remaining portion of the lump sum price will be prorated over the duration of the original contract on a monthly basis, and monthly progress payments will be made.

If adjustments to pay items covered under Contractor Quality Control are approved by supplemental agreement, an equitable adjustment to the lump sum amount for Contractor Quality Control may be made. Any adjustment to Contractor Quality Control shall be included in the supplemental agreement and the adjusted amount, less previous payments, will be prorated equally over the remaining contract period, including any related time extensions.

3.2 Delinquent Reports:

Failure of the contractor to submit complete and accurate Weekly Quality Control Reports, current to the most recent Wednesday submittal date, will be grounds for the Engineer to deduct monies from the contractor's progress payment.

For each Weekly Quality Control Report that is not complete and accurate, and not submitted to the Engineer by the Wednesday submittal date specified in Subsection 106.04(C)(6), the Department will deduct \$2,500.00 from the progress payment for the current month.

For each delinquent Weekly Quality Control Report submitted to the Engineer within 10 business days of the original Wednesday due date, \$2,000.00 will be returned on the next regular estimate, provided all of the requirements specified herein and in Subsection 106.04(C)(6) have been met, and the report is complete and accurate. No deducted monies will be returned for reports submitted more than 10 business days beyond the original Wednesday due date.

All deducted monies which are retained by the Department, as specified above, are liquidated damages.

(925SRVY, 02/20/08)

SECTION 925 - CONSTRUCTION SURVEYING AND LAYOUT:

925-5 Basis of Payment: the first two sentences of the second paragraph of the Standard Specifications are revised to read:

If additional staking and layout are required as a result of additional work ordered by the Engineer, such work will be paid under ITEM 9250101 - ONE-PERSON SURVEY PARTY at the predetermined rate of \$65 per hour, ITEM 9250102 - TWO-PERSON SURVEY PARTY at the predetermined rate of \$100 per hour, ITEM 9250103 - THREE-PERSON SURVEY PARTY at the predetermined rate of \$135 per hour, ITEM 9250106 – SURVEY MANAGER at the predetermined rate of \$100 per hour, and ITEM 9250105 - OFFICE SURVEY TECHNICIAN at the predetermined rate of \$70 per hour.

(1001MATL, 12/14/09)

SECTION 1001 MATERIAL SOURCES: of the Standard Specifications is revised to read:

1001-1 Description:

The work under this section shall consist of the procuring of borrow, topsoil, subbase and base materials, mineral aggregates for concrete structures, surfacing, and landscape plating, from sources either designated on the project plans or in the Special Provisions or from other sources.

1001-2 General:

The contractor shall determine for itself the type of equipment and work required to produce a material meeting the specifications.

Sites from which material has been removed shall, upon completion of the work, be left in a neat and presentable condition. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so that they will not be visible from the highway.

The contractor shall provide an Environmental Analysis, as specified in Subsection 104.12, for any source proposed for use regardless of whether an approved Environmental Analysis exists for the site.

In accordance with Subsection 104.12, the contractor may incorporate an existing Environmental Analysis approved after January 1, 1999, provided that the analysis is updated as necessary to be in compliance with current regulations and with the contractor's planned activities.

It shall be the responsibility of the contractor to conduct any necessary investigations, explorations, and research, on-site and otherwise, before and after submitting the bid proposal, to satisfy itself that the specified quantity and/or quality of material exists in any proposed material source.

The Department makes no representation regarding quality or quantity of materials in any source.

1001-2.01 Material Sources in Flood Plains:

Any material source located in a flood plain and proposed for use on the project shall be reviewed by the appropriate agency having flood plain management jurisdiction for the area in which the proposed source is located. The contractor shall obtain a letter from the governing flood plain agency addressed to the Engineer, certifying that the location of the proposed source conforms to the requirements of the floodplain management agency.

Contractors seeking a flood plain material source are cautioned that Section 404 of the Clean Water Act may prevent use of the source unless an appropriate permit is first obtained from the U.S. Army Corps of Engineers.

Except for surplus material from agency-administered flood control management projects, borrow material shall not be obtained from any area situated in the 100-year flood plain of any stream or watercourse, and located within one mile upstream and two miles downstream of any highway structure or surfaced roadway crossing. Surplus material from agency-administered flood control management projects may be used as borrow material only if the contractor submits written evidence to the Engineer that the flood control agency project was fully designed and funded prior to the date of advertisement for bids on the Department project.

Material sources in flood plains located on Native American Indian Reservations will be considered for use based on an individual analysis. The analysis shall include a review of applicable land use plans, flood plain management plans, environmental plans, applicable laws and regulations pertaining to Indian Reservations, and an engineering analysis of the effects on any highway facility or structure. The contractor shall obtain from the Native

American Tribal Council all permits, licenses, and approvals and present to the Department for review. The Department will review each request on a case by case basis.

1001-2.02 Information Available:

The Department's Materials Group maintains a listing of materials sources for which a completed Environmental Analysis is available and the landowner has allowed the source to be placed on the list. In addition, Materials Group maintains files for those sites for which the Department holds an easement, license, permit, lease, or other right, as well as a General Plan of Operation and Restoration. The contractor may contact the Materials Group at (602) 712-7231 for information and may review the files located at 1221 N. 21st Avenue, Phoenix, Arizona 85009-3740.

Contractors are advised that an agency having jurisdiction over the source, such as the Forest Service, Bureau of Land Management, Bureau of Reclamation, the State Land Department, etc., or the owner, as a condition to the use of the source, may have imposed certain obligations. The contractor who uses such a source shall assume full contractual responsibility for any and all of these obligations imposed either by the agency having jurisdiction or by the owner. Contractors considering such a source shall make themselves fully aware of any and all requirements imposed by the Department and the landowners.

The contractor may propose the use of these or other sources, provided that all requirements of the specifications have been met.

It shall be the responsibility of the contractor to comply with the provisions of the Environmental Analysis and with current laws, rules, and regulations.

The Department makes no representation regarding quality or quantity of materials in any source.

It shall be the responsibility of the contractor to conduct any necessary investigations, explorations and research, on-site and otherwise, to satisfy itself that the specified quantity and/or quality of material exists in any material source.

1001-2.03 Usage of Materials:

Approval of the use of any source shall be limited to the specific contract and purpose for which the use of the source was obtained.

1001-2.04 Royalty Charges:

If the Engineer approves a source for which the Department holds an easement, license, permit, lease, or other right with the landowner or controlling agency that includes requirements for the payment of royalties, the amount of the royalty charges and the name and address of the party to whom royalties are to be paid will be available from the Materials Group, 1221 N. 21st Avenue, Phoenix, Arizona 85009-3740.

Prior to the time of final payment, the contractor shall furnish the Engineer with evidence that all royalty charges have been paid. Such evidence shall consist of a waiver, release, or other written acknowledgement from the owner that all of the contractor's obligations to the owner have been met. In the event that royalty charges have not been paid, the Department reserves the right to make such payment and to deduct the amount of such payment from monies due the contractor.

The final billing and payment for material extracted from sources under the jurisdiction of the State Land Department will include a small administrative charge based on the total amount of royalties due for materials removed.

Upon receipt of the final billing from the Department of Transportation, the contractor shall mail a check, payable to the State Land Department, addressed as follows:

Arizona Department of Transportation
Field Reports Section
206 South 17th Avenue
Phoenix, Arizona 85007

1001-2.05 Performance Bonds:

If sources are under the jurisdiction of either the State Land Department or the Bureau of Land Management, the contractor shall secure a performance bond. A fully executed copy of the bond shall be furnished to the Engineer along with evidence that a fully executed copy has been sent to the State Land Department or the Bureau of Land Management.

The form of the Performance Bond will be available from the Materials Group, 1221 N. 21st Avenue, Phoenix, Arizona 85009-3740. For pits under the jurisdiction of the Bureau of Land Management, the surety shall be a company listed under "Surety Companies Acceptable on Federal Bonds." This list is published annually as of July 1 in the Federal Register.

Performance bonds shall be conditioned upon the compliance with the requirements of the State Land Department and the Bureau of Land Management and the requirements of the specifications for the clearing of pit sites, the removal of material and the cleaning up of pit sites.

Copies of fully executed performance bonds shall be mailed as follows:

State Land Commission
State Land Department
1624 West Adams Street
Phoenix, Arizona 85007

Bureau of Land Management
Manager, Land Office
222 North Central Avenue
Phoenix, Arizona 85004

1001-2.06 Sampling and Testing:

The results of any sampling and testing accomplished by the Department will be available from the Materials Group, 1221 N. 21st Avenue, Phoenix, Arizona 85009-3740.

1001- 2.07 Plan of Operation and Restoration:

The contractor shall determine whether the Department holds an easement, license, permit, lease or other right, for any proposed material source. For such sites, a project-specific Plan of Operation and Restoration will be required. The contractor shall obtain a copy of the related document and the Department's General Plan of Operation and Restoration for the proposed site from the Materials Group. The contractor shall prepare and submit to the Engineer a project-specific Plan of Operation and Restoration which shall follow the format of the Department's General Plan of Operation and Restoration, and shall take into account the requirements of the Environmental Analysis, as well as any restrictions placed on the use of the source by the landowner or agency.

The proposed source will not be approved without an approved project-specific Plan of Operation and Restoration. Approval of the contractor's project-specific plan does not constitute approval of the use of the source.

The contractor shall identify and provide a person in charge of the operation. That person shall maintain copies onsite of the Department's General Plan of Operation and Restoration, the contractor's approved project-specific Plan of Operation and Restoration, the current Environmental Analysis, and the license and permits issued to the Department by the landowner or agency.

1001-3 Proposed Source:

1001-3.01 Approval Requirements:

(A) General:

The contractor shall promptly advise the Engineer as to the source that it proposes to use.

The contractor acknowledges that all the conditions set forth in this subsection shall be met prior to the source being approved for use.

Other than sampling and testing, the requirements of this subsection shall be completed prior to initiation of any activities that disturb the existing conditions at the proposed source.

The contractor further acknowledges that no additional compensation will be made on account of any delays in preparing or modifying the Environmental Analysis, obtaining approval for the use of a source, or the failure to obtain approval of a source. An extension of contract time may be granted only in accordance with Subsections 104.12 or 1001-3.01(B)(4).

Regulatory changes, specification changes, or other reasons may preclude the approval of a materials source. The contractor acknowledges that the Department may refuse to approve a material source even if the Department had approved the source for other projects.

If all of the requirements for approval of a materials source have been accomplished for the project, and the Engineer has approved the source for use on the project and, subsequent to that approval, the Environmental Analysis is rescinded, the contractor may request a revision to the contract in accordance with Subsection 104.02 and 108.08. In reviewing the contractor's request, the Department will take into account the following factors. Additional factors may be considered.

- (1) Whether the contractor was in compliance with the requirements of the Environmental Analysis and, if applicable, the site-specific Plan of Operations and Restoration.
- (2) Whether the reasons for rescinding the approval were reasonably foreseeable.
- (3) Whether the action taken was the result of regulatory changes.
- (4) Whether deficiencies unrelated to the Environmental Analysis may have rendered the source unacceptable.
- (5) Whether rescinding the approval was the sole cause of any impact to controlling activities on the project.

(B) Specific Conditions For Approval:

The use of a source will require written approval by the Engineer. No approval will be given until the contractor has complied with the following conditions:

- (1) The contractor has submitted an Environmental Analysis, as specified in Subsection 104.12, of the source proposed for use and the Department has reviewed the analysis and satisfied itself that the use of such source will not have an adverse social, economic or environmental impact. The requirements of Subsection 1001-3.01 shall be completed prior to initiation of any activities that disturb the existing conditions at the proposed source, except for exploring test areas as specified in Subsection 1001-3.02.
- (2) The contractor has furnished the Engineer with evidence that he has secured the rights to the source, including ingress and egress.
- (3) The Department has determined that the material from the proposed source not only meets the requirements, but is also compatible with the established project design criteria developed by the ADOT Materials Group and based on the soil support value of the embankment; and the sampling and testing as herein specified has been satisfactorily completed.
- (4) The contractor has furnished a fully executed copy of the Performance Bond as specified in Subsection 1001-2.05.

- (5) When required, the contractor has submitted, and the Department has approved, the site-specific plan of operations and restoration as specified in Subsection 1001-2.07.

The contractor shall also notify the Arizona Department of Agriculture, in accordance with the Arizona Native Plant Law, at least 30 days prior to any clearing operations of less than 40 acres on private land, 60 days prior to clearing operations of 40 or more acres on private land, and 60 days prior to any clearing of state land, regardless of size. If the Engineer is convinced that the contractor has made every effort to comply with the provisions of the Arizona Native Plant Law in contacting the Department of Agriculture, the Engineer will increase the number of contract days by the amount of time required for action by the Department of Agriculture. The increase will not exceed 45 calendar days and will be concurrent with any increase allowed for the preparation of the Environmental Analysis.

(C) Historical and Cultural Resources:

If the Department determines that the proposed use will have major adverse impact on cultural or historic resources, the Department will not allow the use of the source.

(D) Permit from Navajo Nation:

For projects located on the Navajo Reservation, the Navajo Nation has adopted a permitting system for any sources, regardless of whether on or off the Navajo reservation, which are to supply material for projects located within its boundaries. No material source will be approved until the contractor submits a copy of the permit from the Navajo Nation allowing materials from the proposed source to be used on the project. For information concerning the permit, the contractor shall contact the Navajo Nation Historic Preservation Office.

1001-3.02 Testing Requirements:

The contractor shall furnish equipment and personnel and shall obtain representative samples of the material under the supervision of the Engineer. At the option of the contractor, the material shall be tested by either the Department or by a testing laboratory approved by the Department. The cost of all sampling and testing done for the purpose of attaining approval of any source, including the cost of supervision by the Engineer, shall be borne by the contractor.

If testing is performed by a testing laboratory, the contractor shall arrange for the samples to be delivered to the testing laboratory. Tests shall be performed using appropriate test procedures referred to in the sections of the specifications in which the specific material requirements are described.

The contractor shall make the arrangements necessary to see that the testing laboratory submits the results of the tests to ADOT Materials Group. The contractor shall submit to ADOT Materials Group sufficient quantity of material from the samples taken so that ADOT Materials Group may test the materials, at the Department's expense, and verify the results.

Exploratory sampling and testing activities conducted prior to the Department's approval shall be limited so as to cause the minimum amount of vegetation removal and surface disturbance required to obtain representative samples. The contractor shall not produce material, mobilize crushing equipment or clear a worksite prior to approval of the Environmental Analysis.

The contractor may request an exemption from the testing requirements specified in this subsection upon presentation of evidence to the satisfaction of the Engineer that the material that will be produced on the project is sufficiently similar to material that has been previously acceptable to the Department on projects with similar materials specifications.

No approval of the source shall be assumed, nor will it be made, until the Department has determined that the material meets the specified requirements.

The contract time will not be adjusted because of any time required by either the contractor or the Department to sample and test the material and to determine the quality of the material.

1001-4 Special Access:

The contractor may make a request to the Engineer to approve special access to a controlled access highway if special access is not shown on the project plans.

The request by the contractor shall be accompanied by an Environmental Analysis and by documents which specify the point(s) of access, the acquisition of right-of-way, the manner in which access will be attained, the traffic control plan, and crossovers, along with all other appropriate data which will allow the Engineer to evaluate its request. If the request is approved, a supplemental agreement shall be entered into.

All costs associated with the special access requested by the contractor shall be borne by the contractor, including, but not limited to, cattle guards, fences, gates and restoration work.

When access is not being utilized, gates shall be closed and locked. Upon completion of all operations, the area within the right-of-way that has been disturbed shall be restored to the condition existing prior to the contractor's operations.

The decision by the Engineer to deny a request by the contractor will be considered to be final.

1001-5 Operations at Source:

1001-5.01 General Requirements:

The contractor shall conduct its operations in such a manner as to preserve available materials in excess of project requirements.

The contractor shall notify the Engineer in advance of operations at the source. Notice shall be given before and after clearing and grubbing, and before and after cleaning up.

1001-5.02 Clearing and Grubbing:

Before beginning stripping, the contractor shall clear and grub the source as necessary to prevent the contamination of materials to be used in the work. Clearing and grubbing shall be in accordance with the requirements of Section 201, except that the resulting surface need not be leveled and vegetable matter need not be separated from any overburden which the Engineer determines to be unsuitable for any future use and which is to be wasted. Clearing and grubbing shall be limited to the area expected to be excavated and areas used for processing and stockpiling.

In the disposal of all tree trunks, stumps, brush, limbs, roots, vegetation and other debris removed, the contractor shall comply with the requirements of the Arizona Revised Statutes Title 49 Chapter 3 – Air Quality; and with the Arizona Administrative Code Title 18 Chapter 2 – Department of Environmental Quality – Air Pollution Control.

Burning will be permitted only after the contractor has obtained a permit from the Arizona Department of Environmental Quality, and from any other Federal, State, County or City Agency that may be involved.

