SPECIAL PROVISIONS

FOR

NAVAJO PARKS AND RECREATION DEPARTMENT PROJECT

BU# C01526

Little Colorado River Tribal Park

January 30, 2018

Construct New Roadway & Parking Lot

PROPOSED WORK:

The proposed Construct New Roadway work is located in Coconino County, located approximately 10 miles west of Cameron on State Route 64 beginning at MP 286.0 and extending easterly to MP 286.6, for approximately 0.6 miles. The work consists of constructing a new access to the LCRTP. Work consists of installing asphaltic concrete and asphaltic concrete friction course, extending two corrugated metal culverts and installing one new culvert, extending a box culvert; curb and gutter; sidewalks; fence; striping; signing; and other related work.

PROFESSIONAL ENGINEER'S SEALS

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

Dibble Engineering

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

Dibble (Roadway)

(SPC00FA, 09/21/16)

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 and Non-bid Pamphlet which include the following documents:

Appendices A, B, C

These Special Provisions,

Wage Determination Decision,

Bidding Schedule,

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 which is furnished to prospective bidders; however, each bidder shall satisfy itself as to the requirements of each document.

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 ADOT 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.

(NAVAJO, 04/15/03)

RELATIONS WITH THE NAVAJO NATION:

The project is located on lands controlled by the Navajo Nation which may subject the contractor to the laws and regulations of the Navajo Nation. Contractors shall make themselves aware of any labor requirements, taxes, fees, licenses, permits or conditions that may be imposed by the Navajo Nation on work performed in the area. Questions regarding Navajo-imposed taxes on construction work conducted on the Reservation should be addressed to the Office of Navajo Taxation.

On other projects in this area, the utilization of Native Americans has developed a reservoir of capable, trained workers. The contractor shall contact the Office of Navajo Labor Relations for assistance in hiring such workers. The contractor shall give preference in hiring to as many workers indigenous to the area as can be properly utilized in the processing of the work. The contractor shall provide a manpower projection identifying the type of crafts and trades that it expects to utilize, the approximate date that it expects to start work, and the name of one of its employees to be its contact.

The Navajo Nation has developed a centralized procedure for handling construction staging sites, pits, permits and environmental clearances. Contractors are advised to contact the Division of Natural Resources of the Navajo Nation for assistance in these matters.

Contractors interested in acquiring water for construction use are advised to contact the Navajo Water Code Section for assistance.

The Navajo Nation contact offices are identified as follows:

Labor:	Office of Navajo Labor Relations Phone: (928) 871-6800
Permits:	Division of Natural Resources Phone: (928) 871-6593
Taxes:	Office of Navajo Taxation Phone: (928) 871-6681
Water:	Navajo Water Code Section Phone (928) 729-4132

GENERAL REQUIREMENTS:

MATERIAL SOURCE:

No Department-furnished material source has been established for this project. Material sources shall be as specified in Section 104 of the Standard Specifications.

Embankment material may be obtained from excavations within the project limits or from non-department furnished source and shall be as specified in Subsection 203-10 of the Standard Specifications. At the contractor's option, excavated material may be mined, processed and used as a source for construction items. All contractor processed material from the project limits must meet the material requirements of the respective bid items that it is used for, in accordance with the Standard Specifications and these Special Provisions.

MATERIAL WASTE SITE:

There is not a designated waste site for the excess materials. Disturbed areas shall be reseeded to the limits of disturbance with native seeding mix.

The contractor shall maintain the haul roads used during the operation, including maintenance, dust and erosion control. If hauling operations damage the access road, it shall be repaired to the same condition of the road prior to the waste operations at no cost to the Department. The contractor may remove brush, tree trimmings, and debris from the access road section, but no ground disturbances or clearing beyond the existing roadway limit will be allowed.

All costs associated with hauling, offloading, securing, restoring, and maintaining the site are considered included in the cost of the earthwork items. No additional measurement or payment will be made for these efforts.

EARTHWORK CALCULATIONS AND CROSS SECTIONS:

Borrow material is anticipated for this project.

The excess earthen material from installing pipe or box culverts is represented within the earthwork summary table.

The Earthwork Summary assumes an off-site source for Bedding and Pipe Backfill materials. Pipe Excavation extends from subgrade to the bottom of the Bedding material. Trench Backfill, per Standard Drawing C-13.15, extends from subgrade to the top of the Pipe Backfill material.

The Earthwork Summary utilizes the quantities for Structural Excavation from the Structure Sheets, per Standard Drawing B-19.50. An offsite source is assumed for Structure Backfill material. The volume displaced by the concrete structures to the neat lines of the Structural Excavation is accounted for in the Earthwork Summary.

CONTRACTOR USE SITES:

Potential contractor use sites are not shown on the project plans. When full environmental clearance is obtained as specified herein, the contractor shall clear and grade the site for use as a construction yard, staging area, waste area or nursery as directed by the Engineer.

The contractor shall submit a Contractor Use Site Plan for review and approval by the Engineer and the Forest representative prior to utilization of the sites. The Contractor Use Site Plan shall include but not be limited to showing the locations and listing the types of equipment and materials to be stored on site at each specific location.

A walkthrough inspection with the Engineer shall be required to review the proposed clearing limits for the use sites. It shall be the contractor's responsibility to coordinate with the Engineer to obtain authorization, prior to grading or moving into the potential contractor use sites. In addition, the contractor shall place the temporary yellow rope prior to moving into the site at no cost to the Department.

The contractor shall be responsible for maintenance, dust and erosion control within the potential use site(s). Existing plant materials requested to remain within the potential use site(s) shall be flagged and protected in place or transplanted as approved by the Engineer. The site shall be restored after contractor operations have ceased on the area. Payment for work on the potential use sites shall be per contract items listed in the bid schedule.

Existing plant materials requested to remain within the alternative use site(s) shall be flagged and protected in place or transplanted as approved by the Engineer. At the completion of the project, the contractor, at the direction of the Engineer, shall recontour the alternative use site(s) similarly to the pre-construction condition, revegetate, seed, and fence the site(s) in accordance with the approved contour and revegetation plan and

any other conditions of the permit(s). All revegetation shall conform to Section 806 herein, except the costs of the work shall be considered as included in the price of contract items.

No separate measurement or payment will be made for any work associated with alternative contractor use site(s).

PROTECTION OF EXISTING FEATURES:

The contractor shall preserve and protect all existing vegetation (i.e., trees, shrubs, cacti and native grasses), topography, and rock formations on or adjacent to the site, unless other requirements have been agreed to by the Engineer. The contractor shall replace damaged vegetation on a one-for-one basis for all unauthorized cutting, removing or altering of existing vegetation, topography, and rock formations including damage due to careless operation of equipment, stockpiling of materials or tracking of terrain by equipment in accordance with Section 201 - CLEARING AND GRUBBING herein.

STORMWATER MANAGEMENT FOR CONSTRUCTION ACTIVITIES:

Controlling runoff and sedimentation from the project site is a high priority for the Department and other agencies having jurisdiction over natural resources downstream of the project area. Stormwater management of construction activities on the project are subject to pollution prevention requirements established under the Arizona Pollutant Discharge Elimination System (AZPDES) permits for storm water point source discharges and the Arizona General Permit. Subsection 104.09 and Section 810 of these Special Provisions contain highlights of the stipulations of the AZPDES Permits and other requirements to achieve compliance. These Special Provisions are not intended to establish or affect the contractor's legal rights or obligations under the law. The contractor shall take special care in regard to understanding the regulations and shall be solely responsible for conducting his/her operations in a manner that is compliant with the terms and conditions of the law.

In case of conflicts between these Special Provisions and the AZPDES regulations, the regulations shall take precedent. ADEQ has the authority to issue administrative, civil, and criminal penalties for noncompliance. Penalties for noncompliance will be borne solely by the contractor.

BONDING AND PERMIT:

The Contractor shall provide to the Navajo Nation a Performance Bond underwritten and executed by Surety Company that guarantees the Contractor's complete and satisfactory performance under Contract. The Performance Bond shall be equal to one-hundred percent (100%) of the Original Contract Amount, unless otherwise provided in the Lesser Bond Amounts. The Contractor shall also provide to the Arizona Department of Transportation (ADOT) a Performance Bond underwritten and executed by Surety Company, registered with the Arizona Department of Insurance, that guarantees the Contractor's complete and satisfactory performance under Contract. The Performance

Bond shall be equal to one-hundred and twenty-five percent (125%) of the Original Contract Amount, and payable to ADOT.

Other bonds as stated in the Request for Proposal are also required.

An Encroachment Permit (Application No. T110058) must be obtained by the contractor for any work in ADOT right of way. The Permit has been initiated by NDOT and shall be completed by the contractor.

CONSTRUCTION SEQUENCING:

The project shall consist of several Phases:

Phase I: SR 64 widening and Access Road
Phase II: Parking Lot

Phase I construction shall begin prior to commencement of Phase II work. Phase II work shall commence no sooner than the first business day after Memorial Day 2018. Tribal vendors on site shall not be disturbed or access impeded prior to Memorial Day 2018.

INTERNAL TRAFFIC CONTROL:

Internal traffic control (ITC) is a process used by construction project managers and contractor staff to coordinate and control the flow of construction vehicles, equipment, and workers operating in close proximity within the work space to ensure the safety of workers and inspectors. The American Road and Transportation Builders Association (ARTBA) guidelines 'Internal Traffic Control Planning for Work Zone Safety' shall be used to help define work zone safety practices. A substitute for these guidelines can be submitted to the Engineer for approval at the PreConstruction Conference.

PREVENTION OF PROLIFERATION OF NOXIOUS WEEDS:

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 not locate the wash-down area near any wash and shall properly protect the wash-down site to prevent any discharge into downstream washes. 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

There will be no direct measurement or payment for the work described above. The cost is considered as included in the price of contract items.

RIPRAP:

The rock for all rock mulch and riprap shall be native materials obtained in the vicinity of the project, to the amount practical and meet the requirements of Subsection 104.05, Section 913, and the gradation shown on the plans. The material shall be angular in shape, and the color shall match the surrounding rock outcrops and adjacent materials. If an outside source is used, it shall be as approved by the Engineer prior to use.

ENVIRONMENTAL MITIGATION MEASURES:

The contractor shall comply with all mitigation measures that are included in Appendix A and B. Compensation for this work shall be considered as included in the prices of other contract items.

Construction shall stop upon the discovery of any cultural or archeological resources within the clearing limits. The contractor shall immediately inform the Engineer of such discovery.

Contractor shall coordinate with NDOT Project Management Staff.

(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.

(103AWARD, 12/14/09)

SECTION 103 - AWARD AND EXECUTION OF CONTRACT:

103.04 Award of Contract: the first paragraph of the Standard Specifications is modified to add:

When a contract is funded, either wholly or in part, by federal funds, an award of contract may be made contingent upon the successful bidder obtaining an appropriate license from the State Registrar of Contractors, in accordance with Arizona Revised Statutes 32-1101 through 32-1170.03. The license must be obtained within 60 calendar days following opening of bid proposals. No adjustment in proposed bid prices or damages for delay will be allowed as a result of any delay caused by the lack of an appropriate license.

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 104 - SCOPE OF WORK:

104.04 **Maintenance of Traffic:** of the Standard Specifications is modified to add:

No work will be allowed on the recognized holidays.

On a recognized holiday, the contractor shall be done working from 12:00 P.M. the business day prior to the holiday and cannot restart work until 5:00 A.M. the business day following the holiday unless otherwise directed by the Engineer. When the holiday falls on Tuesday, the Monday before the holiday shall be considered a holiday also. When the holiday falls on a Thursday, the Friday following the holiday shall also be considered a holiday.

The recognized holidays are:

New Year's Day
Civil Rights Day
Presidents' Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veterans' Day
Thanksgiving Day
Christmas Day

(104SWEPA, 03/11/13)

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 National Pollutant Discharge Elimination System (NPDES) for erosion and sediment control due to stormwater runoff during construction, as specified in the "General Permit for Stormwater Discharges from Construction Activities," issued by the Environmental Protection Agency (EPA). That document is hereinafter referred to as the NPDES general permit, and is available online at http://www.epa.gov/npdes.

Useful information related to stormwater controls and erosion and sediment control measures is presented in the Construction General Permit Fact Sheet, available from the EPA website, and in 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_Control_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 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 NPDES general permit.

The plans will include preliminary erosion control measures and additional information to be included in the project's Stormwater 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 NPDES 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 said permit. Signature of the NOI shall be by a responsible corporate officer, also as defined in the NPDES 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's completed and filed in accordance with Subsection 104.09(C), including the specified review time, and the SWPPP implemented, including installation of the sediment control devices required in Subsection 104.09(B) along the downgradient boundaries of the project.

The contractor shall obtain a copy of the NPDES general permit, and include it with the SWPPP.

Submission of the contractor's NOI shall certify that the contractor and its subcontractors have read and will comply with all provisions of the NPDES 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; runoff coefficients; preliminary site map; 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, and evaluate all SWPPP requirements for adequacy in addressing pollution prevention during construction, and prepare a draft SWPPP for review by the Engineer.

The Department has reviewed the applicable EPA website for Region 9, and contacted the regional TMDL (Total Maximum Daily Load) team leader for any information concerning an EPA-established or approved TMDL for waters in the area of this project. The contractor shall include the Department's information in the draft SWPPP. The contractor may accept this information or make its own assessment of potential TMDL impacts for the project and provide the required information in the draft SWPPP. Should the contractor conduct its own assessment and discover facts that indicate the Department's information may be erroneous, the contractor shall notify the Engineer as soon as possible. Should no assessment from the contractor be provided in the SWPPP, the contractor's signature on the NOI and the finalized SWPPP shall certify that it supports the Department's information regarding TMDLs for the project.

The Engineer will provide the contractor with documentation regarding Endangered Species at the time of approval of the contractor's erosion control coordinator. The contractor shall review the information and include the documentation with the draft SWPPP. The contractor may accept this information or make its own assessment of potential impacts on Endangered Species for the project and provide the required information in the draft SWPPP. Should the contractor conduct its own assessment and discover facts that indicate the Department's information may be erroneous, the contractor shall notify the Engineer as soon as possible. Should no assessment from the contractor be provided in the SWPPP, the contractor's signature on the NOI and the finalized SWPPP shall certify that it supports the information regarding Endangered Species for the project.

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 NPDES general permit. The contractor's erosion control coordinator (also abbreviated herein as ECC) 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 the NPDES General Permit. Documentation of the delegation of a duly authorized representative shall be included as part of the SWPPP.

The draft SWPPP shall include all information and permit requirements specified in the NPDES general permit, including a general location map and finalized site map; identification of receiving waters and wetlands within one mile of 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; provisions for

maintaining undisturbed natural buffers or providing for equivalent erosion and sediment controls when a surface water is located within 50 feet of the project's earth disturbances, as required in said permit; procedures for maintaining temporary and permanent erosion control measures; and a list of the contractor's pollution prevention practices. The draft SWPPP shall also be consistent with applicable federal, tribal, 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.

Temporary or permanent stabilization of disturbed ground surfaces must be initiated immediately when earth-disturbing activities have ceased temporarily or permanently on any portion of the construction site. Such stabilization shall prevent sediment loss from the disturbed surface. 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 the NPDES general permit and approved by the Engineer, erosion control measures shall be completed no later than 14 calendar days after construction activity has temporarily or permanently ceased for the affected sub-area.

Sediment control along the downgradient boundaries of the project shall also be required. The plans may include sediment basins or traps to provide such drainage control. Should the plans not include measures for perimeter sediment control, the draft SWPPP shall either propose construction of such basins, if attainable, or specify other sediment control measures, such as silt fences. All such devices shall be installed and implemented before any clearing and grubbing of the site is initiated.

Sediment basins may be included on the plans as part of the preliminary information, or proposed as part of the final SWPPP. No additional payment will be made for sediment basins included on the plans as part of the preliminary information, the cost being considered as included in contract items. New sediment basins approved for inclusion in the final SWPPP will be paid for in accordance with Subsection 109.04(D).

Should sediment basins be proposed for downstream perimeter control, or for sediment control elsewhere on the project, the contractor shall determine the feasibility and capacity of such basins in accordance with the requirements of the NPDES general permit. If attainable and if approved by the Engineer, such basins shall be included in the final SWPPP.

The contractor shall comply with the requirements of the NPDES general permit should the use of polymers, flocculants, or other treatment chemicals be proposed in conjunction with such basins, or elsewhere on the project.

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 NPDES general permit. The draft SWPPP shall also accommodate all requirements for the contractor's pollution prevention procedures 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 SWPPP shall also list the names of the construction personnel with day-to-day operational control of those activities necessary to ensure compliance with the SWPPP or other conditions of the NPDES general permit.

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; and
- Other record keeping forms and procedures, as needed.

Within 10 calendar days from the SWPPP submittal, the Engineer and contractor will jointly review the contractor's draft SWPPP, and the contractor shall include any additional revisions directed by the Engineer. The finalized SWPPP shall meet the terms

and conditions of the NPDES 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 Engineer and the contractor shall each file a Notice of Intent (NOI) as specified in Subsection 104.09(C). At this time the Engineer will also provide a copy of the Department's NOI to the contractor.

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 NOI's completed and filed in accordance with Subsection 104.09(C), including the specified review time, 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, all as described herein.

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.

The contractor's erosion control coordinator shall maintain the signed SWPPP, a copy of the NPDES general permit, signed NOI, acknowledgement letter(s) from the EPA, completed inspection forms, and other NPDES 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 the EPA, FHWA, and other entities identified in the NPDES 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 reports) 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 NPDES general permit or the SWPPP shall release the contractor from any responsibilities or requirements under other environmental statutes or regulations.

The contractor shall provide copies of the SWPPP upon request to the EPA, U.S. Fish and Wildlife Service, affected local agencies, or operators of affected municipal separate storm sewer systems.

(C) Notice of Intent (NOI):

After the project Storm Water Pollution Prevention Plan (SWPPP) has been approved, the Engineer and contractor will each complete separate Notice-of-Intent (NOI) forms for the project. The NOI prepared by the contractor includes a certification statement which must be signed and dated by an authorized representative of the contractor, as defined in the NPDES General Permit, and must include the name and title of that authorized representative. The contractor's completed NOI form will be submitted to the Engineer for approval prior to submission to EPA. After approval, the contractor shall submit the NOI to the EPA through the eNOI system at http://cfpub.epa.gov/npdes/stormwater/cgpenoi.cfm.

The contractor will be authorized to begin implementation of the approved SWPPP 14 calendar days after acknowledgement of receipt of both NOIs is posted on EPA's NPDES website at http://cfpub.epa.gov/npdes/stormwater/cgpnoisearch.cfm, and a copy of the contractor's approved NOI, indicating an active status, has been provided to the Engineer, unless notified by EPA that additional information regarding Endangered Species or other issues is required. Should additional information be required, the contractor is not authorized to begin SWPPP-related work until notice of eligibility is received from the EPA.

No adjustments to the contract time or costs will be made for the 14 calendar-day review period specified above. If the EPA approval process requires more than 14 calendar days, the contractor may seek, and the Engineer may grant, a non-compensable extension of time in accordance with the terms of Subsection 108.08. The time extension shall not exceed 14 calendar days.

The contractor shall post a sign or other notice near the entrance to the construction site containing the NPDES Permit tracking number and a contact name and phone number of the person designated by the contractor to provide additional project information.

At any time after authorization, the EPA may determine that the contractor's stormwater discharges may cause or contribute to non-attainment of any applicable water quality standards. If the EPA 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 the EPA requires a response, failure to respond in a timely manner constitutes a permit violation. All responses shall be in accordance with the EPA general permit.

(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 or ECC) 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 NPDES 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 NPDES 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 NPDES 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 NPDES 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 ECC 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 (SWPPPs), as specified in the NPDES general permit referenced herein, or the Arizona Pollutant Discharge Elimination System (AZPDES) 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 NPDES general permit shall be started until the erosion control coordinator has been approved, the SWPPP finalized and implemented, and the NOIs completed and filed, all as specified herein.

(E) Pollution Prevention Practices and Requirements:

(1) General 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 steams 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 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 ECC 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 0.25 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 document the inspections and sign the report as specified in the NPDES general permit. Copies of the completed reports shall be retained with the SWPPP for at least three years from the date of filing of the project Notice of Termination (NOT). The contractor 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 and, if the deficiency doesn't require significant repair or replacement, complete such corrections to the satisfaction of the Engineer by the close of the next work day or by the next anticipated storm event, whichever is sooner. Deficiencies requiring installation of a new erosion or sediment control, or significant repair of an existing facility, shall be corrected within seven calendar days of observation, as specified in the NPDES general permit.

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 NPDES 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:

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 specific erosion and sediment controls were initially installed for the major grading activities referenced above.
- The dates when construction activities cease in an area, temporarily or permanently.
- The dates when stabilization is initiated on an area.
- 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 submit a Notice of Termination (NOT) for the project to the Engineer for review. After acceptance, the contractor shall submit the NOT through the EPA's electronic NOI homepage at http://cfpub.epa.gov/npdes/stormwater
/cgpenoi.cfm.

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 the NPDES General Permit, and include the name and title of that authorized representative.

The contractor shall also provide one 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 Stormwater Pollution Prevention Plan (SWPPP), 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 National Pollutant Discharge Elimination System (NPDES) for erosion control due to stormwater 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 nonexecution 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.

(104STORM, 11/01/95)

SECTION 104 - SCOPE OF WORK:

104.11 Damage by Storm, Flood or Earthquake: Item (D), Idled Equipment and Remobilization, of the Standard Specifications is hereby deleted.

104.11 **Damage by Storm, Flood or Earthquake:** Items (E) and (F) of the Standard Specifications are revised to read:

(D) Payment for Repair Work:

The State will pay the cost of the repair work as determined in Subsection 109.04.

(E) Termination of Contract:

If the Department elects to terminate the contract, the termination and the determination of the total compensation payable to the contractor shall be governed by the provisions of Subsection 108.11, Termination of Contract for Convenience of the Department.

(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 affected locations.

(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 and the Navajo Nation Historic Preservation Department.

(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.

(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.

(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:

106.05(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.

106.05(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.

106.05(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 ADOT 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, 2/15/11)

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, 7/10/12)

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.

(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:

The time allowed for the completion of the work included in the contract will be **75** working days, and will be known as the "Contract Time."

(109ACCP, 5/07/13)

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.

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

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.

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

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.

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

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".

(201CLGB, 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 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.

SECTION 201 CLEARING AND GRUBBING:

201-1 Description: of the Standard Specifications is modified to add:

To minimize unnecessary destruction of the existing vegetation, the contractor shall submit a Clearing and Grubbing Plan to the Engineer for approval prior to starting any such operations. The Clearing and Grubbing Plan shall clearly show the location and size of proposed work areas. After the plan has been approved, the contractor shall have the areas staked in the field and schedule an initial site meeting for review and acceptance by the Engineer before starting the actual clearing and grubbing work. The initial site meeting shall also require a decision is made regarding which vegetation, rock formations, and/or boulders located near the tentative clearing limits will remain and which will be removed.

201-5 Basis of Payment: of the Standard Specifications is modified to add:

No measurement or direct payment will be made for the removal and disposal of fixed objects or obstructions 5 feet to 15 feet beyond the toe of slope, the cost being considered to be included in the price of the clearing and grubbing items.

There will be no measurement or direct payment made for installation and subsequent removal of the yellow nylon rope and fence t-bars, the cost being considered to be included in the price of item 2010001 Clearing and Grubbing.

No measurement or direct payment will be made for staking the tentative clearing limits, restaking as requested and scheduling and attending the site meeting(s) described in Subsection 201-3.01, the cost being considered included in the price of Clearing and Grubbing item.

(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 2020037 - REMOVE & SALVAGE CATTLE GUARDS:

Description:

The work consists of furnishing all necessary equipment, materials, and labor to remove and salvage the existing cattle guards within the project limits in accordance with the plans and these Special Provisions.

Construction Requirements:

During construction, the contractor shall remove the existing structure, salvage the cattle guard grate, and dispose of the remnants properly according to all applicable codes and requirements off the project site. The salvaged grate shall be delivered to the Superior Maintenance Yard located at 951 Main Street, Superior, Arizona 85273. All other materials shall be property of the contractor.

Method of Measurement:

Remove & Salvage Cattle Guards will be measured as a unit each.

Basis of Payment:

The accepted quantities of Remove & Salvage Cattle Guards as measured above will be paid for at the contract unit price each, completely removed.

(202SCUT, 07/31/90)

ITEM 2020201 - SAW CUTTING:

The work under this item shall consist of saw cutting the existing pavement where new asphaltic concrete is to match existing bituminous surfaces with no provisions for overlaying the entire section. This item shall also include saw cutting of existing Portland cement concrete pavement, sidewalks, driveways and parking lots where new construction shall match the grade of existing surfaces that are to remain where called for on the project plans or where designated by the Engineer.

Saw cuts shall be made to a minimum depth of 1-1/2 inches and in all cases deep enough to insure a neat vertical joint. Portland cement concrete designated to remain, that is damaged by the saw cutting, shall be replaced in kind at the contractor's expense.

Measurement of this work will be made horizontally at each location to the nearest tenth of a linear foot.

Payment for this work will be made at the contract price per linear foot for Item 2020201, Saw Cutting, which price shall be full compensation for the work, as described and specified herein and on the project plans.

Payment will be made on the total length of saw cut to the nearest foot.

(203QCEW, 07/15/05)

SECTION 203 EARTHWORK: of the Standard Specifications is modified to add:

203-2.02 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) Backfill production, including crusher methods, pit extraction, and washing.

(b) Stockpile management, including stacking methods, separation techniques, stockpile pad thickness, and segregation prevention.

(c) Transporting and placing, including transport technique, lift thickness, processing and mixing technique, and compaction methods.

(d) Excavation and transporting, including method of excavation and transporting methods.

(e) Embankment, including method of mixing, compaction methods, unsuitable material control, waste site, and lift thickness.