When stripping is required, overburden shall be removed to the extent necessary to remove all undesirable materials and shall, at all times, be kept stripped at least five feet beyond the working face of the area being excavated.

The contractor shall comply with the requirements of the landowner or agency having jurisdiction over the land.

1001-5.03 Extraction of Materials:

Materials shall be removed from the source in a workmanlike manner and, when required, in accordance with the contractor's project-specific Plan of Operation and Restoration. In order to produce acceptable material in the amount and gradation required, it may be necessary for the contractor to do any or all of the following, along with any other similar operations usually associated with the extraction, processing and production of the particular material being produced:

- Move materials from one area to another.
- Perform additional screening.
- Remove, wash and waste material.
- Blend materials.
- Revise crushing methods.
- Remove deleterious materials such as clay balls, roots and sticks.

If the Engineer determines that the material in a source is stratified, all material except borrow shall be removed for the full depth in such a manner as to produce a uniform blend of the material. Placing the material from different areas and depths into a surge pile and

removing material from the surge pile by cutting through the pile will be acceptable provided that a uniformly blended material is obtained.

Material sources located in drainage channels such as washes, riverbeds, etc., may experience seasonal variations in the depth of ground water. In order to produce the quantity of material estimated to be available, the contractor may be required to work below the water table.

1001-6 Fences and Cattle Guards:

Where the haul roads to material sources cross existing fence lines in areas where there is livestock of any kind, temporary cattle guards shall be installed by the contractor at each crossing.

The livestock operator or owner shall be contacted prior to the beginning of any operations and effective measures shall be taken and means provided by the contractor to prevent livestock from straying.

In operations where conditions will exist that are dangerous to livestock of any kind, temporary cattle guards and fence shall be installed around the pit area by the contractor to protect livestock.

Temporary cattle guards and fence installed by the contractor shall be removed and existing fence disturbed shall be replaced or reconstructed and all fence shall be left in as good condition as it was prior to the beginning of work.

1001-7 Cleaning Up:

All overburden and other undesirable materials removed and all piles of waste materials resulting from operations in the source shall be handled in accordance with the requirements of the landowner or agency having jurisdiction over the land, the Environmental Analysis, the project-specific Plan of Operation and Restoration, if applicable, and all laws, rules and regulations. All debris shall be removed and disposed of and, if directed, all open test holes shall be filled. Unless otherwise required, the sides of sources shall be sloped and smoothed so that livestock can enter and leave the excavated area safely. Unless otherwise required, all haul roads shall be obliterated and, as far as practicable, the ground left in as good condition as it was prior to hauling.

1001-8 Method of Measurement and Basis of Payment:

Except as may be otherwise specifically provided for in this section or elsewhere, no measurement or direct payment will be made for any costs involved in the procuring of materials. Such costs shall be considered as included in the cost of contract items.

(1002PNT, 11/06/12)

SECTION 1002 PAINT: of the Standard Specifications is revised to read:

1002-1 General Requirements:

All paints specified herein shall be ready-mixed at the manufacturer's plant, except for inorganic zinc-rich primer, which shall be mixed by the fabricator or at the project site just prior to application. All paints shall be standard paint products of the manufacturer with published product data sheets and shall comply in all details with the specifications.

Ready-mixed paint shall be homogeneous, free of contaminants, and shall be of a consistency suitable for the use for which it is specified. The pigment shall be finely ground and properly dispersed in the vehicle, according to the requirements for the type of paint, and this dispersion shall be such that the pigment does not settle appreciably, does not cake or thicken in the paint container, and does not become granular, jelled, or curdled. Any settlement of pigment in the paint shall be easily dispersed with a paddle so as to produce a smooth uniform paint of the proper consistency. The manufacturer shall include in the paint the necessary additives for control of sagging, leveling, drying, drier absorption, and skinning.

Lead, lead compounds, soluble barium compounds, or hexavalent chromium compounds shall not be used as raw materials in the paint formulas specified under this section, and shall not be added to any paint formulas specified under this section.

The use of halogenated solvents is not permitted.

Paint shall be furnished in new, unopened air-tight containers, which are clearly labeled with the exact title of the paint, Federal Specification number when applicable, name and address of the manufacturer, product code, date of paint manufacture, and the lot or batch number. The containers shall meet U.S. Department of Transportation Hazardous Materials Shipping Regulations. Precautions concerning the handling and the application of the paint shall be shown on the label of the paint containers.

All of the paints of any coating system consisting of individual paints (such as a primer, intermediate coat, and topcoat), shall be made by the same manufacturer, and shall be designed and sold to be used together as a system.

Only paints and paint systems approved in accordance with Subsection 1002-3 and shown on the Department's Approved Products List (APL) will be allowed for use. Copies of the most current version of the APL are available on the internet from the ADOT Research Center, through its Product Evaluation Program. Paint supplied by an approved manufacturer with a different product code from that which was previously evaluated and approved will require evaluation to determine if it is acceptable.

The contractor shall submit to the Engineer a Certificate of Compliance for each lot or batch of paint supplied, in accordance with Subsection 106.05, prior to its use. Product data

sheets listing the paint constituents and their proportions as well as Materials Safety Data Sheets (MSDS) are required for each paint material supplied prior to its use.

All applicable governmental environmental regulations shall be adhered to during cleanup and for the disposal of unused paint.

1002-2 Paint Types:

1002-2.01 Three-Paint Coating System:

(A) General:

A three-paint coating system shall be for use on metallic surfaces, and shall include a primer (Paint Number 1), intermediate coat (Paint Number 2), and topcoat (Paint Number 3) from the same system. All three paints shall be water-based, 100 percent acrylic (acrylic latex) paints, unless a non water-based primer is specified, in which case, the topcoat and intermediate coat must be a water-based acrylic paint.

Each individual paint shall conform to all of the chemical and physical characteristics and properties as declared on the manufacturer's product data sheet. In addition, the paint color shall be as specified in the project plans, and the consistency shall be in accordance with the manufacturer's recommendations. The contractor shall use the checking and calibration procedures found in ASTM D 4212 and verify the paint consistency with the Engineer prior to each application.

Each coating is intended for spray application. Limited application can be made by brushing or rolling if approved by the Engineer.

(B) Paint Number 1 - Primer:

This paint shall be used on blast cleaned steel surfaces for the first coat of a three-paint coating which must include Paint Number 2 and Paint Number 3 from the same system.

(C) Paint Number 2 - Intermediate Coat:

This paint for intermediate coats shall be used on primed steel surfaces as the second coat of a three-paint coating system which must include Paint Number 1 and Paint Number 3 from the same system. The paint shall be appropriately tinted to contrast with the prime coat.

(D) Paint Number 3 - Topcoat:

Paint for topcoats shall be used as the third coat of a three-paint coating system which must include Paint Number 1 and Paint Number 2 from the same system.

For topcoats, the gloss shall be as specified on the project plans. The available colors for topcoats shall provide visual matches to the colors given in the Federal Standard No. 595. The colors shall be available in high-gloss enamels, if required.

1002-2.02 Zinc-Rich Primer:

Zinc-rich primer shall be a solvent based, one-part, epoxy ester, zinc-rich coating made to contain no less than 89 percent by weight of zinc dust in the dried film. Zinc-rich primer is suitable for limited use on cuts, welds, or damaged galvanized surfaces, as needed to restore the continuity of cathodic protection. Zinc-rich primer shall be certified by the manufacturer to be compatible with any suitable water-based acrylic finish paint.

Zinc-rich primer shall be used where zinc paint is called for elsewhere in the specifications.

1002-2.03 Inorganic Zinc-Rich Primer:

Inorganic zinc-rich primer shall be a solvent-based three-component, inorganic, ethyl silicate, zinc-rich coating for use on steel surfaces which will be exposed to severely corrosive environments. The primer shall be mixed in accordance with the manufacturer's directions by the fabricator or at the project site just prior to application. Inorganic zinc-rich primer shall be made to contain no less than 80 percent by weight of zinc dust in the dried film, and shall be certified by the manufacturer to form a strong bond to properly cleaned and prepared steel surfaces, either sandblasted or galvanized. This primer shall also be certified by the manufacturer to be compatible with any suitable water-based acrylic finish paint.

1002-2.04 Alkyd Primer:

Alkyd primer shall be solvent-based, and shall be designed for ferrous metal surfaces where there are rusting issues which rule out the use of a water-based primer. Such surfaces may include ornamental iron, tanks, fabricated parts, handrails, and objects referred to as "black steel." Alkyd primer shall be certified by the manufacturer to be compatible with any suitable water-based acrylic finish paint.

1002-2.05 Direct-to-Metal (DTM) Combination Primer and Finish Paint:

This paint shall be a water-based acrylic paint specially designed for use as a direct-to-metal (DTM) primer or combination primer and finish. The product shall be certified by the manufacturer to form a strong bond to properly cleaned and prepared surfaces of structural steel and other metallic products such as metal buildings, tanks, and pipes. It shall also be certified to bond with other properly cleaned and prepared surfaces such as galvanized steel, oil-based paints, and alkyd enamels. When used on ferrous metal surfaces where there are rusting issues, the paint shall be rust-inhibitive. Direct-to-metal combination primer and finish paints shall be designed to be usable as a complete two or three coat system. When used as a primer only, the paint shall be certified by the manufacturer to be compatible with any suitable water-based acrylic finish paint.

1002-2.06 Acrylic Emulsion Paint:

Acrylic emulsion paint shall be used on concrete and masonry surfaces, and shall be a water-based, 100 percent acrylic (acrylic latex) paint.

This paint may be tinted by using "Universal" or "all purpose" concentrates.

The color of the final coat of paint shall be as indicated on the project plans. If no color is specified on the plans, the paint color shall approximate that of paint color chip No. 30318, as specified by Federal Test Standard Number 595, when applied to either a concrete test specimen measuring two feet by two feet, or to the surface of the concrete structure to be painted.

The Engineer will determine color acceptance by visual inspection.

1002-3 Sampling and Testing:

(A) General:

Any lot or batch of paint may, at any time, be sampled and tested for conformance to the specifications and the chemical and physical characteristics and properties as declared by the manufacturer on the product data sheets submitted with the original samples used in the evaluation and approval of the product. Also, complete coating system samples may be required at any time for follow-up evaluation using the performance test method employed in the original evaluation for approval of the system.

(B) Coating Systems for Structural Steel and Other Metallic Surfaces:

Coating systems composed of the paints specified in Subsections 1002-2.01 through 1002-2.05 will be tested as complete systems applied to steel panels and weathered in accordance with ASTM G 154, and exposure cycle number 4 of ASTM D 4587, in the Q-U-V Accelerated Weathering Tester, utilizing UVB 313 lamps. Each system shall have an evaluation rating of 100 or greater after 2000 hours of weathering. The procedure is as follows:

1. Paint coatings will be applied to cold rolled steel panels (ASTM D 609, Type 3, ASTM A 366). The paint will be thinned to 75 ± 2 Ku consistency using demineralized water. Three coats, each approximately 2 mils thickness are applied to each of four panels according to ASTM D 823. The fourth coated panel from each set will be inscribed with an "X" cut to the steel substrate and extending across the entire coated area.
2. The exposure cycle used with the weathering tester shall be D = 8 h UV/60 degree C followed by 4 h CON/45 degree C. One panel from each set of four shall be removed at 1000 hours and another at 1500 hours. The last two panels shall be removed at 2000 hours.
3. Paint systems will be evaluated on the basis of six measures of degradation which may be found to occur under the conditions of exposure. For each measure, a rating scale of from one to five points will be applied. A rating of one point indicates the poorest performance and five points indicate the best performance. The rating from each measure is multiplied by a weighting factor which represents the relative importance of that measure. The product is a score for that measure. The sum of the scores for all measures is the overall

score for the system. To be acceptable, paint systems shall have an overall score of 100 or higher.

- A) Cracking/Flaking: ASTM D 660, ASTM D 661, and ASTM D 772 are used in combination to determine the rating scale. A weighting factor of three will be applied to the results of these tests.
- B) Blistering/Flaking: ASTM D 714 and ASTM D 772 are used in combination to determine the rating scale. A weighting factor of three will be applied to the results of these tests.
- C) Corrosion: A rating scale is derived from ASTM D 610 for evaluating the degree of rusting. A weighting factor of three will be applied to the results of this test.
- D) Chalking/Erosion: ASTM D 4214 and ASTM D 662 are used in combination to determine the rating scale. A weighting factor of three will be applied to the results of these tests.
- E) Adhesion: The tape test is based on ASTM D 3359 and the rating scale is from the Classification of Adhesion Test Results under Test Method B. A weighting factor of five will be applied to the results of this test.
- F) Flexibility: ASTM D 522, using a 1-1/4 inch mandrel, is employed to determine flexibility. The degree of cracking observed after bending is used to determine the rating scale. A weighting factor of five will be applied to the results of this test.

(C) Paint for Concrete and Masonry Surfaces:

Paint for concrete and masonry surfaces will be tested in accordance with the following procedures:

1) Resistance to Accelerated Weathering:

The paint will be applied to concrete mortar panels and weathered in a Q-U-V accelerated weathering tester, according to ASTM G 154, for 2000 hours utilizing UVB-313 lamps, and exposure cycle number 4 of ASTM D 4587. The paint weathered in this manner shall show no appreciable change in color or appearance due to fading, chalking, or material reaction.

2) Adhesion:

The paint shall be applied to a concrete or masonry test surface approved by the Engineer, in accordance with the application plan specified in Subsection 610-3.03. After a minimum period of 30 days of outdoor exposure, the adhesion of the paint will be measured. Testing will be performed in accordance with the requirements of ASTM D 4541, Method E, with a strength of at least 100 psi being required. In addition, testing will also be performed in

accordance with the requirements of ASTM D 3359, Method A, with a rating of 3A or higher being required.

(1003REBAR, 01/26/16)

SECTION 1003 REINFORCING STEEL:

1003-1 General Requirements: the first paragraph of the Standard Specifications is revised to read:

Reinforcing steel shall be furnished in the sizes, shapes, and lengths shown on the plans and in conformance with the requirements of the specifications.

Certificates of Compliance conforming to the requirements of Subsection 106.05 shall be submitted for epoxy coated reinforcing bars, as well as uncoated reinforcing bars, wire, and welded wire fabric. In addition, for epoxy coated reinforcing bars, Certificates of Compliance shall be required from the coating manufacturer and Certificates of Analysis shall be required from the coating applicator.

1003-2 Reinforcing Bars: the first paragraph of the Standard Specifications is revised to read:

Except when used for wire ties or spirals, steel bars used as reinforcement in concrete shall be deformed and shall conform to the requirements of ASTM A 615. Unless otherwise specified, steel bars meeting the requirements of ASTM A 706 may be substituted for ASTM A 615 steel bars. When ASTM A 706 bars are used, tack welding of the reinforcement will not be permitted unless approved in writing by the Engineer.

1003-3 Wire: of the Standard Specifications is revised to read:

Steel wire used as spirals or ties for reinforcement in concrete shall conform to the requirements of ASTM A 82.

1003-5.02 Epoxy for Coating: the first paragraph of the Standard Specifications is revised to read:

A list of powdered epoxy resins which have passed prequalification tests, as described in ASTM A 775, "Epoxy-Coated Steel Reinforcing Bars", and which may be used if the material is applied and cured in the same manner as that used to coat the test bars in the original powder prequalification test may be found on the Department's Approved Products List. Copies of the most current version are available on the internet from the ADOT Research Center through its Product Evaluation Program.

1003-5.02 Epoxy for Coating: the fifth paragraph of the Standard Specifications is revised to read:

The contractor shall furnish a Certificate of Compliance from the coating manufacturer, conforming to the requirements of Subsection 106.05. The Certificate of Compliance shall properly identify the batch and/or lot number, material, quantity of batch, date of manufacture, name and address of manufacturer, and a statement that the material is the same composition as the initial sample prequalified for use. The certificate shall also state that production bars and prequalification bars have been identically prepared and applied with epoxy powders.

1003-5.03 Application of Coating: the second paragraph of the Standard Specifications is revised to read:

The surface to be coated shall be blast cleaned in accordance with the requirements of the Society for Protective Coatings, Surface Preparation Standard SSPC-SP10, Near White Blast Cleaning.

1003-5.03 Application of Coating: the fifth paragraph of the Standard Specifications is revised to read:

The epoxy coating shall be applied as a smooth uniform coat. After curing, the coating thickness shall be ten \pm two mils. Coating thickness shall be controlled by taking measurements on a representative number of bars from each production lot. Coating thickness measurements shall be conducted by the method outlined in the Society for Protective Coatings Paint Application Standard SSPC-PA2.

1003-5.03 Application of Coating: the ninth and tenth paragraphs of the Standard Specifications are revised to read:

The contractor shall furnish a Certificate of Analysis from the coating applicator, conforming to the requirements of Subsection 106.05, with each shipment of coated steel. In addition to the requirements of Subsection 106.05, the Certificate of Analysis shall state that the coated items and coating material have been tested in accordance with the requirements of this subsection and that the entire lot is in a fully-cured condition.

The coating applicator shall be responsible for performing quality control and tests. This will include inspection and testing to determine compliance with the requirements of this subsection for the coating thickness, continuity of coating, coating cure, and flexibility of coating.

(1005PG, 07/01/14)

SECTION 1005 BITUMINOUS MATERIALS:

1005-2 Sampling of Bituminous Material: the first sentence of the first paragraph of the Standard Specifications is revised to read:

Sampling of bituminous material shall conform to the requirements of Arizona Test Method 103.

1005-3.01 Asphalt Cement: the second paragraph of the Standard Specifications is revised to read:

If PG 76-22 TR+ asphalt binder is used, it shall conform to the requirements of Table 1005-1a.

If PG 70-22 TR+ asphalt binder is used, it shall conform to the requirements of Table 1005-1b.

If PG 64-28 TR+ asphalt binder is used, it shall conform to the requirements of Table 1005-1c.

1005-3.04 Emulsified Asphalt (Special Type): of the Standard Specifications is revised to read:

Emulsified asphalt (special type) shall consist of Type SS-1 or CSS-1 diluted with water to provide an asphalt content not less than 26 percent. The water used must be potable. The material shall not be diluted in the field.

TABLE 1005-1: “Creep Stiffness of PAV Binder” in Table 1005-1 of the Standard Specifications is revised to read:

TABLE 1005-1 ASPHALT BINDER ADJUSTMENT TABLE			
Test Property	AASHTO Test Method	Test Result	Percent of Contract Unit Price Allowed
Creep Stiffness of PAV S, MPa	Binder: T 313	≤ 300	100
		301-330	95
		331-450	85
		451-600	75
		> 600	65 (1)

TABLE 1005-1b: PG 70-22 TR+ ASPHALT BINDER is hereby added to the Standard Specifications:

TABLE 1005-1b PG 70-22 TR+ ASPHALT BINDER				
Test Property	Test Method	Requirement	Test Result	Percent of Contract Unit Price Allowed
Solubility in Trichloroethylene, %, minimum	ASTM D 2042	97.5	-----	-----
Softening Point, °C, minimum	AASHTO T 53	54	≥ 54 51 - 53 < 51	100 85 70 (1)
Elastic Recovery, @ 10 °C, %, Minimum	AASHTO T 301	55	≥ 55 50 - 54 < 50	100 85 70 (1)
Phase Angle (δ), @ 70 °C @ 10 rad/sec, degrees, maximum	AASHTO T 315	75	≤ 75 76 - 83 > 83	100 85 65 (1)
(1) Reject Status: The pay adjustment applies if allowed to remain in place.				
<p>Notes:</p> <p>PG 70-22 TR+ asphalt binder shall contain a minimum of 8 percent crumb rubber and a minimum of two percent SBS (styrene-butadiene-styrene) polymer.</p> <p>PG 70-22 TR+ asphalt binder shall conform to the requirements of AASHTO M 320 and, in addition, shall meet the requirements specified above.</p> <p>Table 1005-1 will also apply for PG 70-22 TR+ asphalt binder.</p> <p>Should the bituminous material be deficient on more than one of the properties listed in Tables 1005-1 and 1005-1b, the pay adjustment will be the greatest reduction to the contract unit price specified considering individual test results.</p> <p>The pressure aging temperature for PG 70-22 TR+ asphalt binder shall be 110 °C.</p> <p>The crumb rubber shall be derived from processing whole scrap tires or shredded tire materials. The tires from which the crumb rubber is produced shall be taken from automobiles, trucks, or other equipment owned and operated in the United States. The processing shall not produce, as a waste product, casings or other round tire material that can hold water when stored or disposed of above ground.</p>				

TABLE 1005-1c: PG 64-28 TR+ ASPHALT BINDER is hereby added to the Standard Specifications:

TABLE 1005-1c PG 64-28 TR+ ASPHALT BINDER				
Test Property	Test Method	Requirement	Test Result	Percent of Contract Unit Price Allowed
Solubility in Trichloroethylene, %, minimum	ASTM D 2042	97.5	-----	-----
Softening Point, °C, minimum	AASHTO T 53	50	≥ 50 47 - 49 < 47	100 85 70 (1)
Elastic Recovery, @ 10 °C, %, Minimum	AASHTO T 301	55	≥ 55 50 - 54 < 50	100 85 70 (1)
Phase Angle (δ), @ 64 °C @ 10 rad/sec, degrees, maximum	AASHTO T 315	75	≤ 75 76 - 83 > 83	100 85 65 (1)
(1) Reject Status: The pay adjustment applies if allowed to remain in place.				
<p>Notes:</p> <p>PG 64-28 TR+ asphalt binder shall contain a minimum of 8% crumb rubber and a minimum of two percent SBS (styrene-butadiene-styrene) polymer.</p> <p>PG 64-28 TR+ asphalt binder shall conform to the requirements of AASHTO M 320 and, in addition, shall meet the requirements specified above.</p> <p>Table 1005-1 will also apply for PG 64-28 TR+ asphalt binder.</p> <p>Should the bituminous material be deficient on more than one of the properties listed in Tables 1005-1 and 1005-1c, the pay adjustment will be the greatest reduction to the contract unit price specified considering individual test results.</p> <p>The pressure aging temperature for PG 64-28 TR+ asphalt binder shall be 100 °C.</p> <p>The crumb rubber shall be derived from processing whole scrap tires or shredded tire materials. The tires from which the crumb rubber is produced shall be taken from automobiles, trucks, or other equipment owned and operated in the United States. The processing shall not produce, as a waste product, casings or other round tire material that can hold water when stored or disposed of above ground.</p>				

TABLE 1005-3a: “Elastic Recovery by means of Ductilometer” is revised and “Note 2” is added in Table 1005-3a of the Standard Specifications:

TABLE 1005-3a POLYMERIZED CATIONIC RAPID SET (CRS-2P) EMULSIFIED ASPHALT (1)		
Tests on Emulsion:	Test Method	Requirement
Elastic Recovery by means of Ductilometer, 25 °C (77 °F), % minimum	AASHTO T 301 (2)	55
(2) Testing shall be performed on residue by distillation, not on residue by oven evaporation.		

TABLE 1005-3b: “Elastic Recovery by means of Ductilometer” is revised and “Note 3” is added in Table 1005-3b of the Standard Specifications:

TABLE 1005-3b POLYMERIZED HIGH FLOAT EMULSIFIED ASPHALT (1)			
Tests on Emulsion:	Test Method	Requirement	
		HFE-150P	HFE-300P
Elastic Recovery by means of Ductilometer, 4 °C (39.2 °F), % minimum	AASHTO T 301 (3)	25	25
(3) Testing shall be performed on residue by distillation, not on residue by oven evaporation.			

TABLE 1005-6: PG 70-22 TR+ and PG 64-28 TR+ are added to “Paving Asphalt” in Table 1005-6 of the Standard Specifications:

TABLE 1005-6 OTHER REQUIREMENTS			
Grade of Asphalt Specification Designation	Range of Temperatures for Application by Spraying, °F (Not applicable for Plant Mixing)	Range of Aggregate Temperatures for Plant Mixing, °F	Basis of Conversion, Average Gallons Per Ton at 60 °F
Paving Asphalt	275 - 400	-----	

PG 76-XX			232
PG 70-XX			233
PG 64-XX			235
PG 58-XX			236
PG 52-XX			238
PG 76-22 TR+			229
PG 70-22 TR+			230
PG 64-28 TR+			231

(1006PCC, 02/13/17)

SECTION 1006 PORTLAND CEMENT CONCRETE:

1006-1 General Requirements: of the Standard Specifications is revised to read:

Portland cement concrete shall consist of a mixture of hydraulic cement, fine aggregate, coarse aggregate, and water. It may also contain air-entraining admixtures, chemical admixtures, and supplementary cementitious materials.

The contractor shall determine the mix proportions and shall furnish concrete which conforms to the requirements of the specifications. All concrete shall be sufficiently workable, at the slump proposed by the contractor within the specified range, to allow proper placement of the concrete without harmful segregation, bleeding, or incomplete consolidation. It shall be the responsibility of the contractor to proportion, mix, place, finish, and cure the concrete properly in accordance with the requirements of the specifications.

1006-2.01 Hydraulic Cement: the second through the fifth paragraphs of the Standard Specifications are revised to read:

Portland cement shall conform to the requirements of ASTM C 150 for Type II, III, or V, and shall be low alkali cement containing not more than 0.60 percent total alkali (Na₂O equivalent).

Portland-pozzolan cement shall conform to the requirements of ASTM C 595 for blended hydraulic cement with moderate sulfate resistance, Type IP (MS).

Cementitious material is defined as an inorganic material or a mixture of inorganic materials that sets and develops strength by chemical reaction with water by formation of hydrates and is capable of doing so under water. In this specification, cementitious materials are defined as: hydraulic cement (Portland cement or Portland-pozzolan cement) and supplementary cementitious material (Fly Ash, Natural Pozzolan, or Silica Fume).

Hydraulic cement shall be approved prior to its use in accordance with ADOT Materials Policy and Procedure Directive No. 13, "Certification and Acceptance of Hydraulic Cement, Fly Ash, Natural Pozzolan, Silica Fume, and Lime".

1006-2.02 Water: the first sentence of the first paragraph of the Standard Specifications is revised to read:

The water used shall be free of injurious amounts of oil, acid, alkali, clay, vegetable matter, silt, or other harmful matter.

1006-2.03(A) General Requirements: the first paragraph of the Standard Specifications is revised to read:

When concrete is to be placed at elevations above 4,500 feet, the fine aggregate and the coarse aggregate shall be subjected to five cycles of the sodium sulfate soundness test, and the weighted percentage loss determined separately for each, in accordance with the requirements of AASHTO T 104. The weighted percentage loss determined for each shall not exceed 10 percent. Tests for soundness may be waived when aggregates from the same source have been approved and the approved test results apply to the current production from that source.

1006-2.03(A) General Requirements: the second paragraph of the Standard Specifications is hereby deleted:

1006-2.03(A) General Requirements: the fifth paragraph of the Standard Specifications is revised to read:

When aggregates are stored on the ground, the sites for the stockpiles shall be level and clear of all vegetation. The bottom one-foot layer of aggregate shall not be disturbed or used.

1006-2.03(A) General Requirements: "Lightweight particles" in the table of the ninth paragraph of the Standard Specifications is revised to read:

Lightweight particles (Specific gravity less than 2.0)	AASHTO T 113 (See Note)
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1006-2.03(B) Fine Aggregate: "Lightweight particles" in the table of the second paragraph of the Standard Specifications is revised to read:

Lightweight particles (Specific gravity less than 2.0)	AASHTO T 113 (Except that the percent of lightweight particles shall be reported to the nearest 0.01%.)	1.25% (0.25% Max. Coal and Lignite*)
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1006-2.03(B) Fine Aggregate: the last paragraph of the Standard Specifications is revised to read:

Fine aggregate shall be made into mortar and subjected to testing under AASHTO T 71, except that the mortar shall develop a compressive strength at seven and 28 days of not

less than 90 percent of that developed by a mortar prepared in the same manner with the same Type II cement and graded sand conforming to the requirements of ASTM C 778.

1006-2.03(C) Coarse Aggregate: "Lightweight particles" in the table of the second paragraph of the Standard Specifications is revised to read:

Lightweight particles (Specific gravity less than 2.0)	AASHTO T 113 (Except that the percent of lightweight particles shall be reported to the nearest 0.01%.)	1.25% (0.25% Max. Coal and Lignite*)
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1006-2.04(A) General Requirements: the first paragraph of the Standard Specifications is hereby deleted.

1006-2.04(B) Air-Entraining Admixtures: the first paragraph of the Standard Specifications is revised to read:

Air-entraining admixtures shall conform to the requirements of ASTM C 260.

Air-entraining admixtures shall be approved prior to their use in accordance with ADOT Materials Policy and Procedure Directive No. 2, "Certification and Acceptance of Chemical and Air-Entraining Admixtures for Portland Cement Concrete".

1006-2.04(C) Chemical Admixtures: the first paragraph of the Standard Specifications is revised to read:

Chemical admixtures shall conform to the requirements of ASTM C 494.

Chemical admixtures shall be approved prior to their use in accordance with ADOT Materials Policy and Procedure Directive No. 2, "Certification and Acceptance of Chemical and Air-Entraining Admixtures for Portland Cement Concrete".

1006-2.04(D) Supplementary Cementitious Material (Fly Ash, Natural Pozzolan, and Silica Fume): the first paragraph of the Standard Specifications is revised to read:

Supplementary cementitious materials may be used in addition to hydraulic cement. Supplementary cementitious materials shall be approved prior to their use in accordance with ADOT Materials Policy and Procedure Directive No. 13, "Certification and Acceptance of Hydraulic Cement, Fly Ash, Natural Pozzolan, Silica Fume, and Lime".

1006-2.04(D) Supplementary Cementitious Material (Fly Ash, Natural Pozzolan, and Silica Fume): the last two paragraphs of the Standard Specifications are revised to read:

When a supplementary cementitious material with a calcium oxide content greater than 15 percent is proposed, the hydraulic cement/supplementary cementitious material blend

shall be tested for sulfate expansion in accordance with ASTM C 1012. The maximum expansion shall be 0.10 percent at six months.

When either moderate or high sulfate resistant concrete is specified in the Special Provisions, the proposed hydraulic cement/supplementary cementitious material blend shall be tested for sulfate expansion in accordance with ASTM C 1012. When moderate sulfate resistance is specified, the maximum expansion shall be 0.10 percent at six months. When high sulfate resistance is specified, the maximum expansion shall be 0.05 percent at six months or 0.10 percent at one year.

1006-2.05 Concrete Curing Materials: the second paragraph of the Standard Specifications is revised to read:

Acceptance of concrete curing materials shall be as specified in ADOT Materials Policy and Procedure Directive No. 3, "Curing Compounds".

1006-3.01 Design Criteria: Table 1006-A of the Standard Specifications is revised to read:

TABLE 1006-A				
Class of Concrete	Minimum 28-Day Compressive Strength Required: psi (See Note 1)	Cementitious Material Content: Lbs per Cu Yd Minimum - Maximum (See Notes 2, 3, and 4)	Maximum Water/Cementitious Material Ratio (w/cm): Lb./Lb.	Slump Range: Inches
B	2,500	470 - 658	None	(See Note 6)
S	2,500	520 - 752	0.55	
	3,000 (See Note 5)			
	3,500			
	4,000	564 - 752	0.50	
	4,500			
	Greater than 4,500	564 - 800	0.45	
P	4,000	564 - 658	None	0 - 4.5
H	High performance concrete as specified in project special provisions.			

Note 1: Testing for compressive strength of cylinders for all classes of concrete shall be in accordance with the requirements of Arizona Test Method 314.

Note 2: A supplementary cementitious material (fly ash, natural pozzolan, or silica fume) conforming to the requirements of Subsection 1006-2.04(D) may be used, as specified in paragraphs (a) through (f) below.

(a) When Portland cement is used, a maximum of 25 percent, by weight of the cementitious material, may be an approved fly ash or natural pozzolan, except as specified in paragraphs (d), (e), and (f) below.

(b) When Portland-pozzolan cement [Type IP (MS)] is used, fly ash or natural pozzolan is not allowed, except as specified in paragraphs (d), (e), and (f) below.

(c) When silica fume is used, a maximum of 10 percent, by weight of either Portland cement or Portland-pozzolan cement, may be used.

(d) When a compressive strength greater than 4,500 psi is required, supplementary cementitious material may be added in excess of the maximum cementitious material content. Fly ash or natural pozzolan may exceed 25 percent, by weight of the cementitious material, if approved by the Engineer.

(e) When increased sulfate resistance is specified, the required amount of fly ash or natural pozzolan shall be incorporated into the concrete and may exceed 25 percent, by weight of the cementitious material.

(f) For Class S concrete used in bridge decks, a minimum of 20 percent, by weight of the cementitious material, must be an approved Class F fly ash or natural pozzolan, unless otherwise approved by the Engineer.

Note 3: For any concrete mix, other than for precast and/or prestressed bridge members, with a Portland cement content greater than 545 pounds per cubic yard, one of the options specified in paragraphs (a) through (e) below for the mitigation of a potential alkali silica reaction (ASR) shall be used:

(a) A minimum of 20 percent Class F fly ash or natural pozzolan, by weight of the cementitious material, shall be used. The Class F fly ash or natural pozzolan shall have a calcium oxide content of 15 percent or less.

(b) Instead of using Portland cement, Type IP (MS) Portland-pozzolan cement with a Class F fly ash or natural pozzolan content of at least 20 percent, by weight of the cementitious material, shall be used. The Class F fly ash or natural pozzolan shall have a calcium oxide content of 15 percent or less.