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
Structural Backfill			
Gradation	ARIZ 201	Stockpile	1 per 500 CY per Source
PI	AASHTO T 89 AASHTO T 90		
Proctor Density	ARIZ 225 ARIZ 226 ARIZ 245	Stockpile	1 per Source and as needed
Field Density	ARIZ 227 ARIZ 230 ARIZ 232 ARIZ 235 ARIZ 246	In-place	1 per 200 CY, minimum 1 per lift
Subgrade			
Gradation	ARIZ 201	Roadway	1 per Soil Type
PI	AASHTO T 89 AASHTO T 90		
Proctor Density	ARIZ 225 ARIZ 226 ARIZ 245	Roadway	1 per Soil Type
Field Density	ARIZ 227 ARIZ 230 ARIZ 232 ARIZ 235 ARIZ 246	Roadway	1 per 1,000 feet
Natural Ground for Embankment Less than Five Feet			
Proctor Density	ARIZ 225 ARIZ 226 ARIZ 245	In-place	1 per Soil Type
Field Density	ARIZ 227 ARIZ 230 ARIZ 232 ARIZ 235 ARIZ 246	In-place	1 per 1,000 feet
Embankment			
Proctor Density	ARIZ 225 ARIZ 226 ARIZ 245	In-place	1 per Soil Type

Field Density	ARIZ 227 ARIZ 230 ARIZ 232 ARIZ 235 ARIZ 246	In-place	1 per 1,000 feet per lift
Borrow Within Three Feet of Finished Subgrade Elevation			
Gradation	ARIZ 201	In-place	1 per 2,000 CY
PI	AASHTO T 89 AASHTO T 90		

(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.

203-9.02 Materials: the last sentence of the Standard Specifications is revised to read:

Borrow placed within three feet of the finished subgrade elevation shall conform to the following requirement:

PC + (2.83 x PI) shall not exceed **30**,

where:

PC = Percent of material passing the No. 200 sieve (determined in accordance with Arizona Test Method 201), and

PI = Plasticity Index (determined in accordance with AASHTO T 90).

(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.

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.

404-2.02(C) **Cover Material:** of the Standard Specifications is modified to add:

Prior to placing, the cover material shall be precoated with any grade of PG asphalt cement which meets the requirements of Section 1005 of the specifications. The precoating shall be accomplished by mixing at a central plant until the aggregate is thoroughly coated. The cover material shall have a minimum temperature of 250□F at the time of precoating with asphalt cement. The cover material shall be precoated with approximately 0.40 percent to 0.60 percent asphalt cement, by weight of the aggregate. The final percentage of asphalt cement used for precoating will be as directed by the Engineer. The end result shall be a dust free material.

The gradation shall meet the following requirements for Class **1**, when tested in accordance with the requirements of Arizona Test Method 201.

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.

404-3.06 Application of Cover Material: is revised to read:

Cover material shall be immediately and uniformly spread over the freshly applied bituminous material such that aggregate particles are securely adhered and will not roll, tumble, or be picked up during the rolling process. Any oversize aggregate or foreign material picked up during stockpiling or loading operations shall be eliminated before entering the aggregate spreader hopper. Supplemental spreading and smoothing shall be done by hand methods where necessary.

404-3.07 Rolling Cover Material: is revised to read:

Following the spreading of cover material, the surface shall be promptly rolled with self propelled pneumatic tired compactors. A sufficient number of compactors shall be provided to cover the width of the material spread in one pass of the compactors and this rolling shall continue until a minimum of three passes has been completed. The third pass shall be completed within 30 minutes after the initial rolling commences.

404-3.08 Removal of Loose Cover Material: is revised to read:

The removal of loose cover material shall commence approximately 90 minutes after the final rolling is completed; however, if because of weather conditions, temperature or other reasons, the Engineer determines that conditions are not conducive to obtaining the best results, brooming shall be discontinued until the Engineer has considered all conditions and has determined the best time for the removal of the *cover material*. The cover material shall be removed by means of a power broom which shall be in good

condition and of a design suitable for the work. The action of the broom shall be such that particles which are stuck to the bituminous material will not be dislodged.

404-3.09 Application of Blotter Material: the first paragraph is revised to read:

An application of blotter material and light brooming may be required following the placement of a precoated seal coat and prior to opening the roadway to traffic. The Engineer may direct that blotter material be applied in one or more applications for a total application of 2 pounds per square yard.

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.

404-3.14 **Chip Seal Coat:** the second and third paragraphs of the Standard Specifications are revised to read:

The type of bituminous material shall be **PG 70-22 TR+** and shall be applied at the approximate rate of **0.40** gallons per square yard.

Cover material shall be applied at the rate of approximately **0.0075** cubic yards per square yard; however, the Engineer will specify the exact rate to be applied based on the characteristics of the aggregate material and the surface to be treated.

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

Cover material will be measured by the cubic yard. Cover material will be weighed, before precoating, 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 foot will be determined in accordance with the requirements of AASHTO T19 (Shoveling Procedure).

404-5 **Basis of Payment:** is modified to add:

Adjustments will be made in accordance with Section 1005. No measurement or direct payment will be made for precoating the cover material, material for precoating, and rolling and removal of loose cover material.

(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.

(409AGGR, 01/26/16)

SECTION 409 ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL): the title of the Standard Specifications is revised to read:

SECTION 409 ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL-SPECIAL MIX):

409-1 Description: of the Standard Specifications is revised to read:

The work under this section shall consist of constructing Asphaltic Concrete (Miscellaneous Structural-Special Mix), hereinafter asphaltic concrete, by furnishing all materials, mixing at a plant, hauling and placing a mixture of aggregate materials, reclaimed asphalt pavement (RAP) if used, 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, and as directed by the Engineer.

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.

409-2 Materials: of the Standard Specifications is modified to add:

The bidding schedule quantity of asphaltic concrete is based on an estimated unit weight of **152** pounds per cubic foot.

409-2.01 Mineral Aggregate: of the Standard Specifications is revised to read:

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	Arizona Test Method 251	2.350 - 2.850
Combined Water Absorption	Arizona Test Method 251	0 - 2.5%
Abrasion	AASHTO T 96	100 Rev., Max 9% 500 Rev., Max 40%
Sand Equivalent	AASHTO T 176 (After thoroughly sieving the sample, no additional cleaning of the fines from the plus	Minimum 55

	No. 4 material is required.)	
Fractured Coarse Aggregate Particles	Arizona Test Method 212	Minimum 85% with at least two fractured faces and minimum 92% with at least one fractured face (plus No. 4 material)
Uncompacted Void Content	Arizona Test Method 247	Minimum 45.0%
Carbonates (1)	Arizona Test Method 238	Maximum 20%

(1): 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.

The gradation will be determined in accordance with Arizona Test Method 201, and shall conform to the requirements given below.

Mix Design Grading Limits		
Sieve Size	**Percent Passing**	
	Without Admix.	**With Admix.**
1 Inch	100	100
3/4 Inch	90 – 100	90 - 100
3/8 Inch	62 – 77	62 - 77
No. 8	37 – 46	38 -47
No. 40	10 – 18	11 - 19
No. 200	1.5 - 4.5	2.5 – 6.0

Fine 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 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 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 aggregate up to a maximum of 15 percent of the total aggregate, provided that the composite of uncrushed fine aggregate and crushed fine aggregate meets the requirement for uncompacted void content. The uncrushed fine aggregate shall be 100 percent passing the 1/4 inch and not contain 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.

409-2.02 Bituminous Material: the first paragraph of the Standard Specifications is revised to read:

Asphalt cement shall be a performance grade (PG) asphalt binder, conforming to the requirements of Section 1005. The type of asphalt binder shall be PG **64-22**.

409-2.03 Mineral Admixture: the last two paragraphs of the Standard Specifications are revised to read:

The mineral admixture content shall be 2.0 percent, by weight, of the mineral aggregate. However, a minimum of 1.0 percent mineral admixture may be used if the contractor submits test information showing a lowered percentage of mineral admixture produces mix design results for Index of Retained Strength of at least 60 percent (70 percent if the average elevation of the project is above 3,500 feet) and a Minimum Wet Strength of 150 psi when tested in accordance with Arizona Test Method 802.

The certification and acceptance of Portland cement, blended hydraulic cement, 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".

409-2.04 Mix Design: the third and fourth paragraphs of the Standard Specifications are revised to read:

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. Reclaimed asphalt pavement (RAP) may be used in the mixture if properly designed per Arizona Test Method 833; 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 409-2.02. Limits for the usage of RAP shall be in accordance with ADOT Materials Policy and Procedure Directive No. 20, "Guidance on the Use of Reclaimed Asphalt Pavement (RAP) in Asphaltic Concrete". 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".

If approved by the Engineer, as an alternative to meeting the mix design requirements specified herein, a mix design meeting the requirements of the specifications for a Section 416 Asphaltic Concrete (End Product) (3/4 inch Special Mix), Section 417 Asphaltic Concrete (SHRP) (End Product (1/2 inch Mix), or Section 417 Asphaltic Concrete (SHRP) (End Product) (3/4 inch Mix) may be substituted for use. The type of asphalt binder used in the alternative mix design must be the same as that specified in Subsection 409-2.02. The alternative mix design may include reclaimed asphalt pavement (RAP) if properly designed per Arizona Test Method 833. If a mix design meeting the requirements of Section 417 is used, the number of gyrations for N-design used in the alternative mix design must be at least that which would be specified at the location where the Asphaltic Concrete (Miscellaneous Structural-Special Mix) is to be placed. The lift thickness for the alternative mix design shall conform to the following table.

Alternative Mix Design	Minimum Lift Thickness
Section 416 (3/4 inch Special Mix)	2 inches
Section 417 (1/2 inch mix)	2 inches
Section 417 (3/4 inch mix)	2-1/2 inches

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 mineral aggregate, and RAP material if applicable, 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 material if applicable, 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 previously used mix design may be used for the duration of that project.

409-2.04 **Mix Design:** the last three paragraphs of the Standard Specifications are revised to read:

A copy of the mix design and representative samples of the mineral aggregate, mineral admixture, and asphalt cement used in the mix design shall be submitted to the Engineer

for calibration of the ignition furnace, and for the determination of sand equivalent, fractured coarse aggregate particles, and uncompacted void content. The Engineer shall witness the sampling of the mineral aggregate. 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 uncompacted void content shall meet the requirements specified in Subsection 409-2.01. 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 mix design shall meet the following criteria when tested in accordance with the requirements of the following test methods:

Criteria	Requirement	Arizona Test Method
1. Voids in Mineral Aggregate: %, Range	15.0 – 18.0	(See Note)
2. Effective Voids: %, Range	5.3 – 5.7	(See Note)
3. Absorbed Asphalt: %, Range	0 – 1.0	(See Note)
Note: For mixes without RAP, Arizona Test Method 815. For mixes with RAP, Arizona Test Method 833.		

409-2.05 Sampling and Testing: of the Standard Specifications is revised to read:

Sampling and testing the materials and mixture for quality control purposes shall be the contractor's responsibility. The contractor shall perform sufficient testing to assure that mineral aggregate and asphaltic concrete are produced which meet all specified requirements.

For acceptance purposes, samples of the asphaltic concrete shall be taken by the contractor, under the observation of the Engineer, at random locations designated by the Engineer. A minimum of one sample shall be taken for each 500 tons of asphaltic concrete. Samples shall be taken in accordance with the requirements of Section 2 or Section 3 of Arizona Test Method 104. The Engineer will immediately take custody of the samples. 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 Note)
Gradation	

Marshall Density	Arizona Test Method 410
Maximum Theoretical Density	Arizona Test Method 417
Effective Voids	Arizona Test Method 424
Note: A new calibration of the ignition furnace shall be performed for each mix design, and at any other time the Engineer directs.	

409-3.01 **General:** the first sentence of the second paragraph of the Standard Specifications is revised to read:

Smoothness of the final pavement surface shall be tested, and payment for smoothness made, in accordance with Subsection 109.13. In addition to the requirements of Subsection 109.13, the following requirements shall also be met:

409-3.01 **General:** the fourth paragraph of the Standard Specifications is hereby deleted:

409-3.01 **General:** the ninth, tenth, eleventh, and twelfth paragraphs of the Standard Specifications are revised to read:

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.

Asphaltic concrete immediately behind the laydown machine shall be in a thoroughly mixed, free-flowing, and workable condition, be free of lumps and crusts, and have a minimum temperature of 275 degrees F.

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.

The speed of the paving machine shall be coordinated with the production of the plant and an adequate number of trucks for hauling asphaltic concrete shall be available in order to achieve, as far as practical, a continuous operation.

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 will distribute the mixture uniformly in front of adjustable screeds.

409-3.01 **General:** the seventeenth paragraph of the Standard Specifications is revised to read:

Before asphaltic concrete is placed, the surface to be paved shall be cleaned of all objectionable material and tacked with bituminous material in accordance with the requirements of Section 404.

409-3.03 Acceptance: of the Standard Specifications is revised to read:

Asphaltic concrete will be accepted complete in place unless the result of any test varies from the contractor's mix design target value (TV) as follows:

Test Property	Allowable Variation from Target Value	
Gradation (Sieve sizes)		
3/8 inch	TV –10.0	TV + 10.0
No. 8	TV – 8.0	TV + 8.0
No. 40	TV – 6.0	TV + 6.0
No. 200	TV – 2.5	TV + 2.5
Asphalt Cement Content	TV – 0.60	TV + 0.70
Effective Voids	TV –2.5	TV + 2.0

Within 15 days after receiving notice of any failing test result(s), the contractor may submit a written proposal to accept the material represented by the failing test result(s), in place, at a reduction in cost. If the failing test result(s) are only on asphalt cement content and/or effective voids, the reduction in cost will be $5.00 per ton. If the failing test result(s) are only on gradation, the reduction in cost will be $3.00 per ton. If the failing test result(s) are on asphalt cement content and/or effective voids, and also on gradation, the reduction in cost will be $5.00 per ton. 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, who is not an employee of the contractor or materials supplier, experienced in asphaltic concrete testing and the development of asphaltic concrete mix designs.