(c) Limit the total alkali (Na₂O equivalent) to a maximum of 3.00 pounds per cubic yard of concrete, when calculated as follows:

$$\left[\begin{array}{l} \text{Pounds of total} \\ \text{alkali per cubic} \\ \text{yard of concrete} \end{array} \right] = \frac{\left(\begin{array}{l} \text{Pounds of Portland} \\ \text{cement per cubic} \\ \text{yard of concrete} \end{array} \right) \times \left(\begin{array}{l} \text{Na}_2\text{O equivalent (\%)} \\ \text{in Portland cement} \end{array} \right)}{100}$$

(d) Introduce a lithium nitrate admixture, which has been approved by the Engineer, at a minimum dosage of 0.55 gallons of 30 percent lithium nitrate solution per pound of total alkali (Na₂O equivalent) per cubic yard of concrete. The required amount of lithium nitrate is calculated as follows:

$$\left[\begin{array}{l} \text{Required gallons} \\ \text{of 30 percent} \\ \text{lithium nitrate} \\ \text{solution} \end{array} \right] = \frac{\left(\begin{array}{l} \text{Pounds of} \\ \text{Portland cement} \\ \text{per cubic yard} \\ \text{of concrete} \end{array} \right) \times \left(\begin{array}{l} \text{Na}_2\text{O equivalent (\%)} \\ \text{in Portland cement} \end{array} \right)}{100} \times (0.55)$$

(e) The coarse aggregate and the fine aggregate shall be tested separately in accordance with ASTM C 1260 to determine the potential for alkali silica reaction (ASR). When aggregates show the potential for ASR, as indicated by expansions of 0.10% or greater at 16 days after casting, sufficient mitigation for the expansion shall be determined in accordance with ASTM C 1567. The use of fly ash or natural pozzolan may exceed 25 percent, by weight of the cementitious material.

Note 4: Unless otherwise specified, the cementitious material content shall be as shown.

Note 5: Unless otherwise shown on the plans.

Note 6: The proposed slump shall be chosen by the contractor. Concrete at the proposed slump shall be sufficiently workable to allow proper placement without harmful segregation, bleeding, or incomplete consolidation.

1006-3.01 Design Criteria: the second, third, and fourth paragraphs of the Standard Specifications are revised to read:

Air-entraining admixtures will be required for all classes of concrete placed at an elevation of 3,000 feet or above. The air content of the concrete mixture at the point of placement shall not be less than four percent nor more than seven percent by volume. Where freeze-thaw durability is of concern (such as in bridge decks, overlays, approach slabs, and barrier walls) and the potential for air loss is expected during placement, the range for acceptable air content, when sampled at the truck in accordance with Subsection 1006-7.02, shall be increased to not less than five percent nor more than eight percent. However, no air-entrainment will be required for minor precast structures, precast pipe, and precast, prestressed structural members supporting a concrete deck slab or impervious overlay. Also, no air-entrainment will be required for any precast items constructed using the dry pack or no-slump method.

For elevations below 3,000 feet, air-entraining admixtures may be used at the option of the contractor. If air-entraining admixtures are used, the air content of the concrete mixture at the point of placement shall not exceed seven percent by volume.

Concrete that fails to conform to the air content requirements listed above for the respective elevation as determined by the Engineer, shall be rejected prior to placement.

1006-3.01 Design Criteria: the first and second sentences of the sixth paragraph of the Standard Specifications are revised to read:

The coarse aggregate size designation for Class S or Class B concrete shall be chosen by the contractor and approved by the Engineer and shall conform to the size designation and grading requirements of AASHTO M 43. In choosing the size designation, the maximum size of coarse aggregate shall not be larger than one fifth of the narrowest dimension between the sides of adjacent forms, or two thirds of the minimum clear spacing between reinforcing bars, or two thirds of the minimum clear spacing between reinforcing bars and the sides of adjacent forms, or one third of the depth of the slab, whichever is least.

1006-3.01 Design Criteria: the first sentence of the seventh paragraph of the Standard Specifications is revised to read:

Coarse aggregate for Class P concrete used to construct Portland cement concrete pavement without load transfer dowels shall be separated into two or more stockpiles.

1006-3.02 Design Procedures: the first paragraph of the Standard Specifications is revised to read:

At least two weeks prior to the appropriate concreting operation, the contractor shall furnish a mix design for each class of concrete and each strength of Class S concrete for review and approval. More than one mix design for each class of concrete and each strength of Class S concrete may be submitted for approval provided specific items and locations of intended uses accompany the mix design. The contractor shall substantiate each mix design by furnishing test data and providing all details of the mixtures proposed for use. Mix designs, for other than precast or prestressed concrete, shall be prepared by or under the direction of, and signed by, a registered professional engineer, a NICET Level III or higher certified technician in the concrete subfield, a NRMCA Level 3 Certified Concrete Technologist, or an ACI certified Concrete Laboratory Testing Technician Level 2 or Grade II. Mix designs for precast or prestressed concrete shall be prepared by or under the direct supervision of, and signed by, either one of the individuals listed above or a PCI Quality Control Technician/Inspector Level II or higher. Individuals preparing and submitting mix designs shall have experience in the development of mix designs and mix design testing for the respective type of concrete.

1006-3.02 Design Procedures: the second and third paragraphs of the Standard Specifications are revised to read:

The complete solid volume mix designs submitted for approval shall include all weights and volumes of all ingredients. The brand, type, and source of hydraulic cement and admixtures, the coarse aggregate size number designation, source of aggregates, the specific gravities of all ingredients, the proposed slump, the water/cementitious material ratio, a product code to identify the mix design, and the intended use of each mix design shall be an integral part of each mix design.

The use of new and previously used mix designs, and the requirements for trial batches, will be as required by ADOT Materials Policy and Procedure Directive No. 15, "Submittal and Approval of Portland Cement Concrete Mix Designs".

1006-4.01 General Requirements: of the Standard Specifications is revised to read:

The contractor may obtain concrete for each class of concrete and for each strength of Class S concrete from a source approved by the Engineer in lieu of establishing a batch plant at the project site.

For each class of concrete and each strength of Class S concrete, except for Class P concrete produced in a batch plant at the site and used exclusively for Class P work, the contractor shall furnish a delivery ticket for each batch of concrete. The minimum information to be shown on each delivery ticket shall be the date, time batched, truck identification number, name or identification of batch plant, name of contractor, name and location of project, the quantity of concrete, the batch weights/volumes or mix design product code, the amount of permissible additional water to meet the design water/cementitious material ratio, and the number of revolutions that the concrete has been mixed at mixing speed in a truck mixer. An authorized representative of the contractor shall be responsible for each delivery ticket and shall sign each delivery ticket accepting the contractor's responsibility for the concrete. The representative shall immediately furnish the delivery ticket to the Engineer.

When requested by the Engineer, the contractor shall supply a separate record for each batch of concrete which shows the batch weight/volume of each individual ingredient.

1006-4.02(A) Hydraulic Cement: the last sentence of the first paragraph of the Standard Specifications is hereby deleted:

1006-4.03(A) General Requirements: the last sentence of the first paragraph of the Standard Specifications is revised to read:

Concrete may be mixed in a mobile mixer at the site for Class S or Class B concrete, provided written permission of the Engineer is granted.

1006-4.03(B) Mixing in a Stationary Mixer: the last sentence of the third paragraph of the Standard Specifications is revised to read:

The mixing time shall be not less than 60 seconds for one cubic yard and shall be increased 15 seconds for each additional cubic yard or fraction thereof for Class S or Class B concrete.

1006-4.03(C) Mixing in Truck Mixers: the first sentence of the last paragraph of the Standard Specifications is revised to read:

If additional mixing water is required to maintain the mix design water/cementitious material ratio, the concrete shall be mixed by a minimum of 30 revolutions of the drum at mixing speed after the water has been added, prior to discharge of any concrete for placement.

1006-4.03(D) Mixing in Mobile Mixers: of the Standard Specifications is revised to read:

Concrete mixing in mobile mixers for Class S or Class B concrete shall be performed in accordance with the requirements of AASHTO M 241.

1006-4.04 Consistency: the second paragraph of the Standard Specifications is revised to read:

The contractor shall furnish Class S and Class B concrete having the slump shown on the approved mix design, with a permissible variation of \pm one inch when the slump shown on the approved mix design is four inches or less, and a permissible variation of \pm 1½ inches when the slump shown on the approved mix design is greater than four inches. However, when an approved high range water reducing chemical admixture (ASTM C 494, Type F or Type G) conforming to the requirements of Subsection 1006-2.04 is used, the permissible variation will be \pm two inches, regardless of the slump shown on the approved mix design.

1006-5 Weather Limitations: the title of the Standard Specifications is revised to read:

1006-5 Concrete Temperature and Weather Limitations:

1006-5.01 General Requirements: of the Standard Specifications is revised to read:

The temperature of the concrete mixture immediately before placement shall not be less than 50 degrees F nor greater than 90 degrees F. Concrete that fails to conform to this temperature requirement shall be rejected prior to placement.

Under rainy conditions, placing of concrete shall be stopped before the quantity of surface water is sufficient to cause a flow or wash of the concrete surface or have a detrimental effect on the finished concrete and acceptance parameters.

Placing of concrete shall immediately cease if the hauling vehicles or any equipment or pedestrian traffic tracks mud on the prepared base or changes the allowable subgrade dimensional tolerances for Class P concrete and slabs placed on subgrade for Class S or Class B concrete.

1006-5.02 Hot Weather Concreting: of the Standard Specifications is revised to read:

Forms, subgrade, and reinforcing steel shall be sprinkled with cool water just prior to the placement of concrete.

Mix water may be cooled by refrigeration, liquid nitrogen, or well-crushed ice of a size that will melt completely during the mixing operation. If crushed ice is used, it shall be substituted for part of the mix water on a pound for pound basis.

1006-5.03 Cold Weather Concreting: of the Standard Specifications is revised to read:

Concrete shall not be placed on or against ice-coated forms, reinforcing steel, structural steel, conduits, or construction joints; nor on or against snow, ice, or frozen earth materials. Immediately prior to placing concrete, the temperature of forms, reinforcing steel, earthen material, or any other material that will come in contact with the freshly placed concrete shall be a minimum temperature of 40 degrees F. If artificial heat is used to adjust the temperature of the items that will come in contact with the freshly mixed concrete, the temperature of these items shall not exceed 10 degrees F greater than that of the concrete being placed.

Concrete operations shall be discontinued when a descending ambient temperature in the shade and away from artificial heat falls below 40 degrees F. Concrete operations shall not be resumed until an ascending ambient temperature in the shade and away from artificial heat exceeds 35 degrees F unless otherwise approved by the Engineer.

Mixing and placing concrete shall continue no later in any day than that time which will allow sufficient time to place and protect the concrete already poured before the ambient temperature drops to 35 degrees F.

Concrete shall be protected in a manner to maintain all concrete surface temperatures at not less than 50 degrees F for a period of 72 hours after placement and at not less than 40 degrees F for an additional 96 hours.

The contractor may use equipment to heat the aggregates or water, or both, prior to mixing. If aggregates are heated, the minimum temperature of the heated aggregate shall be 60 degrees F and the aggregates shall have no chunks of ice or frozen aggregate present. Equipment used to heat the aggregates shall be such that consistent temperatures are obtained throughout the aggregate within each batch and from one batch to another. Water shall not be heated in excess of 150 degrees F unless the water is mixed with the aggregate prior to the addition of cement to the batch. During the heating or mixing process, cement shall not be added to water and aggregate combinations which exceed 100 degrees F.

When weather forecasts indicate a probability that ambient temperatures will fall below 35 degrees F during the placement or curing periods, the contractor shall submit a cold weather concreting plan to the Engineer for approval prior to concrete placement. The cold weather concreting plan shall detail methods and equipment which will be used to ensure that the required concrete temperatures are maintained. The contractor shall provide

adequate cold weather protection in the form of insulation and/or heated enclosures to protect the concrete after placement. For bridge decks and suspended structures, the cold weather concreting plan shall include protection measures for both the top and bottom surfaces of the concrete. This protection shall maintain concrete surface temperatures as specified above at all locations in the structure. When artificial heating is required, the heating units shall not locally heat or dry the surface of the concrete.

When a cold weather concreting plan is required, the Engineer may require concrete temperatures to be measured and continuously recorded by the use of temperature sensing devices during the entire curing period. The contractor shall provide the temperature sensing devices and recording instruments. The contractor shall install temperature sensing devices near the surface of the concrete at locations and depths designated by the Engineer. When concrete is placed on a bridge deck or suspended structure, both the bottom surface and the top surface shall be monitored with temperature sensing devices. Temperature sensing devices and recording instruments shall be approved by the Engineer. The contractor shall continuously monitor the concrete temperature and provide the recorded data to the Engineer at any time upon request.

If the surface concrete temperature at any location in the structure falls below 35 degrees F during the curing period, the Engineer may direct the contractor to core the areas in question at the locations indicated by the Engineer. The contractor shall submit the cores to a petrographer for examination in accordance with ASTM C 856. Concrete damaged by frost, as determined by the petrographer, shall be removed and replaced at no additional cost to the Department. All costs associated with coring, transmittal of cores, and petrographic examination shall be borne by the contractor regardless of the outcome of the petrographic examination.

The placing of concrete will not be permitted until the Engineer is satisfied that all the necessary protection equipment and materials are on hand at the site and in satisfactory working condition.

Concrete requiring cold weather protection shall have such protection removed at the end of the required curing period in such a manner that will permit a gradual drop in the concrete temperatures.

1006-7.01 **General:** the second paragraph of the Standard Specifications is revised to read:

Rejection of concrete will also occur due to insufficient compressive strength. Concrete compressive strength requirements consist of the specified strength which the concrete shall attain before various loads or stresses are applied and a minimum strength at 28 days.

1006-7.01 **General:** the last sentence of the third paragraph of the Standard Specifications is revised to read:

Sampling and testing for compressive strength will be performed on all classes of concrete furnished, including each strength specified on the project plans for Class S concrete.

1006-7.02 Sampling and Testing of Concrete: the first sentence of item (1) of the second paragraph of the Standard Specifications is revised to read:

- (1) Concrete for Class S or Class B shall be sampled only once during discharge in the middle portion of the batch.

1006-7.02 Sampling and Testing of Concrete: the third paragraph of the Standard Specifications is revised to read:

Concrete pumped to facilitate placement will be sampled for acceptance at the final point of placement. Samples will be taken during continuous discharge of concrete that has been pumped beyond the pump hopper without interruption at the normal production rate. Where freeze-thaw durability is of concern (such as in bridge decks, overlays, approach slabs, and barrier walls), the concrete shall also be sampled at the truck to determine air loss through the pump. In accordance with Subsection 601-3.03(C), if the loss of air as measured between the supply truck and the point of placement exceeds two percent, the contractor shall employ measures acceptable to the Engineer to reduce the loss of air to less than two percent. If sampling at the point of placement is not practical, as determined by the Engineer, or creates a safety concern, the concrete shall be sampled for acceptance at the truck. When acceptance sampling can only be performed at the truck, the acceptable range of air content of the supplied mix will be adjusted to not less than five percent nor more than eight percent in accordance with Subsection 1006-3.01.

1006-7.02 Sampling and Testing of Concrete: of the Standard Specifications is modified to add:

If approved by the Engineer, and unless otherwise specified, Arizona Test Method 318 may be used to estimate concrete strength by the maturity method. The maturity method shall not substitute for compressive strength acceptance testing (28-day test cylinder breaks). The contractor shall submit a written request to the Engineer prior to using the maturity method. If its use is approved by the Engineer, the contractor shall be responsible to develop the strength-maturity relationship and shall also be responsible to provide the maturity meter(s) and digital data loggers necessary, as well as performing all required testing, all at no additional cost to the Department.

1006-7.03(A) Class S and Class B Concrete: of the Standard Specifications is revised to read:

For Class S concrete with a compressive strength requirement less than 4000 psi, a sample of concrete for the required tests, as specified in Subsection 1006-7.02, will be taken on a daily basis for each 100 cubic yards, or fraction thereof, of continuously placed concrete from each batch plant. For Class S concrete with a compressive strength requirement equal to or greater than 4000 psi, a sample of concrete for the required tests, as specified in Subsection 1006-7.02, will be taken on a daily basis for each 50 cubic yards, or fraction thereof, of continuously placed concrete from each batch plant. For Class B concrete, a sample of concrete for the required tests, as specified in Subsection 1006-7.02, will be taken for each 100 cubic yards placed from each batch plant. For Class S or Class B concrete placed at elevations of 3,000 feet or above, air content testing shall be performed

for each 50 cubic yards placed, regardless of the compressive strength requirement. An additional sample or samples for any of the required tests may be taken at an interval of less than the sampling frequency specified above, at the discretion of the Engineer, on any batch or load of concrete. A sample for the required tests on daily placements of 10 cubic yards or less may be taken at the discretion of the Engineer.

1006-7.03(B) Class E Concrete: of the Standard Specifications is revised to read:

1006-7.03(B) BLANK

1006-7.06(A) Class P Concrete: the fourth sentence of the second paragraph of the Standard Specifications is revised to read:

Cores must be obtained under the observation of an ADOT representative and delivered to the Engineer in time to allow complete testing within 48 days of placement. Testing shall be performed by the Department.

1006-7.06(B) Class S and Class B Concrete: the second paragraph of the Standard Specifications is revised to read:

Concrete failing to meet at least 85 percent of the 28-day compressive strength for specified strengths of 3,000 pounds per square inch and below, 90 percent for a specified strength of 3,500 pounds per square inch, or 95 percent for specified strengths of 4,000 pounds per square inch and above, or any concrete failing to meet the other requirements of Subsection 1006-7.01, will be rejected and removed at no additional cost to the Department and replaced with concrete which meets the specified requirements, unless the contractor can submit evidence that will indicate to the Engineer that the strength and quality of the concrete is such that the concrete should be considered acceptable and be allowed to remain in place.

1006-7.06(B) Class S and Class B Concrete: the third sentence of the last paragraph of the Standard Specifications is revised to read:

All cores shall be obtained and tested in accordance with the requirements of Arizona Test Method 317. Testing shall be performed by the Department.

1006-7.06(C) Class E Concrete: of the Standard Specifications is revised to read:

1006-7.06(C) BLANK

(1007REFS, 11/05/13)

SECTION 1007 - RETROREFLECTIVE SHEETING:

1007-1 General Requirements: the last two sentences of the first paragraph of the Standard Specifications are revised to read:

Sheeting shall conform to criteria listed in the most current version of ASTM D 4956 for the applicable type and class, unless otherwise specified.

1007-2 Material Types: of the Standard Specifications is revised to read:

Sheeting for permanent warning signs, regulatory signs, and overhead-mounted guide signs, including all sign legends and borders, shall be ASTM Type XI.

Sheeting for all warning signs with yellow backgrounds shall be Type XI fluorescent retroreflective yellow.

Sheeting for information signs, ground-mounted guide signs, and marker signs, including all sign legends and borders, shall be ASTM Type IX or XI.

Sheeting for permanent object markers and delineators on a rigid substrate with yellow backgrounds, including guardrail end treatments, guardrail markers, rigid delineators, and impact attenuators, shall be Type XI fluorescent retroreflective yellow.

Sheeting for permanent object markers and delineators on a rigid substrate in colors other than yellow, including guardrail end treatments, guardrail markers, rigid delineators, and impact attenuators, shall be ASTM Type IX or XI.

Sheeting for object markers and delineators on a flexible or plastic substrate, including flexible delineators and sand barrels, shall be ASTM Type VIII, IX or XI.

For temporary regulatory and guide signs on a rigid substrate with fluorescent retroreflective orange sheeting, ASTM sheeting Types VIII, IX, or XI shall be used.

For temporary regulatory and guide signs on a rigid substrate in colors other than fluorescent retroreflective orange, ASTM sheeting Types IV, VIII, IX, or XI shall be used.

For retroreflective orange temporary signs on a flexible or roll-up substrate, ASTM Type VI sheeting shall be used.

All temporary signs (rigid, flexible, or roll-up) with orange backgrounds shall use fluorescent retroreflective orange sheeting, except that non-reflective sign materials may be used for temporary signs where the signs will be clearly visible under available natural light.

For barricades and other temporary channelizing devices, ASTM sheeting Types IV, VIII, IX, or XI shall be used.

Sheeting for Adopt-A-Highway signs shall be ASTM Type I, IV, or XI.

Logo signs shall be ASTM Type I, IX, or XI.

When more than one sheeting type is allowed, the contractor may use any of the types listed, provided that materials used for a particular application shall be of the same ASTM type, manufacturer, and product for all signs of the same type in the project.

Opaque films used with sheeting shall be acrylic type films.

Direct-applied and demountable black characters shall be non-reflective.

1007-3 Visual Appearance, Luminance and Color Requirements: of the Standard Specifications is revised to read:

Except as specified herein, the color of the sheeting, ink or film shall conform to the ADOT Manual of Approved Signs, the Manual on Uniform Traffic Control Devices (MUTCD), and the plans.

All sheeting, inks and film used shall be uniformly colored so there is no visual variation in their appearance on the same sign or from sign to sign of the same colors.

Standard colors specified for sheeting, processing inks, and films shall, as applicable, match visually and be within the color tolerance limits required by Highway Tolerance Charts issued by the Federal Highway Administration. Additionally, for the retroreflective sheeting, unless otherwise noted, the Luminance Factor (Daytime Luminance) and Color Specification Limits (Daytime) shall conform to the applicable requirements of ASTM D 4956.

In addition to the luminance and color requirements, fluorescent orange sheeting and fluorescent yellow sheeting shall have the capacity to effectively fluoresce outdoors under low light conditions. For all applications requiring fluorescent orange sheeting or fluorescent yellow sheeting, the contractor shall provide a letter to the Engineer from the manufacturer certifying that the sheeting to be used is fluorescent.

1007-6 Adhesive: the first paragraph of the Standard Specifications is revised to read:

Reflective sheeting and film adhesives shall be Class I as specified in ASTM D 4956 and as modified herein.

1007-6 Adhesive: the third paragraph of the Standard Specifications is hereby deleted:

1007-8 Durability Requirements: the second and third paragraphs of the Standard Specifications are revised to read:

Sheeting shall be weather-tested as specified above in Subsection 1007-7. Sheeting weather-testing periods and durability ratings shall be as specified in Table 1007-8. In all cases, the related inks and films shall be tested along with the respective sheeting, and shall be subject to the same durability requirements as the sheeting.

TABLE 1007-8			
ASTM Sheeting Type	Color	Weather-testing period, months	Durability rating, years
XI	Fluorescent yellow	42	7
XI	Fluorescent orange	18	3
XI	All other colors	60	10
IX	Fluorescent orange	18	3
IX	All other colors	60	10
VIII	Fluorescent orange	18	3
VIII	All other colors	30	5
VI	Fluorescent orange	18	3
IV	All colors	30	5
I	All colors	30	5

(1010PIPE, 05/03/16)

SECTION 1010 DRAINAGE PIPE:

1010-3 Slotted Pipe: the last paragraph of the Standard Specifications is revised to read:

Grout shall consist of Portland cement, aggregate, and water. It may also contain supplementary cementitious material. Portland cement, aggregate, water, and supplementary cementitious material shall conform to the requirements of Section 1006. If approved by the Engineer, chemical admixtures may be used. Chemical admixtures shall conform to the requirements of Subsection 1006-2.04, except no admixtures containing chlorides or nitrates shall be used. Air-entraining admixtures, conforming to the requirements of Subsection 1006-2.04, will be required for grout placed at elevations of 3000 feet or above.

The grout shall meet the requirements given in the table below.

Minimum Cementitious Material Content: Lbs per CY (See Note 1)	Maximum Water/Cementitious Material Ratio (w/cm): Lb./Lb.	Slump: Inches (See Note 2)	Air Content: Percent (See Note 3)
850	0.60	9 ± 2	0 – 8

Note 1: A maximum of 25 percent of the cementitious material, by weight, may consist of an approved Class F fly ash, conforming to the requirements of ASTM C 618.

Note 2: The consistency of the grout shall be as approved by the Engineer.

Note 3: For placement of grout at elevations of 3000 feet or above, the air content shall be a minimum of 4 percent and a maximum of 8 percent.

The aggregate shall consist of fine aggregate; however, at the option of the contractor, No. 8 coarse aggregate may be used in the grout. If No. 8 coarse aggregate is used, the volume shall be a maximum of 35 percent of the total aggregate volume.

For plant-mixed grout, the proportioning, mixing, and placing shall be in accordance with the applicable requirements in Section 1006.

For on-site mixing, grout that has been mixed more than one hour shall not be used.

Re-tempering of grout will not be permitted.

1010-8 **Corrugated High Density Polyethylene Plastic Pipe:** the title and the first paragraph of the Standard Specifications are revised to read:

1010-8 **Corrugated High Density Polyethylene Plastic Pipe, Steel Reinforced High Density Thermoplastic Ribbed Pipe, and Corrugated Polypropylene Plastic Pipe:**

Corrugated high density polyethylene plastic pipe, fittings, couplings and ends, where specified, shall conform to the requirements of AASHTO M 252 for pipe sizes less than 12 inches in diameter and AASHTO M 294 for pipe sizes 12 to 60 inches in diameter.

Steel reinforced high density thermoplastic ribbed pipe and fittings shall conform to the requirements of ASTM F 2562.

Corrugated polypropylene plastic pipe and fittings for pipe sizes 12 to 60 inches in diameter shall conform to the requirements of AASHTO M 330 (Type C or S) and ASTM F 2881.

1010-8 **Corrugated High Density Polyethylene Plastic Pipe, Steel Reinforced High Density Thermoplastic Ribbed Pipe, and Corrugated Polypropylene Plastic Pipe:** the last paragraph of the Standard Specifications is revised to read:

Tracer wire, which is to be placed in the trench with the corrugated high density polyethylene plastic pipe, steel reinforced high density thermoplastic ribbed pipe, or corrugated polypropylene plastic pipe as an aid in location after burial, shall conform to the requirements of Subsection 104.15(B).

(1011JMAT, 10/20/08)

SECTION 1011 JOINT MATERIALS:

1011-3 Joint Sealant (Hot-Poured): the title and text of the Standard Specifications is revised to read:

1011-3 Joint Sealant (Hot-Applied):

Joint sealant material, other than asphalt-rubber sealant, shall be a hot-applied type, conforming to the requirements of ASTM D 3406 or ASTM D 7116, as appropriate. Joint sealant shall not contain any coal-tar materials.

Asphalt-rubber joint sealant material shall be a hot-applied type, conforming to the requirements of ASTM D 6690, Type I or Type II.

The following requirement shall be added to the "Packaging and Package Marking" requirements of ASTM D 3406, ASTM D 7116, and ASTM D 6690:

The minimum ambient temperature during application and ambient temperatures under various storage conditions shall be clearly marked on the container.

Certificates of Compliance conforming to the requirements of Subsection 106.05 shall be submitted.

(1012GRDRL, 01/25/18)

SECTION 1012 GUARDRAIL MATERIALS: of the Standard Specifications is revised to read:

1012-1 General Requirements:

Certificates of Compliance conforming to the requirements of Subsection 106.05 shall be submitted.

References to ARTBA in this section shall hereinafter refer to AASHTO-AGC-ARTBA "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE". ARTBA hardware drawings and specifications are available at the Roadway Engineering web site.

1012-2 Fasteners, Rail Elements, Posts, and Blockouts:

Guardrail fasteners, rail elements, posts, blockouts, and other components shall conform to the requirements of ARTBA. Rail elements shall be galvanized after fabrication, with fabrication to include forming, cutting, shearing, punching, drilling, bending, welding, and riveting.

Unless otherwise specified, all surfaces of guardrail elements which are exposed to traffic shall present a uniform, pleasing appearance and shall be free of scars, stains or corrosion.

1012-3 Miscellaneous Materials:

Nails shall be 16-penny common, galvanized. Nails for retainer strap shall be 10-penny common, galvanized.

Nuts, bolts, and washers to be used in installations for which the details are not shown on the plans nor in the ARTBA publication shall conform to the requirements of ASTM F 568 or A 307; be galvanized in accordance with the requirements of ASTM A 153, Class C; and conform to the dimensional requirements of the American National Standards Institute.

Structural steel shapes, plates, bars and strips used in fabrication of hardware and all miscellaneous steel shall conform to the requirements of ASTM A 36 and shall be galvanized in conformance with the appropriate requirements of AASHTO M 111 and M 232. They shall meet the dimensional requirements of The American Institute of Steel Construction.

Round and square structural steel tubing shall conform to the material requirements of either ASTM A 500 or A 501 and shall be galvanized in accordance with the requirements of AASHTO M 180, Type 1.

Where galvanizing has been damaged, the coating shall be repaired by applying two coats of zinc-rich primer conforming to the requirements of Section 1002.

1012-4 Timber Guardrail, Posts and Blockouts:

Timber for posts and blockouts shall be rough sawn (unplaned) or S4S with the nominal dimensions indicated. Any species or group of woods graded in accordance with the requirements for Timber and Posts of the Western Wood Products Association may be used.

Timber shall be No. 1 or better, and the stress grade shall be 1,200 pounds per square inch or higher.

At the time of installation, the dimensions of timber posts and blockouts shall vary no more than $\pm 1/2$ inch from the nominal dimensions as hereinbefore specified.

The size tolerance of rough sawn blockouts in the direction of the bolt holes shall vary no more than $\pm 3/8$ inch. Only one type of post and blockout shall be used for any one continuous length of guardrail.

All timber shall have a preservative treatment in accordance with the requirements of AASHTO M 133, American Wood Protection Association (AWPA) Standard U1 "Commodity Specification B: Posts", and AWPA Standard T1.

(1014FAB, 5/07/13)

SECTION 1014 GEOSYNTHETICS:

1014-1 General Requirements: the third sentence of the fourth paragraph of the Standard Specifications is revised to read:

Samples shall be a minimum of six feet long by the full roll width.

1014-2 Pavement Fabric: "Weight: oz./sq. yd.", "Asphalt Retention: gal./sq. yd." , and the footnote in the table of the first paragraph of the Standard Specifications are revised to read:

Property	Requirement	Test Method
Weight: oz./sq. yd.	4.0 - 6.0	ASTM D 3776
Asphalt Retention: gal./sq. yd.	0.2 minimum	ASTM D 6140
* Minimum - Average value in weaker principal direction. All numerical values represent minimum average roll values, i.e., the average test result in the weaker principle direction for a lot shall meet or exceed the minimum values listed when sampled according to ASTM D 4354 and tested according to the test method specified above.		

1014-2 Pavement Fabric: the last sentence of the last paragraph of the Standard Specifications is hereby deleted:

1014-3 Geogrid: the last sentence of the last paragraph of the Standard Specifications is hereby deleted:

1014-4.01(A) Nonwoven: of the Standard Specifications is revised to read:

Low survivability, nonwoven separation fabric shall meet the following physical requirements:

Property	Requirement (Average Roll Value) (1)	Test Method
Grab Tensile Strength: lbs.	90 min.	ASTM D 4632
Grab Elongation at Break: %	45 min., 115 max. (2)	ASTM D 4632
Puncture Strength: lbs.	30 min.	ASTM D 4833
Burst Strength: psi	130 min.	ASTM D 3786
Trapezoidal Tear: lbs.	30 min.	ASTM D 4533
Permittivity: second ⁻¹	0.07 min.	ASTM D 4491
Apparent Opening Size: U.S. Standard sieve size	30 – 140	ASTM D 4751
Ultraviolet Stability: %	70 min.	ASTM D 4355

(1) Average roll values represent the average test results for a lot in the weaker

direction when sampled according to ASTM D 4354 and tested according to the test method specified above.

(2) If the average grab elongation of the fabric is greater than 115 percent at break, the elongation will be acceptable if the grab tensile strength requirement is met prior to or at 115 percent elongation.

1014-4.02(A) Non-woven: of the Standard Specifications is revised to read:

Moderate survivability, nonwoven separation fabric shall meet the following physical requirements:

Property	Requirement (Average Roll Value) (1)	Test Method
Grab Tensile Strength: lbs.	140 min.	ASTM D 4632
Grab Elongation at Break: %	45 min., 115 max. (2)	ASTM D 4632
Puncture Strength: lbs.	50 min.	ASTM D 4833
Burst Strength: psi	210 min.	ASTM D 3786
Trapezoidal Tear: lbs.	40 min.	ASTM D 4533
Permittivity: second ⁻¹	0.07 min.	ASTM D 4491
Apparent Opening Size: U.S. Standard sieve size	30 – 140	ASTM D 4751
Ultraviolet Stability: %	70 min.	ASTM D 4355
<p>(1) Average roll values represent the average test results for a lot in the weaker direction when sampled according to ASTM D 4354 and tested according to the test method specified above.</p> <p>(2) If the average grab elongation of the fabric is greater than 115 percent at break, the elongation will be acceptable if the grab tensile strength requirement is met prior to or at 115 percent elongation.</p>		

1014-4.03(A) Nonwoven: of the Standard Specifications is revised to read:

High survivability, nonwoven separation fabric shall meet the following physical requirements:

Property	Requirement (Average Roll Value) (1)	Test Method
Grab Tensile Strength: lbs.	200 min.	ASTM D 4632
Grab Elongation at Break: %	45 min., 115 max. (2)	ASTM D 4632
Puncture Strength: lbs.	75 min.	ASTM D 4833
Burst Strength: psi	320 min.	ASTM D 3786
Trapezoidal Tear: lbs.	50 min.	ASTM D 4533
Permittivity: second ⁻¹	0.07 min.	ASTM D 4491
Apparent Opening Size: U.S. Standard sieve size	30 – 140	ASTM D 4751
Ultraviolet Stability: %	70 min.	ASTM D 4355

- (1) Average roll values represent the average test results for a lot in the weaker direction when sampled according to ASTM D 4354 and tested according to the test method specified above.
- (2) If the average grab elongation of the fabric is greater than 115 percent at break, the elongation will be acceptable if the grab tensile strength requirement is met prior to or at 115 percent elongation.