Within three working days, the Engineer will determine whether or not to accept the contractor's proposal. If the proposal is accepted, the asphaltic concrete shall remain in place, at a reduction in cost per ton, as described above, and any necessary corrective action shall be performed at no additional cost to the Department. 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 asphaltic concrete, represented by failing test results, is used as temporary pavement which will be removed prior to, or after, the completion of construction, the Engineer reserves the right to waive the engineering analysis and accept the material in place, at a cost reduction described above, provided the temporary pavement maintains the functionality of the intended use for the duration of the project.

409-5.02 **Reduction for Noncompliance:** of the Standard Specifications is revised to read:

A reduction in payment to the contractor for asphaltic concrete will be made for quantities of asphalt cement (bituminous material) that do not meet the requirements of Section 1005 as determined by corresponding test results. Adjustments in payment will be made in accordance with the requirements of Table 1005-1 and the following formula:

$$R = (100 - P) \times \left[\frac{(CP) \times T}{100} \right]$$

Where:

R = Amount of Reduction in Payment (dollars)
T = Quantity of asphalt cement in failure (tons, rounded to nearest tenth)
P = Percent of Contract Unit Price allowed (Table 1005-1)
CP = Current Price for asphalt cement (bituminous material), as determined by the Department, for the month in which a deficiency was noted. This value will be posted on the ADOT Contracts and Specifications Section website, on or shortly after the last Wednesday of each month.

(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.

(601PRCST, 03/31/05)

SECTION 601 - CONCRETE STRUCTURES:

601-1 **Description:** of the Standard Specifications is modified to add:

Pre-cast minor structures shown on the Department's Approved Products List (APL) may be used as alternatives to cast-in-place minor structures. The current list of such pre-cast structures is available on the internet from the Arizona Transportation Research Center (ATRC), through its PRIDE program.

The "H" dimension for catch basins shall be determined in the field prior to casting. The contractor is advised to acquaint itself with conditions peculiar to the project, which might limit the use of precast items.

The use of precast cattle guards for either H-10 or H-20 loading shall be limited to roadway locations with maximum longitudinal grades of six percent.

Pre-cast minor structures not appearing on the APL may be considered for use in accordance with the requirements of Subsection 106.14.

(602PRSTR, 09/08/11)

SECTION 602 PRESTRESSING CONCRETE:

602-1 **Description:** the first paragraph of the Standard Specifications is revised to read:

The work under this section shall consist of prestressing precast and cast-in-place concrete by furnishing, placing and tensioning of prestressing steel in accordance with the details shown on the project plans, and the requirements of the specifications.

602-1 **Description:** the third paragraph of the Standard Specifications is revised to read:

Prestressing for precast concrete members shall be performed by the pretensioning method.

Precast, prestressed concrete bridge members shall be manufactured in accordance with Materials Policy and Procedure Directive No. 22, "Qualification and Specification Requirements for the Manufacturing of Precast/Prestress Concrete Bridge Members".

Prestressing for cast-in-place concrete structures shall be performed by the post-tensioning method.

ITEM 6070038 - SLIP BASE:

Description:

The work under this item shall consist of furnishing all materials, tools, equipment, and labor necessary to install slip bases in accordance with the project plans and the requirements of these specifications.

Materials:

All materials for the slip bases shall be new.

Method of Measurement:

SLIP BASE will be measured by the unit for each slip base installed complete in place.

Basis of Payment:

The accepted quantities of SLIP BASE, 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 project plans.

(607POST, 9/08/11)

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.

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, and shall not be covered with a protective or anti-graffiti film. The panels shall not be overlaid.

The contractor shall not paint the bolts or the washers except as indicated in the addition to subsection 608-3.01 identified in these special provisions.

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 ± 1/16th of an inch.

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 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 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-cuttable 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 the fabrication of the new sign panels, the contractor shall ensure the bolt holes on each sign panel are placed so the holes will not coincide with any legend on the sign panel and any bolts, washers, or other hardware used to install the sign panel to sign supports will not cover any portion of the legend on the sign panel. If the bolt holes on a sign panel do not comply with these requirements, the Engineer may reject the sign panel or, at the Engineer's discretion, accept the sign panel but require the contractor to paint the bolts, washers, and any hardware coinciding with legend on the sign 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:** first paragraph of the Standard Specifications is revised to read:

Sign panels will be measured to the nearest 0.1 square foot for each type or types of sign panels furnished and installed. The area of each sign panel, except for warning, regulatory and marker sign panels, will be measured per plans dimensions. The total area of each type or types of sign panels will be rounded to the nearest square foot.

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 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.

(610PNT, 08/29/12)

SECTION 610 PAINTING:

610-1 ***Description:*** of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing paint and other materials and painting concrete, structural steel, or other surfaces where shown on the plans in accordance with the requirements of the specifications. The work shall include preparation of the surfaces to be painted, the protection and drying of the paint coatings and the protection of pedestrian, vehicular or other traffic near or under the work from paint spatter and disfigurement.

After ground disturbance has been initiated for each structure to be painted, the local soil colors and textures are observable and the color of surrounding land formations can be ascertained, Roadside Development and the Engineer, in consultation with Forest Service, will determine a range of paint color(s) to be applied to the structures. Each structure may be painted a different color under this contract, depending on the structure's visual setting. Up to three initial colors per structure will be selected for further consideration (using either separately, or in combination, Federal Test Standard Number 595, Frazee, Dunn-Edwards or other industry standard color charts). The contractor will provide a minimum of three sets of fully covered eight-inch by ten-inch paint color draw downs of the selected color reference samples and the contractor's proposed paint brand. Paint color draw downs are to be submitted to the Engineer for submittal to Roadside Development for review and approval. While each structure is being constructed, a field review will be conducted by Roadside Development, the Engineer, and the Forest Service to evaluate the appropriate colors to be considered at each structure location.

Test samples measuring ten feet by fifteen feet of each of the selected colors shall be applied by the contractor on the concrete surfaces of each structure for final color approval by Roadside Development, the Engineer and the Forest Service.

All samples shall have two coats of paint applied. The paint shall be applied using the same methods that will be used to paint the concrete structures.

The contractor shall match the final colors selected for each structure and provide final eight- inch by ten-inch fully covered paint draw downs; no paint shall be ordered, purchased or applied until the final draw downs and samples for each structure have been approved by Roadside Development.

610-3.02(A)(1) Blast Cleaning: the last sentence of the first paragraph of the Standard Specifications is revised to read:

Blast cleaning shall leave all surfaces with a dense, uniform anchor pattern or profile of 1.0 to 3.0 mils, as measured with an approved surface profile comparator or pressed film replica tape.

610-3.02(A)(4) Water Blast Cleaning: the next to last sentence of the first paragraph of the Standard Specifications is revised to read:

All the surfaces to be coated shall be power washed with a water pressure of not less than 2000 psi and not greater than 5000 psi.

610-3.03 Application: the first two paragraphs of the Standard Specifications are revised to read:

Painting shall be accomplished in a neat and professional manner.

For painting metal surfaces, paint shall normally be applied by spraying with limited use of hand brushes or rollers.

610-3.03 Application: the last paragraph of the Standard Specifications is revised to read:

For painting concrete surfaces, the contractor shall apply all paint applications to a test specimen or to the concrete surface, according to Application Plan, for the subsequent approval of the Engineer. The contractor shall refinish the test inspection areas to match the paint finish of the surrounding concrete surfaces.

610-3.04 Protection Against Damage: the second paragraph of the Standard Specifications is revised to read:

Paint which results in an unsightly appearance on surfaces not designated to be painted shall be removed or obliterated as approved by the Engineer.

610-3.05(A)(1) General: the first paragraph of the Standard Specifications is revised to read:

All surfaces of new metals shall be painted with one shop coat (primer) and two field coats (the intermediate coat and topcoat), unless otherwise specified.

All paints used shall be appropriately chosen from among the types described in Subsections 1002-2.01 through 1002-2.05 and shall conform to the requirements given therein.

610-3.05(A)(2) Primer: the first paragraph of the Standard Specifications is revised to read:

The dry film thickness of the primer shall not be less than 2.0 mils, and be sufficient to cover the blast profile pattern.

610-3.05(A)(2) Primer: the first sentence of the fifth paragraph of the Standard Specifications is revised to read:

As soon as practicable after being accepted by the Engineer and prior to removal from the shop, machine-finished surfaces shall be coated with a rust inhibitor which can easily be removed.

610-3.05(A)(3) Intermediate Coat: the first sentence of the first paragraph of the Standard Specifications is revised to read:

The intermediate coat shall be appropriately tinted to contrast with the primer.

610-3.05(A)(4) Topcoat: the first paragraph of the Standard Specifications is hereby deleted:

610-3.06 Painting Damaged Galvanized Coating: of the Standard Specifications is revised to read:

Damaged areas of galvanized coating shall be roughened by sanding or acid treatment. The roughened areas shall be painted with two coats of zinc-rich primer, conforming to the requirements of Subsection 1002-2.02.

610-4 Blank: the title and text of the Standard Specifications are revised to read:

610-4 Field Adhesion Testing:

Random adhesion testing of the completed paint finish may be performed by the Department after a minimum of 30 days from the time of application.

If adhesion testing is performed, it will be done according to one or both of the following methods and shall meet the respective requirements. When testing is performed in accordance with ASTM D 4541, Method E, a strength of at least 100 psi is required. When testing is performed in accordance with ASTM D 3359, Method A, a rating of 3A or higher is required.

(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.

(702ATTN, 11/01/16)

SECTION 702 ATTENUATION DEVICES:

702-1 **Description:** of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing all materials and installing attenuation devices of the types designated and at the locations shown and in accordance with the plans and the requirements of the specifications.

702-2.01 **General:** the fifth and sixth paragraphs of the Standard Specifications are revised to read:

Asphaltic concrete shall conform to the requirements of Section 409.

Attenuation devices approved for use are shown on the Department's Approved Products List (APL). The most current version is available on the internet from ADOT Engineering and Construction, through the Product Evaluation Program. Attenuation devices other than those listed on the APL must be approved by the Department prior to use.

702-2.03 **Sand Barrel Crash Cushion:** of the Standard Specifications is revised to read:

The barrels used in sand barrel crash cushions shall be frangible, plastic barrels formulated or processed to resist deterioration from ambient ultraviolet light.

The barrels shall exhibit good workmanship and shall be free of structural flaws and objectionable surface defects. When filled with the specified weight of sand, the barrel walls shall not distort, either as an indentation or a protrusion, more than 1/2 inch from the original barrel wall configuration.

Each barrel shall be clearly labelled with the design weight of the filled barrel. The barrels shall have design weights consistent with those shown on the project plans. The Engineer may open the barrels to verify fill height and weight based on manufacturer's literature.

When sand barrel crash cushions are installed at elevations above 3,000 feet, a minimum of five percent rock salt (by weight) shall be thoroughly mixed with the sand.

Regardless of whether barrels are pre-filled or filled in place on the project site, the Department will sample the sand or the sand/rock salt mixture.

For barrels filled in place the sand, or the sand/rock salt mixture if used, will be sampled in accordance with Arizona Test Method 105 and will be accepted only upon test results indicating conformance to the requirements herein. If the Department accepts the sand barrel crash cushion, a permanent unique identifier will be affixed to the barrel indicating conformance with the requirements specified herein.

Pre-filled barrels delivered to the project shall have been inspected by the Department in advance and shall each have a Department-furnished unique identifier that is permanently affixed to the barrel corresponding to a production lot(s) for which Department test results indicated conformance with the requirements specified herein. Pre-filled barrels not having a Department-furnished unique identifier will not be accepted.

Upon delivery the contractor shall furnish a Certificate of Compliance, in accordance with the requirements of Subsection 106.05, for each production lot from which filled barrels are supplied. The Certificate of Compliance shall include a statement of the following:

1) The assembly of all parts of each sand barrel, including filling of the barrels with sand or a sand/rock salt mixture, has been completed as directed by the manufacturer.

2) The pre-indicated fill heights have been adjusted based on the unit weight of the sand in accordance with the manufacturer's recommendations.

Barrels shall be filled to the specified weight with clean concrete sand meeting the requirements of ASTM C33 or alternatively, sand (fine aggregate) meeting the requirements of Subsection 1006-2.03 (B). The sand, immediately prior to placement in the barrel, shall have a dry unit weight of 90 to 110 pounds per cubic foot when tested in accordance with AASHTO T 19 (Shoveling Method) and a moisture content of less than two percent in accordance with AASHTO T255.

Sampling of the sand for pre-filled barrels will be performed by the Department on a production lot basis. The supplier shall notify the Department at least ten days prior to filling barrels. A Certificate of Analysis for the sand, conforming to the requirements of Subsection 106.05, shall be submitted to the Department upon sampling that indicates the following:

1) The sand meets the requirements herein for dry unit weight and conformance to ASTM C33 or Subsection 1006-2.03(B) of these specifications.

2) The total dry weight of sand included in the production lot.

3) The quantity of each specified weight of barrel that will comprise the production lot.

Samples of the sand will be taken in accordance with Arizona Test Method 105 prior to the addition of any rock salt to determine conformance with the requirements of gradation. If the production lot will consist of sand only, the sand will also be tested for conformance with the requirements for dry unit weight and moisture content.

When a sand-rock salt mixture is used, the Department will sample, in addition to the sand, the sand-rock salt mixture in accordance with Arizona Test Method 105. The sand-

rock salt mixture will be tested to determine conformance with the requirements for dry unit weight, moisture content, and percent rock salt. The percent rock salt will be determined in accordance with Arizona Test Method 744.

The rock salt will be sampled to verify the maximum particle size.

The entire quantity of sand or sand-rock salt mixture intended for the production lot shall be maintained separately in a stockpile or other suitable means to prevent contamination.

The Engineer will notify the supplier of the test results. The test results will reference the Supplier, Production Date(s), Total Dry Weight of Sand, and Production Lot Number. Production lots containing at least five percent rock salt will be identified with an alphanumeric production lot number that includes the prefix "RS". If the test results are not acceptable, the production lot will be rejected by the Department.

The supplier shall notify the Department's Structural Materials Testing Section at least five days prior to filling the barrels to coordinate observation of the operation by Department's Structural Materials Testing Section. The Department will observe the filling of the barrels and will affix a unique identifier to each barrel filled with approved materials in an acceptable manner. The unique identifier will be in the form of a stencil or green tag containing the following information: Supplier, Production Date, Specified Weight of Sand, Production Lot Number, and Lab Report Number.

Sand barrel crash cushion installations placed prior to January 1, 2017 for which test results indicate conformance with the material requirements herein will be allowed to remain in use.

Lifting, moving, and transporting of sand barrels shall be accomplished in a manner consistent with the manufacturer's recommendations and shall not result in damage to the sand barrel or cause loss of sand from or vertical migration of sand within the barrel.

Sand barrels may be transported and used on one or more projects provided that they are properly identified, have been previously accepted by the Department and are free of defects. Any sand barrel that demonstrates evidence of tampering will not be accepted.

(708PPM, 6/15/09)

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 ± 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.

(709DCPM, 8/12/14)

SECTION 709 - DUAL COMPONENT PAVEMENT MARKINGS:

709-2.02(J) **Retroreflectance:** the first paragraph of the Standard Specifications is revised to read:

White and yellow dual component marking materials shall have the following minimum retroreflectance values at 86.5 degrees illumination angle and 1.5 degrees observation angle as measured by the Department, using an LTL-X Delta Retrometer or similar device, within 30 days after application to the roadway surface. The readings shall be taken from sample plates of markings applied in the field on the project to the specified thickness and bead application rate. The contractor and Engineer shall coordinate on procedures for sampling and handling of samples.

709-2.03 **Glass Beads:** the second paragraph of the Standard Specifications is modified to add:

Heavy metal concentration in glass beads shall conform to the requirements of Subsection 708-2.02(B)(6) of the specifications.

ITEM 8050003 - SEEDING (CLASS II):

The work under this item shall consist of furnishing all materials, preparing the soil, applying Class II seed, establishing, and maintaining the seeded areas along with final mulch cover.

Areas to be seeded are those disturbed or unvegetated areas listed herein, shown on the plans, called for in the contractor's erosion/sediment control plan, or designated by the Engineer. Seeding is required to stabilize the unpaved disturbed dry area within the Waters of the U.S. Seeding area below the Ordinary High Water Mark (OHWM) shall exclude any definable low flow channels.

Seeding may be included as part of a landscape project as specified in Section 807, or used for erosion control as part of a Storm Water Pollution Prevention Plan (SWPPP) as specified in Subsection 104.09 of the specifications, or both.

In either case, seeding shall be accomplished in two (2) stages. The first stage shall consist of tillage; furnishing and applying compost, chemical fertilizer, and sulfur; furnishing and planting the contract-specified seed mix; and furnishing, applying and affixing final mulch cover. The second stage, beginning after the first stage has been accepted by the Engineer, shall be a 45 calendar-day period during which time the contractor shall be responsible for maintaining and stabilizing the seeded and mulched areas, and restoring damaged or eroded areas.

Seeding used as part of a SWPPP shall be completed, including the 45 calendar-day maintenance period, before the end of the contract time, or sooner as required in the SWPPP. Seeding used as part of a landscape project shall be completed, including the 45 calendar-day maintenance period, before the end of the Construction Phase. When seeding is part of a landscape project, the maintenance activities described herein shall be in addition to the work specified in Section 807 for landscape establishment. No time extension will be granted for seeding not completed as specified herein, including the 45 calendar-day maintenance period, before the end of the contract time or Construction Phase as applicable.

2.0 Materials:

2.01 General:

Appropriate documentation, as specified below, shall be submitted to the Engineer a minimum of 30 calendar days before the start of a scheduled seeding activity. No materials shall be delivered to the site until the documentation has been approved by the Engineer.

Unless otherwise specified, Certificates of Compliance conforming to the requirements of Subsection 106.05 of the specifications shall be provided for all materials.

The contractor shall also provide test from accredited laboratories for all materials, as specified herein. Should the contractor perform its own testing, such test results shall also be provided to the Engineer.

2.02 Seed:

(A) General Requirements:

The species, variety, and strain of seed (designated elsewhere herein as contract-specified seed) shall be as shown on the plans or as specified herein. The contract-specified seed shall be obtained from seed suppliers through harvesting of wildland collections, or field-grown seeds grown prior to or during the contract period.

A Certificate of Analysis for each seed species shall be furnished to the Engineer at least four (4) weeks prior to seeding construction. No seed shall be furnished to, or delivered to the project until approved by the Engineer and Roadside Development. The Certificates of Analysis shall contain the following information for each seed sample: the test results of the Fifty States Noxious Weed list, all seeds including weed seeds listed, purity and germination, tetrazolium test results, when used and any pathology found to be present. The sample testing, when available for the native plant species, shall use the rules for testing seeds published by the "Association of Official Seed Analysts" or the "Society of Commercial Seed Technologists".

If the samples indicate species listed as noxious, restricted or invasive, the lot will be rejected or evaluated for use on the project. The list of noxious, restricted or invasive species is located at Roadside Development and linked to the following website:

http://www.azdot.gov/business/engineering-and-construction/roadway-engineering/roadside-development

Within 30 calendar days after the award of contract, the contractor shall submit the name of the seeding subcontractor to be used, along with written confirmation from seed suppliers and collectors, on their letterhead, that the source(s) for the contract-specified seed has been secured. If any of the contract-specified seed is expected to be unavailable prior to the time specified for seeding, in accordance with Subsection 2.02(B) below, the contractor shall notify the Engineer at this same time.

The seed shall be delivered to the project site unmixed in standard, sealed, undamaged containers for each seed species. Each container shall be labeled in accordance with the appropriate provisions of the Arizona Revised Statutes and the U.S. Department of Agriculture rules and regulations under the Federal Seed Act. Labels shall indicate the scientific genus, species, subspecies/varieties or strains of seed, the percentage of germination, purity and weed content, unless otherwise approved by Roadside Development Section through the Engineer, the date of analysis which shall not be more

than 15 months prior to the delivery date, and testing information. A Certificate of Analysis from an accredited seed-testing laboratory, and conforming to Subsection 106.05 of the specifications, shall accompany each container of seed.

Unless otherwise approved by the Engineer, weed content of the contract-specified seed mix shall not exceed 0.5 percent.

The contractor shall provide all seed tag labels to the Engineer. No payment will be made for seed until tag labels and Certificates of Analysis from all seed to be used on the project have been submitted as specified.

Both the contractor and the seed supplier shall store seed under dry conditions, at temperatures of between 35 °F and 120 °F, and out of direct sunlight. Prior to using the seed, the contractor, as well as seed supplier, shall both provide a certification letter to the Engineer verifying that the seed was stored as specified herein.

Legume seed shall be inoculated with appropriate bacteria cultures approved by the Engineer, in accordance with the culture manufacturer's instructions.

Tetrazolium staining shall be acceptable to test for germination and hard seed. Cut or fill testing will not be allowed. As directed by the Engineer, seeds with an expiration date past the acceptable test date or not meeting the specified conditions for storage shall be retested by the contractor. The Engineer may perform random sampling of seeds throughout the project. Mixing of the specified seed at the project site shall be under the supervision of the Engineer.

Application rates of seed as specified are for Pure Live Seed (PLS). PLS is determined by multiplying the sum of the percent germination of seeds, including hard or dormant seeds, by the percent purity.

Seed mix species and the PLS rates are shown in Table 1 below:

TABLE 1

SEED MIX - for All Unpaved Disturbed Areas, Unvegetated Areas, and/or Designated Areas

Botanical Name	Common Name	PLS Rate (Pounds Per Acre)	Per Pound Value for Substitution (see text)
Atriplex confertifolia	Shadscale	0.25	$23
Artemisia frigida	Fringed Sage	1	$55
Aster tanacetifolius	Purple Prairie Aster	1	$40
Baileya multiradiata	Desert Marigold	1	$70
Bouteloua curtipendula cv. Vaughn *	Sideoats Grama	3	$17

Bouteloua gracilis cv. Hachita	Blue Grama	1.5	$15
Coreopsis tinctoria	Plains Coreopsis	1	$15
Distichlis stricta	Desert Saltgrass	1	$65
Elymus canadensis	Nodding Wild Rye	3	$9
Ephedra viridis	Green Mormon Tea	0.5	$20
Gaillardia aristata	Blanket Flower	0.75	$20
Gaillardia pulchella	Firewheel	0.5	$20
Hilaria jamesii	Galleta Grass	2	$40
Koeleria macrantha	Prairie Junegrass	0.75	$35
Linum lewisii	Blue Flax	2	$10
Oryzopsis hymenoides	Indian Ricegrass	2	$10
Pascopyrum smithii	Western Wheatgrass	3.5	$15
Penstemon palmeri	Palmer Penstemon	2	$45
Sitanion hystrix **(syn.** Elymus elymoides)	Squirrel-tail Grass	2	$45
Sphaeralcea grossulariaefolia	Gooseberry-leaf Globemallow	1	$75
Sporobolus airoides	Alkali Sacaton	1.5	$25
Sporobolus cryptandrus	Sand Dropseed	0.5	$10
Stipa comata	Needle And Thread	0.5	$60
Verbena goodingii	Desert Verbena	0.5	$79
Per Acre Subtotal Value			**$952.00**

* Niner may be furnished if Vaughn is determined by ADOT Roadside Development as unavailable from seed sources.

(B) Seed Substitution:

No substitution of the contract-specified seed will be allowed unless evidence is submitted documenting that the contractor has made a diligent effort to obtain the contract-specified seed from either seed suppliers or collectors, and that the contract-specified seed will not become available prior to the time specified for seeding in the contractor's approved construction schedule.

The contractor may also request a substitution if the lowest price available for the contract-specified seed is greater than two (2.0) times the value shown in Table 1. The contractor shall provide documentation from a minimum of three (3) seed suppliers or collectors supporting such request. Documentation shall include copies of the invoices from each supplier or collector. Only those invoices obtained within three (3) weeks of

the time specified for seeding in the contractor's approved construction schedule will be acceptable.

Should a substitution of the contract-specified seed be requested for one of the two (2) reasons specified above, and the contractor's documentation is approved by the Engineer, the Department's Roadside Development Section will specify an alternate seed within five (5) working days of the Engineer's approval of the contractor's documentation. The alternate seed will only be allowed when there is an insufficient quantity of the contract-specified seed, as determined in the previous two (2) paragraphs, for the areas to be seeded as called for herein or as required for erosion control. The contractor shall obtain and apply the alternate seed, as required, to all such remaining areas. Unless otherwise approved by the Engineer, the approved alternate seed will only be allowed until such time that contract-specified seed meeting the availability and price requirements specified herein can be provided.

For each pound of contract-specified seed not provided by the contractor, the value indicated in Table 1 will be deducted from the contract amount. The price per pound for the alternate seed selected by the Department, as specified above, will be determined in accordance with Subsection 109.04(D)(2) of the specifications. No additional adjustments will be made for substituting the alternate seed, the costs being considered as included in the contract item for seeding.

No payment will be made for areas seeded with unapproved seed.

2.03 Tacking Agent:

Tacking agent shall be a naturally occurring organic compound, and shall be non-toxic. The tacking agent shall be a product typically used for binding soil and mulch in seeding or erosion control operations. Approved types shall consist of mucilage or gum by dry weight as active ingredient obtained from guar or plantago. The tacking agent shall be labeled indicating the type and mucilage purity.