1014-4.04(A) Nonwoven: of the Standard Specifications is revised to read:

Very high survivability, nonwoven separation fabric shall meet the following physical requirements:

Property	Requirement (Average Roll Value) (1)	Test Method
Grab Tensile Strength: lbs.	270 min.	ASTM D 4632
Grab Elongation at Break: %	45 min., 115 max. (2)	ASTM D 4632
Puncture Strength: lbs.	110 min.	ASTM D 4833
Burst Strength: psi	430 min.	ASTM D 3786
Trapezoidal Tear: lbs.	75 min.	ASTM D 4533
Permittivity: second ⁻¹	0.07 min.	ASTM D 4491
Apparent Opening Size: U.S. Standard sieve size	30 – 140	ASTM D 4751
Ultraviolet Stability: %	70 min.	ASTM D 4355

(1) Average roll values represent the average test results for a lot in the weaker direction when sampled according to ASTM D 4354 and tested according to the test method specified above.

(2) If the average grab elongation of the fabric is greater than 115 percent at break, the elongation will be acceptable if the grab tensile strength requirement is met prior to or at 115 percent elongation.

1014-4.04(B) Woven: of the Standard Specifications is revised to read:

Very high survivability, woven separation fabric shall meet the following physical requirements:

Property	Requirement (Average Roll Value) (1)	Test Method
Grab Tensile Strength: lbs.	340 min.	ASTM D 4632
Grab Elongation at Break: %	13 Min., 115 Max. (2)	ASTM D 4632
Puncture Strength: lbs.	130 min.	ASTM D 4833
Burst Strength: psi	500 min.	ASTM D 3786
Trapezoidal Tear: lbs.	90 min.	ASTM D 4533
Permittivity: second ⁻¹	0.07 min.	ASTM D 4491
Apparent Opening Size:	30 – 140	ASTM D 4751

U.S. Standard sieve size		
Ultraviolet Stability: %	70 min.	ASTM D 4355
<p>(1) Average roll values represent the average test results for a lot in the weaker direction when sampled according to ASTM D 4354 and tested according to the test method specified above.</p> <p>(2) If the average grab elongation of the fabric is greater than 115 percent at break, the elongation will be acceptable if the grab tensile strength requirement is met prior to or at 115 percent elongation.</p>		

1014-6.02 Geocomposite Wall Drain Fabric: of the Standard Specifications is revised to read:

The geotextile wall drain fabric shall be laminated onto or adhere to the side of the drainage core which will face the backfill. The geotextile fabric shall be a non-woven polyester or polypropylene fabric meeting the following physical requirements:

Property	Requirement (Average Roll Value) (1)	Test Method
Weight: oz./sq. yd.	4.0 min.	ASTM D 3776
Grab Tensile Strength: lbs.	90 min.	ASTM D 4632
Grab Elongation at Break: %	35 min., 115 max. (2)	ASTM D 4632
Mullen Burst Strength: psi	140 min.	ASTM D 3786
Trapezoidal Tear: lbs.	30 min.	ASTM D 4533
Puncture Strength: lbs.	30 min.	ASTM D 4833
Apparent Opening Size: U.S. Standard sieve size	30 – 140	ASTM D 4751
Permittivity: second ⁻¹	0.50 min.	ASTM D 4491
Ultraviolet Stability: %	70 min.	ASTM D 4355
<p>(1) Average roll values represent the average test results for a lot in the weaker direction when sampled according to ASTM D 4354 and tested according to the test method specified above.</p> <p>(2) If the average grab elongation of the fabric is greater than 115 percent at break, the elongation will be acceptable if the grab tensile strength requirement is met prior to or at 115 percent elongation.</p>		

A minimum three-inch wide flap of geotextile fabric shall extend beyond both longitudinal edges of the geocomposite core. The geotextile fabric shall cover the full length of the core.

1014-7.02 Geocomposite Edge Drain Fabric: of the Standard Specifications is revised to read:

The geotextile edge drain fabric shall completely wrap around the drainage core material in a snug manner and may be permanently bonded to the core. The geotextile fabric shall be a non-woven polyester or polypropylene fabric meeting the following physical requirements:

Property	Requirement (Average Roll Value) (1)	Test Method
Weight: oz./sq. yd.	4.0 min.	ASTM D 3776
Grab Tensile Strength: lbs.	90 min.	ASTM D 4632
Grab Elongation at Break: %	35 min., 115 max. (2)	ASTM D 4632
Mullen Burst Strength: psi	140 min.	ASTM D 3786
Trapezoidal Tear: lbs.	30 min.	ASTM D 4533
Puncture Strength: lbs.	30 min.	ASTM D 4833
Apparent Opening Size: U.S. Standard sieve size	30 – 140	ASTM D 4751
Permittivity: second ⁻¹	0.50 min.	ASTM D 4491
Ultraviolet Stability: %	70 min.	ASTM D 4355
<p>(1) Average roll values represent the average test results for a lot in the weaker direction when sampled according to ASTM D 4354 and tested according to the test method specified above.</p> <p>(2) If the average grab elongation of the fabric is greater than 115 percent at break, the elongation will be acceptable if the grab tensile strength requirement is met prior to or at 115 percent elongation.</p>		

1014-8 Temporary Silt Fence Fabric: the last two paragraphs of the Standard Specifications are revised to read:

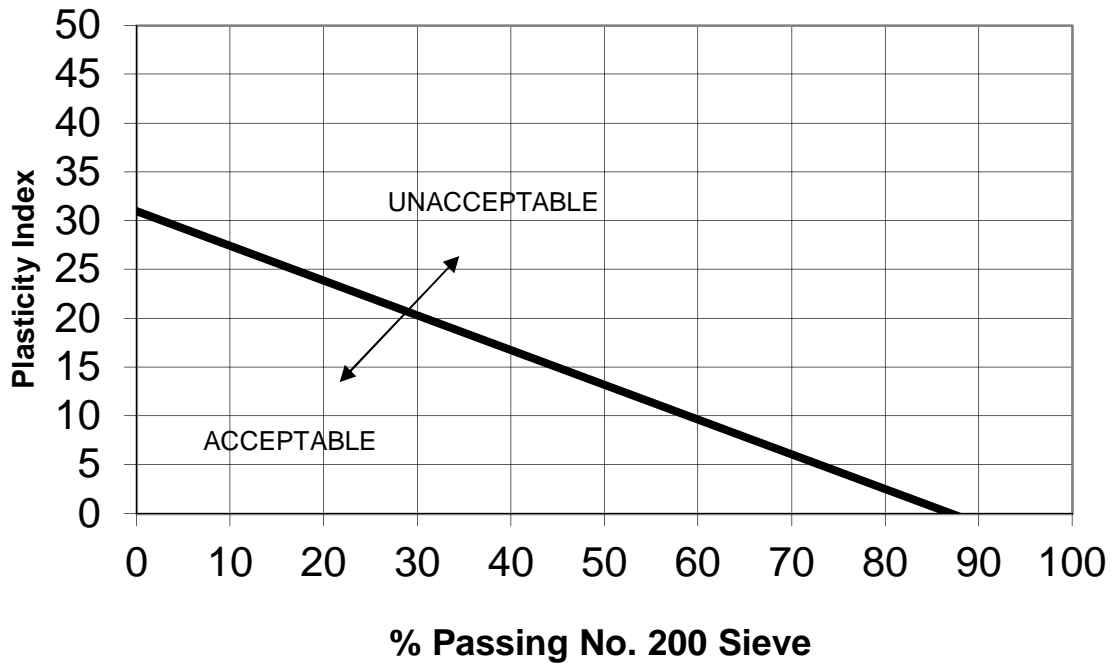
The fabric shall meet the following physical requirements:

Property	Requirement (Average Roll Value) (1)	Test Method
Grab Tensile Strength: lbs.	100 min.	ASTM D 4632
Elongation at 50 % of min. tensile strength (60 lb.): %	50 max.	ASTM D 4632
Permittivity: second ⁻¹	0.05 min.	ASTM D 4491
Apparent Opening Size: U.S. Standard sieve size	30 max.	ASTM D 4751
Ultraviolet Stability: %	70 min.	ASTM D 4355
<p>(1) Average roll values represent the average test results for a lot in the weaker direction when sampled according to ASTM D 4354 and tested according to the test method specified above.</p>		

APPENDIX A

Subgrade Acceptance Chart

SUBGRADE ACCEPTANCE CHART



CONSTRUCTION CONTROL R-VALUE = 30
ADOT TRACS NO. 060 MA 144 H8874 01D

DESIGN R-VALUE = 30

APPENDIX B

Sample Temporary Occupancy Permit (TOP) for roadway
surfacing/resurfacing



HOUSE / STRUCTURE MOVE PROCESS INSTRUCTIONS

Licensing Process:

1. Once the application package is received by Jones Lang LaSalle Brokerage, Inc. (JLL), the application and drawing will be forwarded to the engineering firm to prepare the Exhibit "A" drawings for the contract. **This process takes approximately 10 to 15 working days.**
2. When the Exhibit "A" is completed, information will be forwarded to BNSF's local Roadmaster and the Signal Supervisor for approval. **This process takes approximately 20 working days.**
3. Once approvals have been received, a contract will be prepared and two (2) copies will be forwarded to you for an original signature. **A letter will be sent to you that will provide directions regarding insurance and any additional fees.**
4. Return the signed contracts (2 contracts with original signatures), along with the appropriate **payment** to JLL's Permits Department.
5. The final contracts, with original signatures, will be presented for execution provided payment has been received and insurance has been approved.
6. Once the contract is executed, one original will be returned to you for your files.
7. The cover letter and the executed contract will list the Roadmaster's name and phone number. **You will need to contact the Roadmaster ten (10) days prior to beginning work.**

Process Time:

Please be advised that the average time period for completion of this process is **approximately 30 days** from the time that the application is received. Any missing information, changes made by the applicant or necessary railroad device relocation estimates could cause an additional delay. Every effort will be made to complete this process in a timely manner.

Insurance Requirements for the following Agreement:

Commercial General Liability Insurance	Contractual Liability with a combined single limit of a minimum of \$2,000,000 each occurrence and an aggregate limit of at least \$4,000,000.
Business Automobile Insurance	Combined single limit of at least \$1,000,000 per occurrence.
Workers Compensation and Employers Liability Insurance	Employers' Liability with limits of at least \$500,000 each accident, \$500,000 by disease policy limit, \$500,000 by disease each employee.
Severability of interest and naming Licensor and JLL as additional insured's shall be indicated on the certificate of insurance above (excluding Workers Compensation).	
Please note: These limits are subject to change without notice. An Agreement will be provided to you, which contains details concerning insurance requirements.	

Please send the following so we may process your License request:

1. **Completed Application.**
2. **\$800 non-refundable application fee.** This is not in lieu of a permit agreement fee. Check should be made payable to BNSF Railway Company. Please ensure all information is accurate, as each change will add an additional \$800 to the application fee.
3. **One set of drawings** (no larger than 11 x 17) for the area to be occupied. (Include: streets, distance from tracks and streets, mileposts if available and any distinguishing land marks.)

Forward to:

Jones Lang LaSalle Brokerage, Inc.

Attn: Permit Services-House/Structure Moves

4200 Buckingham Dr.

Suite 110

Ft. Worth, TX 76155



APPLICATION FOR HOUSE / STRUCTURE MOVE AGREEMENT

Jones Lang LaSalle Brokerage, Inc.
ATTN: Permit Services-House/Structure Moves
4200 Buckingham Dr.
Suite 110
Fort Worth, Texas 76155

Applicants Tax ID #
or SS #

We submit for your approval the following application for a House / Structure move on, over or across BNSF RAILWAY COMPANY'S right-of-way, as shown on the enclosed location plan and detailed sketch.

Applicant understands he or she will be requested to sign a standard House / Structure Moving Agreement which will require Applicant to:

- 1. furnish insurance as requested by BNSF Railway Company, and
2. reimburse BNSF Railway Company for expenses incurred in connection with the move.

Legal Name to be shown on permit:
If a corporation, State in which incorporated:
Mailing Address:
Daytime Phone: FAX:
Contact Name: Email Address:

Crossing Location:
City County State
Highway Name / Number Crossing is located at RR Milepost DOT #
1/4 Section Township Range
Latitude Longitude

Are there other private crossings in the vicinity? Yes No
If yes, give distance and direction from the crossing.
What is the distance of the closest public crossing in either direction:
Type of crossing: plank concrete other Describe:
Crossing Width

Type of User Vehicle
Auto Pickup Van Industrial If Industrial, type:
Total number of vehicles crossing per day:

Structure to be moved
Dimensions of Structure: Height: Width: Length: Approximate Weight:
Specify time period crossing will be required: days.

Date: Signed:
Print Name:
Title:
Phone #: FAX:

If you require additional assistance, please contact Holley Anthony at (817) 230-2633 or Holley.Anthony@am.jll.com

APPENDIX C

Western Burrowing Owl Awareness Flyer



Western Burrowing Owl Awareness

ADOT Environmental Planning Group

1611 W. Jackson St- Mail Drop EM02

Phoenix, AZ 85007

The purpose of this flyer is to provide ADOT employees and contractors, working on roadside projects, with basic knowledge to reduce the risk of incidental take of Western Burrowing Owls.

Legal Status:

Western Burrowing Owls (*Athene cunicularia*) are protected under the Federal Migratory Bird Treaty Act of 1918. All migratory birds and their parts are fully protected. They are also protected under Arizona State Law in Title 17-101, Title 17-235, and Title 17-236.

What to look for:

- Description– small, ground-dwelling owl.
- Length– 19.5-25.0 cm (7.68-9.85 inches)
- Wingspan– 58.42 cm (23.0 inches)
- Mass– about 150 grams
- Males are typically slightly larger than females.
- Round head, lacks ear tufts.
- Distinct oval facial ruff, framed by a broad, puffy white eyebrow.
- Eyes contain a bright yellow iris.

Where are owls found?

- Dry, open, short grass, treeless plains.
- Dependent on fossorial mammals. (ground squirrels, prairie dogs, badgers, etc.) to construct burrows.
- Human dominated landscapes: golf courses, airports, agricultural fields.

Identifying an active burrow:

- Owls use burrows constructed by ground squirrels, badgers, coyotes and tortoises. They can also use pipes, culverts, and ditches.
- Presence of excrement (whitewash) near entrance to burrow.
- Burrowing owls frequently decorate entrance of burrows with cow or horse manure, feathers, vegetation and trash items.

How to avoid them:

- Scan ahead prior to arriving at a sign location.
- If burrowing owls are observed within the project area, stop and move at least 100 feet beyond the owl or occupied burrow before resuming work.

If you think your work may potentially impact a Burrowing Owl or active burrow, please stop.

Move at least 100 feet from the animal or burrow before resuming work.

If you have any questions or think you have a borrowing owl or active burrow on your work site please contact:

Joshua Fife, Biologist, ADOT Environmental Planning Group, jfife@azdot.gov

Office: (602)712-6819, Mobile: (602) 622-9622, EPG General: (602)712-7767

Source: Arizona Game and Fish Department Animal Abstract: Western Burrowing Owl. Heritage Data Management System

(revised November 25, 2013)

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS
EXECUTIVE ORDER 11246, July 1, 1978

(Revised November 3, 1980)

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer Identification Number" means the Federal Social Security Number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership or participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown plan. Each Contractor or Subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each

construction trade in which it has employees in the covered area

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications. Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such site or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or women sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on the job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations: by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and

Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

Revised 04-15-81

female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative actions obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is under utilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm

debarred from Government Contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as an limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Title VI/Non-Discrimination Assurances

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the *Federal Highway Administration*, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performance by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the *Federal Highway Administration* to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the *Federal Highway Administration*, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the *Federal Highway Administration* may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with request to any subcontract or procurement as the Recipient or the *Federal Highway Administration* may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

Title VI/Non-Discrimination Assurances**APPENDIX E**

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1687 *et seq.*).