The contractor shall have the tacking agent swell volume tested by an approved testing laboratory using the USP method. The standard swell volume shall be considered as 30 milliliters per gram. Material shall have a swell volume of at least 24 milliliters per gram. Certified laboratory test results for homogenous consistency shall be furnished to the Engineer for each shipment of tacking agent to be used on project areas. Tacking agent rates shall be adjusted to compensate for swell volume variation. Material tested with lesser swell volume shall have the tacking agent rate increased by the same percentage of decrease in swell volume from the standard 30 milliliters per gram. Material tested with greater volume may reduce tacking agent rates by the same percentage of increase in swell volume from the standard 30 milliliters per gram. Tacking agent shall be pure material without starches, bentonite, or other compounds that would alter the swell volume test results of mucilage, or the effectiveness of the tacking.

2.04 Thermally-Refined Wood Fiber:

Wood cellulose fiber mulch shall conform to the requirements of Subsection 805-2.03 of the Standard Specifications, except as modified herein, and shall be from thermo-mechanically processed wood, processed to contain no growth germination inhibiting factors. The mulch shall be from virgin wood manufactured and processed so the fibers will remain in uniform suspension in water under agitation to form homogenous slurry. Paper products will not be considered as virgin wood. The thermally-refined wood fiber mulch shall have the properties shown in Table 2 below:

TABLE 2	
Virgin Wood Cellulose Fiber	90% min.
Recycled Cellulose Fiber	10% max.
Ash Content	0.8% +/-0.3%
pH	4.5 +/-1.0
Water Holding Capacity	10 : 1 (water : fiber) Min.

2.05 Straw Mulch:

(A) General:

Straw mulch shall conform to the requirements of Subsection 805-2.03 of the Standard Specifications, except as modified herein, and shall be from the current season's crop. A letter of certification from the supplier shall be required stating that the straw was baled less than twelve (12) months from the delivery date.

All straw, including hydraulically applied straw, shall be free from noxious weeds in compliance with the standards and procedures of the North American Weed Management Association (NAWMA) or the Arizona Crop Improvement Association (ACIA). The contractor shall provide documentation, including a transit certificate, and appropriate labels and/or marking twine, from the ACIA or NAWMA that straw materials to be used for mulch are free of noxious weeds. The straw shall be accompanied by the certification, labels and/or marking twine at the time of delivery to the project site. Straw delivered to the project without such information will be rejected, and promptly removed from the project.

Rye straw and oat straw will not be acceptable.

(B) Straw Mulch for Hydraulic Application:

Hydraulically applied straw mulch shall be wheat or rice straw processed to various particle sizes, mixed with water and tacking material, and applied as a non-clogging slurry using a hydroseeder. A minimum of 70 percent of the wheat or rice straw in the mix shall be not less than 1/2 inch ± 1/4 inch in length. Straw particles may be longer provided that the particles can be used with the selected hydroseeder without clogging. Hydraulically applied straw mulch, as furnished by the manufacturer, may contain up to ten (10) percent paper or cotton materials in dry weight. Hydraulically applied straw mulch shall also contain 20 percent of wood fiber in dry weight. The combined dry weight percentage of

paper, cotton, and wood fiber materials together shall be not less than 15 percent nor more than 30 percent of the hydraulically applied straw mulch.

Hydraulically applied straw mulch material from the following sources shall be acceptable:

HydroMax
North American Green
5401 St Wendel-Cynthia Road
Poseyville, IN 47633
Phone: 1-800-772-2040

Hydro Straw
Hydrostraw LLC
22110 S. State Route 27
Rockford, WA 99030
Phone: 1-800-545-1755

Shot Straw
Rio Ranches LLC
PO Box 156
Palo Verde, AZ 85343
Phone: 602-680-8320

DuraBlend 361
PrimeOne Products LLC
PO Box 30816
Spokane, WA 99223
Phone: 509-981-8555

2.06 Slow-release Chemical Fertilizer and Sulfur:

Chemical fertilizer shall conform to the requirements of Subsection 805-2.06 of the specifications and shall be the kind hereafter specified. Fertilizer shall be composed of a 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, a blended fertilizer 25-4-8, shall have approximately 80 percent of the nitrogen defined as slow release, and contain five (5) percent Iron, ten (10) percent sulfur and trace amounts of zinc and manganese. The result shall be a 24-18-2 chemical blended fertilizer, as specified herein.

In addition to the fertilizer mixture, agricultural sulfur compounds, comprised of between 80 percent and 96 percent sulfur, shall be applied at the rate specified in Section 3.02. Chemical fertilizer and sulfur shall not be applied for the seeding area below the OHWM.

2.07 Water:

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

2.08 Compost:

Compost in bulk or furnished in containers or bags, shall consist of composted organic vegetative materials and may contain worm castings. No animal manures or city biosolids shall be used in the composting or added to the compost. Prior to being furnished on the project, compost samples shall be tested for the specified microbiological and nutrient conditions, including maturity and stability, by a testing laboratory approved for testing of organic materials. During pre-activity seeding construction meeting, compost test written

results submitted to the Engineer for approval shall be within nine (9) months from the date of the official lab test.

Compost material shall be dark brown in color with the parent material composted and no longer visible. The structure shall be a mixture of fine and medium size particles and humus crumbs. The maximum particle size shall be within the capacity of the contractor's equipment for application to the constructed slopes. The odor shall be that of rich humus with no ammonia or anaerobic odors.

Bulk Compost shall also meet the requirements of Table 3:

TABLE 3	
Cation Exchange Capacity (CEC)	Greater than **45** meq/100 g
Carbon : Nitrogen Ratio (C : N)	Less than 20 : 1
PH (of extract)	6.5 – 8.5
Organic Matter Content	Greater than 30%
Total Nitrogen (not added)	Greater than 1%
Maturity Index	Greater than 50% on Maturity Index at a 10 : 1 ratio
Stability Indicator, CO_2 Evolution: Biologically Available C (BAC)	Less than 4mg CO_2-C/g OM/day is desirable. From 4 through 8mg CO_2-C/g OM/day is acceptable. Greater than 8mg CO_2-C/g OM/day is not acceptable.
The CEC lab testing method shall refer to EPA9081 at the web link: *http://epa.gov/osw/hazard/testmethods/sw846/pdfs/9081.pdf*	

Bulk compost is preferred and shall be applied to areas designated for seeding at the specified rate of 15 cubic yards per acre prior to final tillage for incorporation into the soil seedbed. Unless otherwise approved by the Engineer, bulk compost shall be engaged to all areas where equipment can be operated for final tillage in order to incorporate into the soil seedbed. Bulk compost may be substituted with hydraulically applied compost for small sized projects that cover less than five (< 5) acres of Class **II** Seeding as per the approval of the Engineer.

In areas where bulk compost cannot be applied by broadcast methods, compost shall be applied hydraulically as per the approval of the Engineer. Hydraulically applied compost shall be applied at the rate of 3,000 pounds per acre to mini-benched slopes or on other approved areas for incorporation into the soil seedbed. For seeding areas 3:1 and flatter where bulk compost cannot be employed, hydraulically applied compost shall be utilized at the rate of 3,000 pounds per acre as per the approval of the Engineer. Hydraulically applied compost may also be combined with soil amendments and fertilizer in the same slurry under the approval of the Engineer. Seed shall be employed separately after the implementation of hydraulically applied compost and prior to the final mulch cover.

Hydraulically applied compost shall meet the requirements of Table 4 below:

TABLE 4	
Cation Exchange Capacity (CEC)	Greater than **55** meq/100 g *
Carbon : Nitrogen Ratio (C : N)	Less than 20 : 1
PH (of extract)	6.5 – 8.5
Organic Matter Content	Greater than 35%
Total Nitrogen (not added)	Greater than 1%
Micronutrients (added)	S, Ca, Mg, Na, Fe, Al, Mn, Cu, Zn, B
Stability Indicator, CO_2 Evolution: Biologically Available C (BAC)	Less than 4mg CO_2-C/g OM/day is desirable. From 4 through 8mg CO_2-C/g OM/day is acceptable. Greater than 8mg CO_2-C/g OM/day is not acceptable.
Moisture Content by Weight	Less than 21%
The CEC lab testing method shall refer to EPA9081 at the web link: http://epa.gov/osw/hazard/testmethods/sw846/pdfs/9081.pdf	

* When CEC is from 50 meq/100 g through 55 meq/100 g, in order to be approved, the contractor may add 100 pounds additional Hydraulically Applied Compost per acre to compensate for the lower-than-standard CEC value.

Compost shall not be applied for the seeding area below the OHWM. The choice between bulk compost and hydraulically applied compost shall be evaluated, as well as coordinated by Construction Professional Landscape Architect (PLA) according to specific project conditions with the approval of the Engineer.

2.09 Soil Conditioners:

Soil conditioners, when required, will be as shown in the Special Provisions.

3.0 Construction Requirements:

3.01 General:

(A) Seeding Operations:

At least two (2) weeks prior to beginning seeding, the contractor shall complete and submit a batch mix and seed application form to the Engineer for approval. The batch mix form will be supplied by the Engineer.

After acceptance of the form, the Engineer and contractor shall determine a one-acre sample area to be seeded and mulched prior to applying seed to the remainder of the project. Both regular straw mulch and hydraulically applied straw mulch shall be applied to the sample area. Both straw mulches shall be representative of the materials proposed for use on the project. If the seeding and mulching procedures are acceptable, the contractor shall begin seeding operations as specified herein.

The contractor shall notify the Engineer at least two (2) days prior to commencing any phase of seeding operations for the remainder of the project.

The equipment and methods used to distribute seeding materials shall provide an even and uniform application of seed, mulch, and other materials at the specified rates.

Unless specified otherwise in the Special Provisions, seeding operations shall not be performed on undisturbed soil outside the clearing and grubbing limits of the project or on steep rock cuts.

The contractor shall coordinate the seeding operations with the grading operations to determine mobilization frequency as embankment and cut slopes are finished throughout the duration of the project. Seeding shall be done during suitable weather and soil conditions for tillage and placement of materials. Seeding operations shall not be performed when wind exceeds ten (10) miles per hour or, if in the opinion of the Engineer, conditions would prevent uniform application of materials or would carry seeding materials into areas not designated for seeding.

The contractor shall not expose an area greater than 750,000 square feet at any one location within the project limits until the seeding proposed for that portion of the project has been installed and accepted by the Engineer. Seeding shall be accomplished within 14 days after slopes and disturbed areas have been completed. Seeding operations shall comply with Subsection 104.09 and the applicable portions of Section 203 of the specifications, and as directed by the Engineer.

Frequent mobilizations may be required to accomplish seeding as specified herein. The Department will consider the cost of such multiple mobilizations to be included in the price bid for the seeding. No adjustments will be made to the contract for the number of seeding mobilization activities. Should the contractor fail to provide seeding for a sub-area as specified herein, the Engineer will immediately notify the contractor of such non-compliance. Should the contractor fail to immediately remedy the unstabilized area, the Engineer may suspend work until such seeding stabilization has been completed, or proceed to provide the necessary seeding stabilization. The entire cost of such work will be deducted from the monies due or to become due to the contractor. In addition, no adjustment to the contract time will be made for suspensions resulting from the contractor's failure to provide seeding for a sub-area within the time periods specified herein.

3.02 Tillage:

Where equipment can operate, the area to be seeded shall be prepared with a ripper bar, chisel plow, or with other devices to provide thorough soil cultivation to the depth specified below.

Where equipment is not suitable for operation, hand tillage and/or other manual methods shall be utilized as approved by the Engineer. Tillage depth shall follow the requirements specified herein to maximum extent practicable (MEP).

For areas too steep to be prepared for seeding after the slope has been completed, as determined by the Engineer, tillage shall be accomplished with appropriate equipment as the slope is being constructed. On slope areas, all tillage shall be horizontal and parallel to the contours of the areas involved in order to create a roughened surface condition. All seeded areas suitable for tillage shall be pre-tilled to promote on-site stormwater infiltration and alleviate stormwater surface runoffs, as a part of stormwater Volume Reduction Approaches (VRAs). All areas which are eroded shall be restored to the specified condition, grade, and slope as directed prior to seeding.

Cut slopes shall be prepared with ridges and deep tillage, or shall be mini-benched. On fill slopes, the operations shall be conducted in such a manner as to form minor ridges thereon to assist in retarding erosion and favor germination of the seed.

Except as specified herein, slopes shall be constructed in accordance with Subsection 203-3.03(B) of the specifications. Cut slopes flatter than 3:1 (horizontal to vertical) shall be tilled a minimum of 12 inches in depth, and fill slopes flatter than 3:1 shall be tilled to a six-inch minimum depth. All slopes steeper than 3:1, and areas which could potentially be affected by underground utilities, shall be tilled to a minimum six (6) inches in depth, and left in a roughened surface condition as they are constructed.

Tillage shall be a minimum of two (2) inches in depth for the first ten (10) feet from the toe of AC wedge including shoulder build-up areas (edge of pavement build-up areas) or from the outside edge of curb and gutter.

Care shall be taken during the seeding operations to prevent damage to existing trees and shrubs in the seeding area in accordance with the requirements of Subsection 107.11 of the specifications.

Tillage may require passing the equipment over the area several times to provide thorough soil cultivation. Furrows from tillage shall be no more than 12 inches apart. No work shall be done when the moisture content of the soil is unfavorable to tillage.

All competitive vegetation shall be uprooted prior to seeding and the soil shall be left in a friable roughened surface condition free of clods or large stones over four (4) inches in any dimension, and other foreign material that would interfere with the seeding operation. Exposed stones larger than four (4) inches shall be removed and disposed of in an approved manner prior to grading and seeding.

Regardless of the method of seeding application, all areas prepared with tilling shall have chemical fertilizer and soil amendments (sulfur and compost) uniformly applied and incorporated into the soil prior to final tillage and seeding.

Chemical fertilizer and sulfur shall be applied at the rate of 200 pounds each per acre. Bulk compost shall be applied at the rate of 15 cubic yards per acre.

Unless otherwise approved by the Engineer, bulk compost shall be applied using broadcast methods to all areas where equipment can be operated. For areas where bulk compost cannot be applied by broadcast methods, as evaluated by Construction PLA and determined by the Engineer, compost shall be applied hydraulically at the rate specified in Section 2.08 above. Hydraulically applied compost shall not be combined with seed and/or final mulch cover in the same slurry. However, sulfur and fertilizer may be utilized together with hydraulically applied compost in the same slurry with the approval of the Engineer.

Slopes 3:1 and flatter shall have fertilizer, sulfur, and compost tilled into a minimum of the top four (4) inches of the surface. Slopes steeper than 3:1 shall have fertilizer, sulfur, and compost uniformly broadcast for incorporation into the soil as directed by the Engineer. Unless otherwise operated together with hydraulically applied compost for the approved locations, fertilizer and sulfur shall not be applied hydraulically to areas for seeding.

For mini-benched slopes, fertilizer, compost, and sulfur shall be applied at the specified rates with no tillage or incorporation.

3.03 Seeding:

(A) General:

Drill seeding with straw mulch shall be considered as the preferred method of seed application when practicable. Unless otherwise approved by the Engineer, drill seeding shall be used for all areas with slopes of 3:1 or less.

Hydroseeding shall be the alternative method for seed distribution for slopes in excess of 3:1, and where drill seeding is not practicable or suitable for soil conditions and seed types, as determined by the Engineer.

Seeds not suitable for drill seeding and hydroseeding methods shall be broadcast manually. Areas to be seeded manually shall be completed after the final soil tillage and prior to any drill or hydroseeding.

Final straw mulch cover or hydraulically applied straw mulch cover shall be applied on all seeded areas, as specified in Sections 3.04 or 3.05, within 24 hours of seed application. Seeding application shall be accomplished prior to installation of straw mulch cover or hydraulically applied straw mulch cover. Combining the seed application process with the mulching process will not be acceptable. By implementing Low Impact Development (LID) source-control measure, the contractor shall install final straw mulch cover or

hydraulically applied final straw mulch cover to minimize raindrop splash erosion and wind erosion/dust, as close as possible at the source of disturbance to protect all seeded areas. Thermally-refined wood fiber shall not be utilized solely as final mulch cover to protect all seeded areas.

Unless otherwise specified in the Special Provisions, Class II seeding areas shall not be watered after planting.

(B) Drill Method:

After the tillage and incorporation of fertilizer, sulfur, and compost is completed and accepted by the Engineer, seed shall be planted with a drill seeder capable of accurately metering the specific seed mix. Use of a drill seeder shall not damage the prepared seedbed, and shall provide a soil cover over the planted seed.

Seed shall be planted approximately 1/4 inch deep, with a maximum depth of 1/2 inch. The distance between the furrows produced using the drill process shall not be more than eight (8) inches. If the furrow openers on the drill exceed eight (8) inches, the area shall be drilled twice. Seeding shall be done with grass seeding equipment with double disc openers, depth bands, packer wheels or drag chains, rate control attachments, seed boxes with agitators and separate boxes for small seed. Seed of different sizes shall be sowed from at least two (2) separate boxes adjusted or set to provide the planting rate as specified.

(C) Hydroseed Method:

Areas and seed types not suitable for drill-seeding, as determined by the Engineer, shall be hydroseeded. The contract-specified seed shall be applied in a slurry containing 200 pounds of thermally-refined wood fiber and a minimum of 40 pounds tacking agent per acre. Seed shall not be in the slurry for more than 30 minutes. Hydroseeded areas shall also be mulched, as specified in Sections 3.04 or 3.05, within 24 hours of application of the seed.

(D) Manual Application:

Manually applied seeds shall be broadcast evenly to produce uniform distribution over the seeded areas.

3.04 Applying Straw Mulch:

(A) General:

Within 24 hours after each area is planted, straw mulch shall be uniformly applied at the minimum rate of 2 1/2 tons per acre for areas to be crimped and tacked, and minimum two (2) tons per acre for tacked-only areas. Except for edge of pavement build-up areas, and unless otherwise specified by the Engineer, straw mulch shall be applied to all seeded

areas. Areas to receive hydraulically applied straw mulch, if directed by the Engineer, shall be mulched in accordance with Section 3.05.

During seeding and mulching operations, care shall be exercised to prevent drift and displacement of materials. Mulch material which is placed upon trees and shrubs, roadways, structures, and upon any areas where mulching is not specified, or which is placed in excessive depths on mulching areas, shall be removed as directed. Mulch materials which are deposited in a matted condition shall be loosened and uniformly spread to the specified depth over the mulching areas. Any unevenness in materials shall be immediately corrected by the contractor. In addition, the contractor shall minimize production of dust or other airborne particulate matter during application of straw mulch, either by moistening the straw, modifying equipment with misters, or through other means approved by the Engineer.

Except as specified in the next paragraph, straw mulch applied to seeded areas shall be immediately affixed by crimping and tacking after application. No mulch shall be applied to seeding areas which cannot be crimped and/or tacked by the end of each day. Any drifting or displacement of mulch before crimping and/or tacking shall be corrected by the contractor at no additional cost to the Department.

Crimping shall not be required for areas that are steeper than 3:1. Crimping may also be waived, when specifically directed by the Engineer, for drill seeded or hydroseeded areas with rocky conditions or other areas deemed unsuitable by the Engineer for crimping. Straw mulch applied to such areas shall only be tacked, as specified in Subsection 3.04(C) below.

Prior to the application of a tacking agent, protective covering shall be placed on all structures and objects where stains would be objectionable. All necessary precautions shall be taken to protect the traveling public and vehicles from damage due to drifting spray.

(B) Anchorage by Crimping:

Except as specified above in 3.04(A), crimping shall be required for all straw mulched areas. Straw mulch shall be anchored into the soil with a heavy disc. Discs shall be flat and serrated, with at least 1/4 inch thickness having dull edges, and spaced no more than nine (9) inches apart. Straw mulch shall be anchored to a depth of at least two (2) inches and shall not be covered with an excessive amount of soil. Anchoring operations shall be across the slopes where practical, with no more than two (2) passes of the anchoring equipment. Immediately following the crimping operation, the crimped area shall be tacked as specified in Subsection 3.04(C) below.

(C) Anchorage by Tacking:

Straw mulch shall be anchored by tacking, using a slurry consisting of a minimum of 150 pounds of tacking agent, 500 pounds of thermally refined wood fiber mulch, and 300 gallons of water per acre. The contractor may increase the quantities of components to

ensure the stability of the straw mulch to provide erosion control during the 45 calendar-day maintenance period at no additional cost to the Department.

3.05 Hydraulically Applied Straw Mulch with Tacking Agent:

Areas seeded but not practical for straw mulch, as determined by the Engineer, shall have hydraulically applied straw mulch with tacking agent applied at the variable rates shown in the Table 5 below.

TABLE 5

Slope (H:V)	Hydraulically Applied Straw Mulch (pounds per acre - dry weight)	Tacking Agent (pounds pure mucilage per acre - dry weight)	Thermally-Refined Wood Fiber (pounds per acre - dry weight)
Flat to 6:1	2,000	150	400
From greater than 6:1 to 3:1	2,500	150	500
Greater than 3:1	3,000	200	600
Erosive Soil Slopes or Highly Erosive Areas*	3,500	250	700
* As determined by Engineer			

The contractor shall submit a batch (tank) mix quantity schedule for mulch application to the Engineer for approval prior to mixing hydraulically applied straw mulch, thermally-refined wood fiber, and tacking agent in a slurry. Batch mixing and coverage will be monitored throughout the seeding operations. The contractor shall coordinate the mixing and application operations with the Engineer in advance of all mixing. Fertilizer or seed shall not be mixed into any slurry for temporary erosion control mulch application.

3.06 Shoulder Build-up Areas - Edge of Pavement Build-up Areas:

Seeding shall be applied to all new earthen and milled asphaltic concrete edge of pavement build-up areas. Edge of pavement build-up areas shall be tilled two (2) inches deep from the toe of AC wedge to the toe of the edge of pavement build-up area prior to seeding.

After the two-inch tillage is complete, compost, fertilizer, seeding, and mulching shall be done in three (3) separate steps. For the first step, fertilizer and compost shall be broadcast evenly over both types of edge of pavement build-up areas. For the next step, seed shall be applied by hydroseeding for both types of areas. For the third step, seeded edge of pavement build-ups comprised of milled asphaltic concrete shall have hydraulically applied straw mulch and tacking agent applied, and earthen edge of pavement build-up areas shall have straw mulch or hydraulically applied straw mulch applied, with a tacking agent in either case. No crimping shall be required.

The application rate of hydraulically applied straw mulch and tacking agent shall be as specified in Table 5 above.

3.07 Seeding Acceptance:

After application the Engineer will inspect seeded areas or sub-areas for conformance to the contract requirements. The contractor shall correct, to the satisfaction of the Engineer, any areas not conforming to the specifications. The 45-day maintenance period will begin upon acceptance of the area by the Engineer.

The contractor shall maintain and stabilize each area or sub-area, including edge of pavement build-up areas, for a minimum period of 45 calendar days after application of the seeding and mulching materials, and acceptance by the Engineer. Any areas damaged from erosion, or that have less than 90 percent of applied mulch remaining, shall be re-seeded, re-mulched, and re-tacked at no additional cost to the Department.

Except for projects with Landscape Establishment, seeding shall be completed, including the 45 calendar-day maintenance period, before the end of the contract time, or sooner if required in the SWPPP or elsewhere in the contract documents. Seeding used as part of a landscape project shall be completed, including the 45 calendar-day maintenance period, before the end of the Construction Phase.

4.0 Method of Measurement:

Seeding (Class II) will be measured by the acre, to the nearest one acre of ground surface seeded. Measurements will be along the ground surface for the areas seeded and mulched, as approved by the Engineer.

5.0 Basis of Payment:

During pre-activity construction meeting, the contractor in conjunction with Engineer shall verify and be in agreement with the quantity of seeding areas as evaluated by Construction PLA. The quantity of areas to be seeded shall be in compliance with environmental requirements.

The accepted quantities for Seeding (Class II), measured as provided above, will be paid in two (2) phases corresponding to the application stage and the 45 calendar-day maintenance stage.

Upon completion of the application stage and acceptance by the Engineer, the contractor will be paid 70 percent of the contract bid price per acre for the completed work. Such price will be considered full compensation for furnishing and applying the contract-specified seed mix, fertilizers, soil amendments, tillage, mulch materials, and tacking agent, all required testing, and all equipment and labor required to complete the work as specified herein.

Upon completion of the 45 calendar-day maintenance stage, and acceptance by the Engineer, the contractor will be paid 30 percent of the contract bid price per acre for the completed work. Such price will be considered full compensation for seeding maintenance, including all equipment, labor, and materials required to correct deficiencies in seeded, mulched areas, as specified herein.

No measurement or payment will be made for the mobilizations required to apply and stabilize the seeding for each area or sub-area, as specified herein, the cost being considered as included in the contract price for Seeding (Class II).

An adjustment to the contract will be made if a contractor-requested seed substitution is approved as specified in Subsection 2.02(B) above.

(810ERCON, 3/24/11)

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).

SECTION 901 MOBILIZATION:

901-5 **Basis of Payment:** of the Standard Specifications is revised to read:

Bonding costs (premiums, etc) will not be measured for payment, but are considered included in the cost of mobilization.

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 9141103 - BUILDING (RELOCATE ENTRY BOOTH):

Description:

The work under this item shall consist of removal, salvage, and installing the existing metal prefabricated entry building at the location shown on the project plans and detailed in these specifications.

The work under this item shall also consist of furnishing and installing the electrical system to the requirements of these Special Provisions. The electrical system includes, but may not necessarily be limited to, buried conduit and insulated wire.

Materials and Construction Requirements:

The new building site shall be asphalt pavement constructed under bid item #4090003. Electrical Materials and construction, consisting of extending the existing buried service line to the new location approximately 100' away, shall be performed in accordance with the latest published regulations of the National Electrical Code (NEC), state and local codes, and according to the latest Institute of Electrical and Electronic Engineers (IEEE); American National Standards Institute (ANSI); American Society for Testing and Materials (ASTM); Insulated Cable Engineers Association (ICEA); National Electrical Manufacturers Association (NEMA) Standards; and the latest published regulations of the Federal Occupational Safety and Health Act (OSHA). When applicable, the material used in the performance of the electrical work shall be listed by the Underwriters' Laboratories, Inc. (UL) for the class of service for which they are intended.

Method of Measurement:

The relocate entry booth work will be measured for payment by the lump sum as a single complete unit of work.

Basis of Payment:

The accepted quantities for relocate entry booth work, 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.

(924CQC, 3/02/09)

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.

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

Any native materials (earth, rock, plants, etc) that are approved for use from Navajo Nation lands shall result in a negotiated unit price at the time of approval.