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(EXECUTIVE ORDER 11246)

JULY 1, 1978 (Revised November 3, 1980)

(Revised April 15, 1981)

1. The bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

	Minority	Female
Tucson and balance of Pima County	24.1	6.9
Cochise, Graham, Greenlee and Santa Cruz Counties	27.0	6.9
Phoenix and balance of Maricopa County	15.8	6.9
Apache, Coconino, Gila, Mohave, Navajo, Pinal, Yavapai and Yuma Counties	19.6	6.9

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in all areas where he has Federal or federally assisted work.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3 (a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

*** EXECUTIVE ORDER 2009-09 ***
PROHIBITION OF DISCRIMINATION IN STATE CONTRACTS
NONDISCRIMINATION IN EMPLOYMENT BY
GOVERNMENT CONTRACTORS AND SUBCONTRACTORS
(Superseding Executive Order 99-4 and Amending Executive Order 75-5)

[M09-395]

WHEREAS, Executive Order 99-4 was effectuated to assure that persons or entities contracting with the State of Arizona or its political subdivisions comply with the provisions of Title VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000e, et. seq.) and with Arizona's Civil Rights Act (Title 41, Chapter 9, Article 4);

WHEREAS, Executive Order 99-4 correctly states that various religious organizations are exempted from Arizona's Civil Rights Act;

WHEREAS, Executive Order 99-4 does not expressly state the federal and state exemptions for Indian tribes under both the federal and State Civil Rights Acts;

WHEREAS, 42 U.S.C. § 200e(b)(1) exempts tribes from the definition of employer;

WHEREAS, A.R.S. § 41-1461 4 (b)(i) also exempts Indian tribes from the definition of employers to whom the Arizona Civil Rights Act applies;

WHEREAS, Indian tribes across the State have recently begun to experience difficulty contracting with the State, often for money or services to which they are lawfully entitled, as a result of their exclusion from specified exemptions within Executive Order 99-4;

WHEREAS, the Attorney General's Office has in some cases interpreted the existing provisions as requiring tribes to waive rights guaranteed by both federal and State law;

WHEREAS, a modification is necessary to expressly provide that the exemptions found in federal and State law continue in full force and effect;

NOW, THEREFORE, I, Janice K. Brewer, Governor of the State of Arizona, by virtue of the authority vested in me by the Constitution and laws of this State, hereby order and direct as follows:

1. Executive Order 75-5 is hereby amended as follows:

PART I - Non-discrimination in employment by government contractors and subcontractors.

Unless otherwise exempted by federal or state civil rights laws, all government contracting agencies shall include in every government contract hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- A. The Contractor will not discriminate against any employee or applicant for employment because of race, age, color, religion, sex, or national origin. The contractor will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to their race, age, color, religion, sex or national origin. Such action shall include, but is not limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The contractor agrees to post in conspicuous

Arizona Administrative Register / Secretary of State
Governor's Executive Orders/Proclamations

places available to employees and applicants for employment notices to be provided by the contracting officer setting forth the provisions of this non-discrimination clause.

A continued Executive Order No. 75-5 is hereby amended to permit government contractors and subcontractors that are exempted from compliance under Title 41, chapter 9, article 4, Arizona Revised Statutes or 42 U.S.C. § 200e(b)(1), to provide employment preferences consistently with federal and state statutes;

Therefore, Executive Order 75-5 does not apply to Indian tribes. It likewise does not apply to religious organizations with respect to the employment of individuals of a particular religion to perform work connected with the activities of the employer. It also provides that religious organizations may provide employment preferences based upon religion when dealing with a bona fide occupational qualification reasonably necessary to the operation of the religious organization. This is consistent with the provisions of the Civil Rights Act of 1964 (42 U.S.C. 2000e, et seq.). In addition, in the Personal Responsibility and Work Opportunity Reconciliation Act, P.L. 104-193, Congress provided that religious organizations are eligible for the receipt of federal funds on the same basis as other private organizations.

Executive Order No. 75-5 prohibits all other government contractors and subcontractors from discriminating against any employee or applicant for employment because of race, age, color, religion, sex or national origin. Executive Order No. 75-5 further requires all government contractors and subcontractors to take action to insure that applicants are employed and employees are treated during employment without regard to their race, age, color, religion, sex or national origin.

- B. The contractor will in all solicitations or advertisement for employees placed by or on behalf of the contractor state that all qualified applicants will receive consideration for employment without regard of race, age, color, religion, sex or national origin.
- C. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice to be provided by the agency contracting officer advising the labor union or workers' representative of the contractor's commitments under the Executive Order and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- D. The contractor will furnish all information and reports required by the contracting agency and will permit access to his books, records, and accounts by the contracting agency and the Civil Rights Division for purposes of investigation to ascertain compliance with such rules, regulations and orders.
- E. In the event of the contractor's noncompliance with the nondiscrimination clauses of the contract or with any such rules, regulations or orders of the Arizona Civil Rights Division said noncompliance will be considered a material breach of the contract and this contract may be cancelled, terminated or suspended, in whole or in part, and the contractor may be declared ineligible for future government contracts until said contractor has been found to be in compliance with the provisions of this order and the rules and regulations of the Arizona Civil Rights Division, and such sanctions may be imposed and remedies invoked as provided in Part II of this order, and the rules and regulations of the Arizona Civil Rights Division.
- F. The contractor will include the provisions of paragraphs A through E in every subcontractor purchase order so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to the subcontract or purchase orders the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance, provided, however, that in the event the contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the State of Arizona to enter into such litigation to protect the interest of the State of Arizona.
- G. Each contractor having a contract containing the provisions prescribed in this section shall file and shall cause each of his subcontractors to file compliance reports with the contracting agency or the Civil Rights Division, as may be directed. Compliance reports shall be filed within such times and shall contain such information as the practices, policies, programs and employment policies, programs and employment statistics of the contractor and each subcontract and shall be in form as the Arizona Civil Rights Division may prescribe.
- H. Bidders or prospective contractors of subcontractors shall be required to state whether they have participated in any previous contract subject to the provisions of this order or any preceding similar Executive Order and in such event to submit on behalf of themselves and the proposed subcontractors compliance reports prior to, or as an initial part of negotiation of a contract.
- I. Whenever the contractor or subcontractor has a collective bargaining agreement or other contract or understanding with a labor union or an agency referring workers of providing or supervising apprenticeship or training for

such workers, the compliance report shall include such information from such labor unions or agency practices and policies affecting compliance as the contracting agency or Civil Rights Division may prescribe: provided that, to the extent such information is within the exclusive possession of a labor union or an agency referring workers or providing or supervising apprenticeship or training and such labor union or agency shall refuse to furnish such information to the contractor, the contractor shall so certify the contracting agency as part of its compliance report and shall set forth what efforts he has made to obtain such information.

- J. The contracting agency or the Civil Rights Division shall require that the bidder or prospector contractor or subcontractor shall submit as part of his compliance report a statement in writing signed by an authorized officer or agent on behalf of any labor union or any agency referring workers or providing or supervising apprenticeship or other training with which the bidder or prospective contractor deals with supporting information to the effect that the signer's practices and policies do not discriminate on the grounds of race, color, religion, sex or national origin, and that the signer either will affirmatively cooperate in the implementation of the policy and provisions of this order or that it consents and agrees that recruitment, employment, and the terms and conditions of employment under the proposed contract shall be in accordance with the purpose and provisions of this order. In the event that the union or the agency shall refuse to execute such a statement, the compliance shall so certify and set forth what efforts have been made to secure such a statement and such additional factual material as the contracting agency or the Civil Rights Division may require.

PART II - Enforcement

- A. Each contracting agency shall be primarily responsible for obtaining compliance with this Executive Order with respect to contracts entered into by such agency or its contractors. All contracting agencies shall comply with the rules of the Civil Rights Division in discharging their primary responsibility for securing compliance with the provisions of contracts and otherwise with the terms of this order and the rules and regulations and orders of the Civil Rights Division issued pursuant to this order. They are directed to cooperate with the Civil Rights Division and to furnish the Division such information and assistance as it may require in the performance of the Division's functions under this order. They are further directed to appoint or designate from among the agency personnel compliance officers. It shall be the duty of such officers to first seek compliance with the objective of this order by conference, conciliation, mediation or persuasion.
- B. The Civil Rights Division may investigate the employment practices of any government contractor if subcontractor of initiate such investigation by the appropriate contracting agency or determine whether or not the contractual provisions specified in this order have been violated. Such investigations shall be conducted in accordance with the procedures established by the Civil Rights Division and the investigating agencies shall report to the Civil Rights Division any action taken or recommended. The Civil Rights Division may receive and investigate or cause to be investigated complaints by employees or prospective employees of a government contractor or subcontractor which alleges discrimination contrary to the contractual provisions specified in Part I of this order. If the investigation is conducted for the Civil Rights Division by a contracting agency, that agency shall report to the Civil Rights Division what action has been taken or its recommendation with regard to such complaint.
- C. The Civil Rights Division shall use its best efforts directly and through contracting agencies, other interested state and local agencies, contractors and all other available instrumentalities to cause any labor union engaged in work under government contracts or any agency referring workers or providing or supervising apprenticeship or training for it in the course of such work or cooperate in the implementation of the purposes of this order.
- D. The Civil Rights Division or any agency, officer or employee in the executive branch of the government designated by rule, regulation or order of the Civil Rights Division may hold such hearings, public or private, as the Division may deem advisable for compliance, enforcement of educational purposes. The Civil Rights Division may hold or cause to be held hearings in accordance with rules and regulations issued by the Civil Rights Division prior to imposing, ordering or recommending the imposition of penalties and sanctions under this order.
- E. No order for debarment of any contractor from further government contracts under this order shall be made without affording the contractor an opportunity for a hearing.
- F. Sanctions and Penalties. In accordance with such rules, regulations or orders as the Civil Rights Division may issue or adopt, the Civil Rights Division or the appropriate contracting agency may publish or cause to be published the names of contractors or unions which it has concluded have complied or have failed to comply with the provisions of this order and with the rules, regulations and orders of the Civil Rights Division.
1. Contracts may be cancelled, in whole or in part, terminated, or suspended absolutely, or continuation of contracts may be conditioned upon a program for future compliance approved by the contracting agency or the Civil Rights Division: provided that any contracting agency shall refrain from entering into further contracts, extensions or

other modifications of existing contracts with any noncomplying contractor until such contractor has established and will carry out personnel and employment policies in compliance with the provisions of this order.

2. Under rules and regulations prescribed by the Civil Rights Division, each contracting agency shall make reasonable efforts within a reasonable time limitation to secure compliance with the contract provisions of this order by methods of conference, conciliation, mediation and persuasion before proceedings shall be instituted under this order of before a contract shall be cancelled or terminated in whole or in part under this order for failure of a contractor or subcontractor to comply with the contract provisions of this order.

G. This Executive Order shall become effective immediately of its issuance.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona

Janice K. Brewer
G O V E R N O R

DONE at the Capitol in Phoenix, Arizona this 20th day of October in the year Two Thousand and Nine and of the Independence of the United States of America the Two Hundred and Thirty-fourth.

ATTEST:
Ken Bennett
Secretary of State

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
CONTRACTS AND SPECIFICATIONS SECTION

BID SCHEDULE

CONTRACT # 2018016

TRACS No.	Project No.	Item	County	District	Gross Length	Net Length	Prepared By:
060 MA 144 H887401C	060-B-NFA	NFA	MARICOPA	CENTRAL		1	Mahfuz Anwar

Highway Termini	Location	Work Description
• US 60	• GREENWAY RD TO THOMPSON RANCH	• SYSTEM ENHANCEMENT (ENGINEERING)

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
2020020	REMOVAL OF CONCRETE CURB	L.FT.	948		
2020021	REMOVAL OF CONCRETE CURB AND GUTTER	L.FT.	6,293		
2020025	REMOVAL OF CONCRETE SIDEWALKS, DRIVEWAYS AND SLABS	SQ.FT.	37,629		
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	24,735		
2020034	REMOVAL OF SIGNS	L.SUM	1		
2020048	REMOVAL OF STRUCTURE (CONCRETE BOX CULVERT)	EACH	1		
2020053	REMOVE (EXISTING LIGHTING PULL BOX)	EACH	26		
2020061	REMOVE AND RELOCATE MAIL BOXES	EACH	2		
2020071	REMOVE GUARD RAIL	L.FT.	128		
2020162	REMOVE (CONCRETE CHANNEL)	SQ.YD.	404		
2020168	REMOVE (LANDSCAPE MEDIAN)	SQ.FT.	3,688		
2020169	REMOVE (PLANTER)	SQ.FT.	275		
2020170	REMOVE (CONCRETE MEDIAN)	SQ.YD.	37		
2030301	ROADWAY EXCAVATION	CU.YD.	2,575		
2030501	STRUCTURAL EXCAVATION	CU.YD.	100		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
2030506	STRUCTURE BACKFILL	CU.YD.	101		
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	4,447		
4040072	EMULSIFIED ASPHALT (SLURRY SEAL)	TON	1		
4040075	EMULSIFIED ASPHALT (SS-1)	TON	8		
4040111	BITUMINOUS TACK COAT	TON	9		
4040116	APPLY BITUMINOUS TACK COAT	HOUR	18		
4040163	BLOTTER MATERIAL	TON	8		
4040174	DRY MINERAL AGGREGATE (SLURRY SEAL) (TYPE II)	TON	3		
4040282	ASPHALT BINDER (PG 76-16)	TON	342		
4160004	ASPHALTIC CONCRETE (3/4" MIX) (END PRODUCT) (SPECIAL MIX)	TON	6,846		
4160031	MINERAL ADMIXTURE	TON	68	\$90.00	\$6,120.00
5010111	PIPE, CORRUGATED METAL, SLOTTED, 24"	L.FT.	30		
5011014	PIPE, REINFORCED CONCRETE, CLASS IV, 18"	L.FT.	82		
5011023	PIPE, REINFORCED CONCRETE, CLASS III, 24"	L.FT.	165		
5011042	PIPE, REINFORCED CONCRETE, CLASS II, 36"	L.FT.	10		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
5019008	PIPE (SLEEVE)(12")	L.FT.	679		
5030142	CONCRETE CATCH BASIN (MEDIAN) (C-15.80)(H=8' OR LESS)	EACH	1		
5030272	CATCH BASIN,TYPE M-1 (L=6') (PHOENIX DET. P-1569)	EACH	2		
5030274	CATCH BASIN,TYPE M-1 (L=17')(PHOENIX DET. P-1569)	EACH	1		
5030604	CONCRETE CATCH BASIN (MODIFIED PHOENIX DET. P1572 PER DET. D3)	EACH	2		
5041901	DRAINAGE STRUCTURE (PIPE PENETRATION INTO CHANNEL PER DET. D1)	EACH	2		
5050031	MANHOLE (C-18.10) (NO. 3) (FOR PIPES 6" TO 36")	EACH	1		
5050202	RESET FRAME AND COVER FOR MANHOLE (MAG DET. 422)	EACH	4		
6010002	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,000)	CU.YD.	102		
6050002	REINFORCING STEEL	LB.	14,548		
6070038	SLIP BASE (NEW)	EACH	20		
6070055	SIGN POST (PERFORATED) (2 1/2 S)	L.FT.	312		
6070057	SIGN POST (PERFORATED) (2 1/2 T)	L.FT.	258		
6070060	FOUNDATION FOR SIGN POST (CONCRETE)	EACH	46		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
6080005	WARNING, MARKER, OR REGULATORY SIGN PANEL	SQ.FT.	531		
6080110	REMOVE AND REINSTALL SIGN	EACH	1		
7015010	TEMPORARY CONCRETE BARRIER (INSTALLATION AND REMOVAL)	L.FT.	10,194		
7015020	TEMPORARY IMPACT ATTENUATORS (INSTALLATION AND REMOVAL)	EACH	4		
7015051	OBLITERATE PAVEMENT MARKING (ARROW, SYMBOL OR LEGEND)	EACH	2		
7015091	SPECIALTY SIGNS	SQ.FT.	225		
7016020	TEMPORARY CONCRETE BARRIER (IN USE)	L.FT./DAY	1,060,395		
7016021	TEMPORARY IMPACT ATTENUATORS (IN USE)	EACH-DAY	390		
7016030	BARRICADE (TYPE II, VERT.PANEL, TUBULAR MARKER)	EACH-DAY	66,900		
7016031	BARRICADE (TYPE III, HIGH LEVEL FLAG TREES)	EACH-DAY	14,940		
7016032	PORTABLE SIGN STANDS (RIGID)	EACH-DAY	9,000		
7016033	PORTABLE SIGN STANDS (SPRING TYPE)	EACH-DAY	21,615		
7016035	WARNING LIGHTS (TYPE A)	EACH-DAY	38,895		
7016039	EMBEDDED SIGN POST	EACH-DAY	6,900		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
7016051	TEMPORARY SIGN (LESS THAN 10 S.F.)	EACH-DAY	39,915		
7016052	TEMPORARY SIGN (10 S.F. OR MORE)	EACH-DAY	13,020		
7016067	CHANGEABLE MESSAGE BOARD (CONTRACTOR FURNISHED)	EACH-DAY	1,800		
7040005	PAVEMENT MARKING (WHITE EXTRUDED THERMOPLASTIC) (0.090")	L.FT.	5,569		
7040006	PAVEMENT MARKING (YELLOW EXTRUDED THERMOPLASTIC) (0.090")	L.FT.	11,820		
7040074	PAVEMENT SYMBOL (EXTRUDED THERMOPLASTIC) (ALKYD) (0.090")	EACH	69		
7060015	PAVEMENT MARKER, RAISED, TYPE D	EACH	180		
7060018	PAVEMENT MARKER, RAISED, TYPE G	EACH	35		
7310186	POLE (SPECIAL) (30' APS DECORATIVE TRANSIT STYLE)	EACH	46		
7310371	POLE FOUNDATION (TRANSIT STYLE POLE)	EACH	46		
7310650	MAST ARM (SPECIAL)(TRANSIT STYLE POLE)	EACH	46		
7310812	REMOVE AND SALVAGE EXISTING LIGHTING POLES	EACH	26		
7320030	ELECTRICAL CONDUIT (1") (PVC)	L.FT.	410		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
7320055	ELECTRICAL CONDUIT (2") (PVC) (DIRECTIONAL BORE)	L.FT.	540		
7320060	ELECTRICAL CONDUIT (2 1/2") (PVC)	L.FT.	5,870		
7320410	PULL BOX (NO. 5)	EACH	46		
7320510	CONDUCTOR (NO. 10)	L.FT.	1,770		
7320531	CONDUCTOR (NO. 6) (SOLID)	L.FT.	450		
7320740	REMOVAL OF EXISTING CONDUCTORS	L.FT.	6,500		
7340115	PEDESTAL (ELECTRICAL) (LIGHTING AND IRRIGATION METER)	EACH	4		
7360104	LUMINAIRE (TRANSIT STYLE)(LED)	EACH	48		
7370455	MISCELLANEOUS ELECTRICAL (AS-BUILT DRAWING)	L.SUM	1		
7378916	GROUND ROD (5/8" x 8")	EACH	46		
8030104	DECOMPOSED GRANITE (1/2" SCREENED)	SQ.YD.	4,971		
8061009	TREE (24" BOX) (MULTI-TRUNK)	EACH	18		
8061011	TREE (36" BOX) (SINGLE TRUNK)	EACH	27		
8061298	SHRUB (FIVE GALLON)	EACH	1,280		
8061299	SHRUB (15 GALLON)	EACH	60		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
8070001	LANDSCAPING ESTABLISHMENT	L.SUM	1		
8080032	BACKFLOW PREVENTION UNIT (REDUCED PRESSURE) (1")	EACH	2		
8080045	FLOW METER	EACH	3		
8080049	EMITTER (ASSEMBLY) (MULTI OUTLET)	EACH	760		
8080087	PRESSURE REGULATOR RISER (WITH FILTER)	EACH	18		
8080141	CONTROLLER (AUTOMATIC) (TWO WIRE)	EACH	2		
8080168	CONTROL VALVE (REMOTE) (ELECTRIC) (1")	EACH	18		
8080182	MASTER VALVE	EACH	3		
8080263	VALVE (BALL)(1 1/2")	EACH	5		
8080264	VALVE (QUICK COUPLER)	EACH	8		
8080288	PIPE (PVC) (6") (SLEEVE)	L.FT.	1,244		
8080312	PIPE (PVC) (3/4") (SDR 21) (CLASS 200)	L.FT.	13,200		
8080344	PIPE (PVC) (1 1/2") (SCHEDULE 40)	L.FT.	4,466		
8080378	PIPE (PVC) (3")(SLEEVE)	L.FT.	381		
8080617	PROVIDE WATER SERVICE (1")	EACH	2		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
8080645	RESET WATER METER BOX	EACH	1		
8080646	RESET FRAME AND COVER FOR VALVE BOX	EACH	21		
8080658	FIRE HYDRANT (SPECIAL) (COEM STD DET 360, DETAIL C5)	EACH	4		
8101014	EROSION CONTROL (WATTLE)(20")	L.FT.	5,349		
8101018	EROSION CONTROL (CONSTRUCTION ENTRANCE/EXIT GRAVEL PAD)	SQ.YD.	500		
8101023	EROSION CONTROL (WATTLES) (12")	L.FT.	50		
8101029	EROSION CONTROL (ROCK MULCH) (GRADATION C)	CU.YD.	3		
8101050	EROSION CONTROL (CURB INLET PROTECTION)	L.FT.	105		
9010001	MOBILIZATION	L.SUM	1		
9030008	FENCE (8' WROUGHT IRON)	L.FT.	6,310		
9050003	GUARD RAIL, W-BEAM, SINGLE FACE (EXISTING GUARDRAIL CONNECTION)	L.FT.	163		
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1		
9080001	CONCRETE CURB (C-05.10) (TYPE A)	L.FT.	763		
9080094	CONCRETE CURB AND GUTTER (TRANSITION TYPE A TO C, MAG DET 221, DET M2)	EACH	20		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
9080101	CONCRETE CURB AND GUTTER, TYPE A (MAG DET. 220)	L.FT.	6,255		
9080102	CONCRETE CURB AND GUTTER, TYPE B (MAG DET. 220)	L.FT.	356		
9080103	CONCRETE CURB AND GUTTER, TYPE C (MAG DET. 220)	L.FT.	198		
9080112	CONCRETE TRANSITION CURB	EACH	22		
9080134	CONCRETE VALLEY GUTTER (MAG DET 240, DET M6)	SQ.FT.	6,534		
9080241	CONCRETE SIDEWALK (MAG DET. 230 & 231)	SQ.FT.	25,078		
9080289	CONCRETE WHEEL CHAIR RAMP (CITY OF PHOENIX P1240-1, DETAIL P3)	EACH	4		
9080290	CONCRETE WHEEL CHAIR RAMP (MAG DET 235-2, DET M4)	EACH	3		
9080296	CONCRETE SIDEWALK RAMP (MAG DET 236-4, DET M5)	EACH	1		
9080298	CONCRETE SIDEWALK RAMP (CITY OF PEORIA P-241-6, DET P)	EACH	1		
9080300	CONCRETE SIDEWALK RAMP (CITY OF PHOENIX P1240, DETAIL P2)	EACH	11		
9080350	CONCRETE DRIVEWAY (MAG DET. 250)	SQ.FT.	11,523		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
9080361	CONCRETE DRIVEWAY (MAG DET. 260) (ALLEY ENTRANCE)	SQ.FT.	822		
9120003	SHOTCRETE (3")	SQ.YD.	546		
9210012	MEDIAN PAVING (CONCRETE PAVER STD. DET. C-05.40)	SQ.YD.	1,079		
9210013	MEDIAN PAVING (STAMPED CONCRETE STD. DET. C-05.40)	SQ.YD.	47		
9240010	FORCE ACCOUNT WORK (APS ELECTRICAL SERVICE)	L.SUM	1	\$19,000.00	\$19,000.00
9240119	MISCELLANEOUS WORK (CONCRETE ENCASE PER MAG STD. DET. 404)	EACH	2		
9240120	MISCELLANEOUS WORK (GABION BASKET PILASTRE)	EACH	28		
9240129	MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS)(MANUAL/MECHANICAL)	SQ.YD.	249		
9240170	CONTRACTOR QUALITY CONTROL	L.SUM	1		
9240182	MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS)(HERBICIDE)	SQ.YD.	498		

BID SCHEDULE

060 MA 145 H887401C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
9250001	CONSTRUCTION SURVEYING AND LAYOUT	L.SUM	1		

BID TOTAL :

PROPOSAL

TO THE ARIZONA DEPARTMENT OF TRANSPORTATION:

Gentlemen:

The following Proposal is made for constructing project

060 MA 144 H887401C 060-B-NFA
WICKENBURG-PHOENIX HIGHWAY (US 60)
(Greenway Road to Thompson Ranch Road/Thunderbird Road)

in the State of Arizona.

The following Proposal is made on behalf of _____

and no others.

(NAME OF COMPANY, FIRM, OR CORPORATION)

The undersigned hereby certifies that (s)he has been duly authorized to submit a proposal on behalf of the company, firm, or corporation mentioned above; and further certifies, pursuant to Subsection 112(c) of Title 23, United States Code and Title 44, Chapter 10, Article 1 of the Arizona Revised Statutes, that neither (s)he nor anyone associated with the company, firm, or corporation mentioned above has, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such project and furthermore that no member or employee of the Arizona Department of Transportation is personally or financially interested, directly or indirectly, in the Proposal, or in any purchase or sale of any materials or supplies for the work to which it relates, or in any portion of the profits thereof.

The undersigned certifies that the approved Plans, Standard Specifications, Special Provisions and forms of Contract and Bond authorized by the Arizona Department of Transportation and constituting essential parts of this proposal, have been carefully examined, and also that the site of the work has been personally inspected. The undersigned declares that the amount and nature of the work to be done is understood and that at no time will misunderstanding of the Plans, Specifications, Special Provisions, or conditions to be overcome, be plead. On the basis of Plans, Specifications, Special Provisions, and the forms of Contract and Bond proposed for use, the undersigned proposes to furnish all the necessary equipment, materials, machinery, tools, apparatus, and other means of construction, and labor to do all the work in the manner specified, and to accept, as full compensation therefor, the sum of the various products obtained by multiplying each unit price, herein bid for the work or materials, by the quantity thereof actually incorporated in the complete project, as determined by the State Engineer. The undersigned understands that the quantities mentioned herein are approximate only and are subject to increase or decrease and hereby proposes to perform all quantities of work as either increased or decreased, in accordance with the provisions of the Specifications, at the unit price bid in the Bidding Schedule.

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

The undersigned further proposes to execute the Contract Agreement and furnish satisfactory Bond within ten calendar days from the date of Notice of Award, time being of the essence. The undersigned further proposes to begin work as specified in the contract attached hereto, and to complete the work on or before expiration of the contract time as defined in the Specifications, and maintain at all times a Payment Bond and a Performance Bond, approved by the State Engineer, in an amount equal to one hundred (100) percent of the total bid. These bonds shall serve not only to guarantee the completion of the work on the part of the undersigned, but also to guarantee the excellence of both workmanship and material and the payment of all obligations incurred, until the work is finally accepted and the provisions of the Plans, Standard Specifications and Special Provisions fulfilled.

A Proposal Guaranty in the amount and character named in the Advertisement for Bids is enclosed, which Proposal Guaranty is submitted as a guaranty of the good faith of the bidder, and that the bidder will enter into written contract, as provided, to do the work, if successful in securing the award thereof, and it is hereby agreed that if at any time other than as provided in the Proposal there should be failure on the part of the undersigned to execute the Contract and furnish satisfactory Bond as herein provided, the State of Arizona, in either of such events, shall be entitled and is hereby given the right to retain the said Proposal Guaranty as liquidated damages.

If by a Corporation:

(Seal)

Corporate Name: _____

Corporate Mailing Address: _____ Zip Code: _____

Incorporated under the laws of the State of: _____

By (Signature): _____ Date: _____

President: _____

Secretary: _____

Treasurer: _____

If by a Firm or Partnership:

Firm or Partnership Mailing Name: _____

Firm or Partnership Address: _____

By (Signature): _____ Date: _____

Name and Address of Each Member: _____

If by an Individual:

Signature: _____ Date: _____

Mailing Address: _____

ARIZONA DEPARTMENT OF TRANSPORTATION
SURETY (BID) BOND
(Penalty of this bond must not be less than 10% of the bid amount)



KNOW ALL MEN BY THESE PRESENTS, THAT _____

as Principal, hereinafter called the Principal, and _____

a corporation duly organized under the laws of the state of _____ hereinafter called the Surety, holding a certificate of authority to transact surety business in this State issued by the Director of the Department of Insurance, are held and firmly bound unto the Arizona Department of Transportation, as Obligee, hereinafter called the Obligee, in the sum of Ten Percent (10%) of the amount of the bid of Principal, submitted by Principal to the Arizona Department of Transportation for the work described below, for the payment of which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is herewith submitting its proposal for TRACS/Project No.

060 MA 144 H887401C 060-B-NFA
WICKENBURG-PHOENIX HIGHWAY (US 60)
(Greenway Road to Thompson Ranch Road/Thunderbird Road)

NOW THEREFORE, if the Obligee, acting by and through its Transportation board, shall accept the proposal of the Principal and the Principal shall enter into contract with the Obligee in accordance with the terms of such proposal, and give such bonds and certificates of insurance as may be specified in the contract documents with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter into such contract and give such bonds and certificates of insurance, if the Principal shall pay to the Obligee the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the obligee may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise it remains in full force and effect.

IN WITNESS WHEREOF, we hereunto set our hands and seals:

Principal

By

Title

Surety

By Attorney-in-Fact

Address Attorney-in-Fact

Subscribed and sworn before me
this _____ day of _____, 20 _____.

My Commission expires: _____

Notary Public

CERTIFICATION WITH REGARD TO THE
PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL
OPPORTUNITY CLAUSE
OF EXECUTIVE ORDER NO. 99-4 AND THE FILING OF REPORTS

AUGUST 1, 2000

The undersigned contractor or subcontractor, as appropriate, hereby certifies that he either has or has not, as indicated, participated in a previous contract or subcontract subject to the equal opportunity clause in Executive Order No. 99-4 of March 26, 1999, and furthermore that he either has or has not, as indicated, filed with the Highways Division, Arizona Department of Transportation, or the Arizona Civil Rights Division, all reports due under the filing requirements of the regulations of the Arizona Civil Rights Division.

Participated in previous contracts: Yes No.

Filed Required reports: Yes No.

Print Contractor Name

Signature

Title

Date

060 MA 144 H887401C 060-B-NFA
WICKENBURG-PHOENIX HIGHWAY (US 60)
(Greenway Road to Thompson Ranch Road/Thunderbird Road)

**CERTIFICATION WITH RESPECT TO THE
RECEIPT OF ADDENDA**

In the submission of a bid and by the signing of the Proposal, this will certify that the following numbered addenda issued on this project have been brought to my personal attention and furthermore that I understand and agree that those will be made a part of the Contract.

Addendum No. _____, _____, _____, _____, _____

PRINT NAME OF CONTRACTOR

SIGNATURE

TITLE

DATE

060 MA 144 H887401C 060-B-NFA
WICKENBURG-PHOENIX HIGHWAY (US 60)
(Greenway Road to Thompson Ranch Road/Thunderbird Road)

**ARIZONA DEPARTMENT OF TRANSPORTATION
PARTICIPATION IN BOYCOTT OF ISRAEL CERTIFICATION FORM**

060 MA 144 H887401C 060-B-NFA
WICKENBURG-PHOENIX HIGHWAY (US 60)
(Greenway Road to Thompson Ranch Road/Thunderbird Road)

This Certification is required in response to legislation enacted to prohibit the State from contracting with companies currently engaged in a boycott of Israel. To ensure compliance with A.R.S. §35-393.01, this form must be completed and returned with the bid. The bidder understands that this response will become public record and may be subject to public inspection.

As defined by A.R.S. §35-393.01:

1. "Boycott" means engaging in a refusal to deal, terminating business activities or performing other actions that are intended to limit commercial relations with Israel or with persons or entities doing business in Israel or in territories controlled by Israel, if those actions are taken either:
 - (a) In compliance with or adherence to calls for a boycott of Israel other than those boycotts to which 50 United States Code section 4607(c) applies.
 - (b) In a manner that discriminates on the basis of nationality, national origin or religion and that is not based on a valid business reason.
2. "Company" means a sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, Limited Liability Company or other entity or business association, and includes a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate.
3. "Direct holdings" means all publicly traded securities of a company that are held directly by the state treasurer or a retirement system in an actively managed account or fund in which the retirement system owns all shares or interests.
4. "Indirect holdings" means all securities of a company that are held in an account or fund, including a mutual fund, that is managed by one or more persons who are not employed by the state treasurer or a retirement system, if the state treasurer or retirement system owns shares or interests either:
 - (a) Together with other investors that are not subject to this section.
 - (b) That are held in an index fund.
5. "Public entity" means this State, a political subdivision of this STATE or an agency, board, commission or department of this state or a political subdivision of this state.
6. "Public fund" means the state treasurer or a retirement system.
7. "Restricted companies" means companies that boycott Israel.
8. "Retirement system" means a retirement plan or system that is established by or pursuant to title 38.

All Bidders must select one of the following:

_____ **The bidder does not participate in, and agrees not to participate in during the term of the contract a boycott of Israel in accordance with A.R.S. §35-393.01.**

_____ The bidder **does** participate in a boycott of Israel as defined by A.R.S. §35-393.01.

By submitting this response, the bidder agrees to indemnify and hold the State, its agents and employees, harmless from any claims or causes of action relating to the State's action based upon reliance on the above representations, including the payment of all costs and attorney fees incurred by the State in defending such an action.

_____	_____
Company Name	Signature of Person Authorized to Sign
_____	_____
Address	Printed Name
_____	_____
City State Zip	Title