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 ± 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, 7/01/14)

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 Binder: S, MPa	T 313	≤ 300 301-330 331-450 451-600 > 600	100 95 85 75 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.				

Notes:

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.

PG 70-22 TR+ asphalt binder shall conform to the requirements of AASHTO M 320 and, in addition, shall meet the requirements specified above.

Table 1005-1 will also apply for PG 70-22 TR+ asphalt binder.

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.

The pressure aging temperature for PG 70-22 TR+ asphalt binder shall be 110 °C.

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.

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.				

Notes:

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.

PG 64-28 TR+ asphalt binder shall conform to the requirements of AASHTO M 320 and, in addition, shall meet the requirements specified above.

Table 1005-1 will also apply for PG 64-28 TR+ asphalt binder.

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.

The pressure aging temperature for PG 64-28 TR+ asphalt binder shall be 100 °C.

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.

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 (Na_2O 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)

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*)

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*)

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			
	4,500	564 - 752	0.50	
	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 (Na_2O equivalent) to a maximum of 3.00 pounds per cubic yard of concrete, when calculated as follows:

$$\begin{bmatrix}\text{Pounds of total}\\ \text{alkali per cubic}\\ \text{yard of concrete}\end{bmatrix} = \frac{\begin{pmatrix}\text{Pounds of Portland}\\ \text{cement per cubic}\\ \text{yard of concrete}\end{pmatrix} \times \begin{pmatrix}Na_2O\text{ equivalent (\%)}\\ \text{in Portand cement}\end{pmatrix}}{100}$$

(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 (Na_2O equivalent) per cubic yard of concrete. The required amount of lithium nitrate is calculated as follows:

$$\begin{bmatrix}\text{Required gallons}\\ \text{of 30 percent}\\ \text{lithium nitrate}\\ \text{solution}\end{bmatrix} = \frac{\begin{pmatrix}\text{Pounds of}\\ \text{Portland cement}\\ \text{per cubic yard}\\ \text{of concrete}\end{pmatrix} \times \begin{pmatrix}Na_2O\text{ equivalent (\%)}\\ \text{in Portand cement}\end{pmatrix}}{100} \times (0.55)$$

(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 ± one inch when the slump shown on the approved mix design is four inches or less, and a permissible variation of ± 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 ± 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).

(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

(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.

1014-4.03(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: 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.

1014-6.02 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

(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.

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

(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.

1014-8 **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

(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.

Appendix A

Cultural Resource Compliance Form

Biological Resource Compliance Form

THE NAVAJO NATION

02/11/20

Ben Shelly
PRESIDENT

Rex Lee Jim
VICE-PRESIDENT

February 10, 2011

Eunice Tso
Project Manager
ETD, Inc.
2101 N. Fourth Street, Suite 201
Flagstaff Arizona 86004

Re: Section 106 Compliance Determination for an access road from Arizona State Route 64 to the Little Colorado River Gorge Tribal Park View Point One, in Cameron Chapter, Navajo Nation.

Dear Ms. Tso:

The Cultural Resource Compliance Section of the Navajo Nation Historic Preservation Department (NNHPD) received a request for compliance with the National Historic Preservation Act of 1966 , as amended, 36 CFR part 800 Section 106 for an access road from Arizona State Route 64 to the Little Colorado River Gorge Tribal Park View Point One, in Cameron Chapter, Navajo Nation. The area of the proposed undertaking has been previously was surveyed in 2000 and in 1996, reports entitled: On the Road to Hell Hole Bend: A cultural Resources Survey of State Route 64, Between Desert View and Cameron, Coconino County, Arizona and A Cultural Resource Inventory of the Proposed Improvement of 4.45 miles of Six (6) Navajo Routes, Near Cameron, Coconino County, Arizona. No cultural resources were noted within or adjacent to the proposed access road. No further work is warranted, for this undertaking.

As agent of the Bureau of Indian Affairs (pursuant to Public Law 93-638, archaeological service contract), the NNHPD, with this letter, hereby documents compliance with the Navajo Nation Cultural Resource Protection Act (19 NNC 1001 §201) and consultation with the Navajo Nation Historic Preservation Officer pursuant to Sections 101(a & d), 106(a & d) and 110(a), 2(e) ii of the National Historic Preservation Act.

Should any previously unidentified or incorrectly identified cultural resources including, but not limited to, archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices be discovered, all operations in the immediate vicinity must cease and the Navajo Nation Historic Preservation Department must be notified. NNHPD can be reached at 928/871-7132.

If there are any questions, please call Ron Maldonado at (928) 871-7139.

Sincerely,

Alan S. Downer, Director

ETD, Inc.

2101 N. Fourth Street, Suite 201
Flagstaff, AZ 86004

Planning • Environment • Construction

Phone: 928-779-6032
Fax: 928-779-9115
www.etd-inc.com

January 20, 2011

Ron Maldanodo, Compliance Officer
Navajo Nation Historic Preservation Department
Cultural Resource Compliance Section
Post Office Box 4950
Window Rock, Arizona 86515

Dear Mr. Maldanodo,

Please find enclosed a copy of the cultural resources inventory report EcoPlan Report 00-469:12-SR 64 - *On the Road to HellHole Bend: A Cultural Resources Survey of State Route 64, Between Desert View and Cameron, Coconino County, Arizona.*

ETD, Inc. has been hired by the Navajo Nation Department of Parks and Recreation to prepare an Environmental Assessment for an access road off of State Route 64 to the Little Colorado River Gorge Tribal Park Viewpoint One in Cameron Chapter of the Navajo Nation, Coconino County, Arizona (see attached map- Township 29 North, Range 8 East of the Gila and Salt Meridian, mapped on USGS 7.5' Map: *Coconino Point, Arizona.*)

While doing a records research we discovered this report which covers the portion of land affected within the Arizona Department Of Transportation Right Of Way of State Route 64. However, according to the Navajo Nation Historic Preservation Department, there is no record of this report, nor of any associated compliances issued. Therefore, we are submitting the report on behalf of ADOT and the project sponsor -The Navajo Nation Department of Parks and Recreation - for compliance.

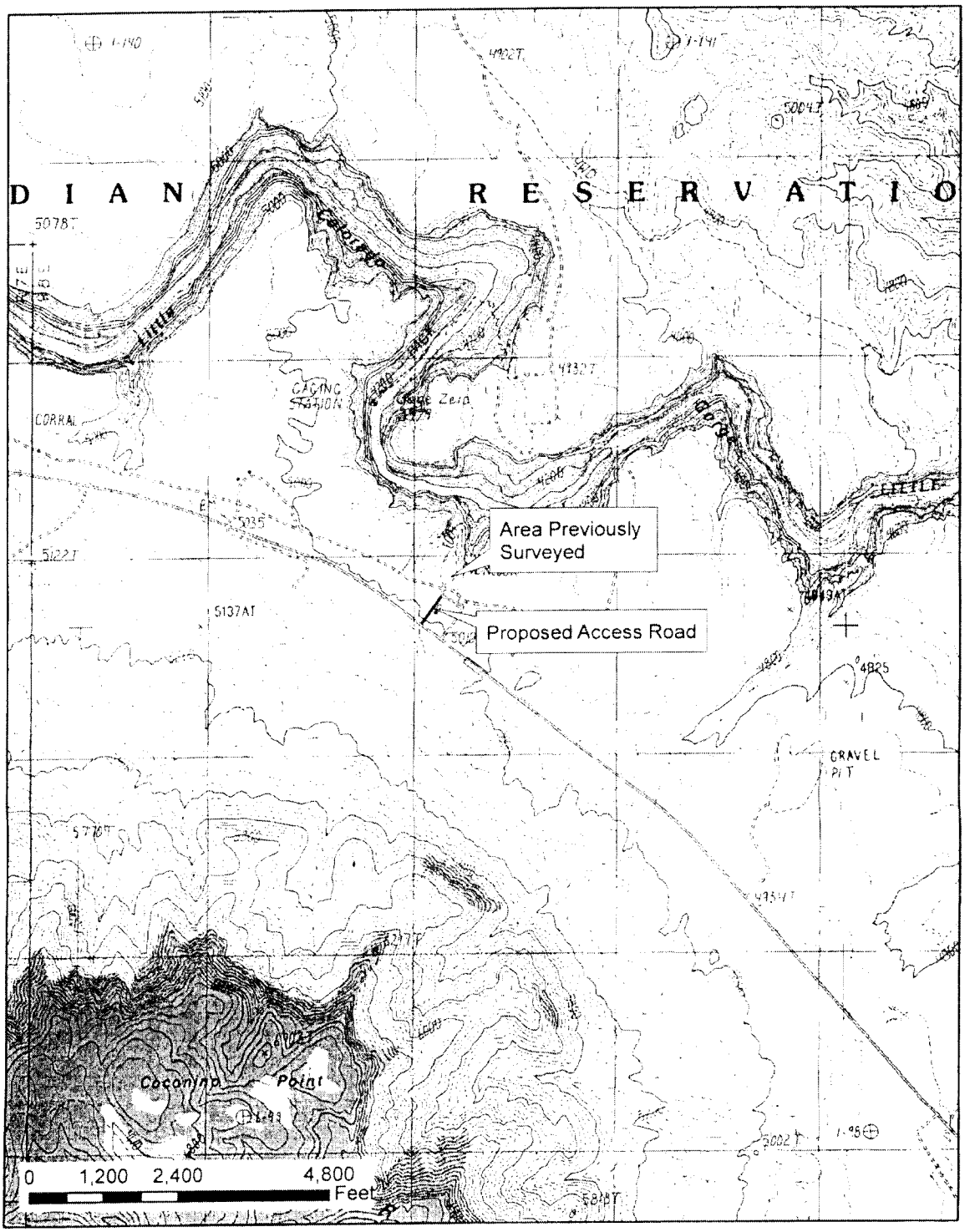
Based on the report no prehistoric or historic sites, Isolated Occurrences (IOs), In-Use Areas (IUAs), or Traditional Cultural Properties (TCPs) were encountered in the specific project area during the time of survey. A determination of "no historic properties affected" is recommended for the proposed undertaking. We recommend that the clients be allowed to proceed with construction as planned.

If you have any questions, feel free to call us at (928) 779-6032.

Sincerely,

Eunice Tso, Project Manager
ETD, Inc.

Jan 27, 2011
Date



Topographic map showing location of the proposed access road to LCR Gorge Tribal Park USGS 7.5' Map: Coconino Point, Arizona (Provisional Edition 1988)

4/19/06

CULTURAL RESOURCES COMPLIANCE FORM
HISTORIC PRESERVATION DEPARTMENT
PO BOX 4950
WINDOW ROCK, ARIZONA 86515

ROUTING: COPIES TO
AZ — SHPO
— REAL PROPERTY MGT/330
XX — ETD

NNHPD NO. **HPD-06-248**
OTHER PROJECT NO.
ETD-06-003

PROJECT TITLE: **ETD-06-003: A Cultural Resources Inventory of the Little Colorado River Tribal Park Viewpoint for the Navajo Parks & Recreation Department located west of Cameron, Cameron Chapter, Coconino County, Arizona**

LEAD AGENCY: BIA/NR

SPONSOR: Ray Russell, Department Director, Navajo Nation Parks & Recreation Department, PO Box 2520, Window Rock, Arizona 86515

PROJECT DESCRIPTION: The proposed undertaking will involves upgrading the existing facilities & constructing a new visitors within the 13.14-acre area. Ground disturbance will be intensive and extensive with the use of heavy equipment.

LAND STATUS: Tribal Trust
CHAPTER: **Cameron**
LOCATION: Unplatted & Projected T29N, R8E; Coconino Point Quadrangle, Coconino County, Arizona G&SRPM&B

PROJECT ARCHAEOLOGIST: **Mathilda Burke & Ezekiel P. Yazzie**
NAVAJO ANTIQUITIES PERMIT NO.: B06098

DATE INSPECTED: **02/23/06**
DATE OF REPORT: 02/28/06
TOTAL ACREAGE INSPECTED: **17.82 ac**

METHOD OF INVESTIGATION: Class III pedestrian inventory with transects spaced **7.5** m apart.

LIST OF CULTURAL RESOURCES FOUND:	**(1) In-Use Area (IUA) & (2) Isolated Occurrences (IO)**
LIST OF ELIGIBLE PROPERTIES:	**None**
LIST OF NON-ELIGIBLE PROPERTIES:	**(1) IUA & (2) IO's**
LIST OF ARCHAEOLOGICAL RESOURCES:	**None**

EFFECT/CONDITIONS OF COMPLIANCE: **No historic properties affected.**

In the event of a discovery [*"discovery"* means any previously unidentified or incorrectly identified cultural resources including but not limited to archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices], all operations in the immediate vicinity of the discovery must cease, and the Navajo Nation Historic Preservation Department must be notified at (928) 871-7132.

FORM PREPARED BY: TAMARA BILLIE
FINALIZED: April 3, 2006

Notification to Proceed Recommended: Yes XX No ____
Conditions: Yes ____ No XX

Alan S. Downer, Navajo Nation Historic Preservation Officer — Date 4-4-06

Navajo Region Approval: Yes X No ____

Acting Regional Director — Date 4/13/06

ok.

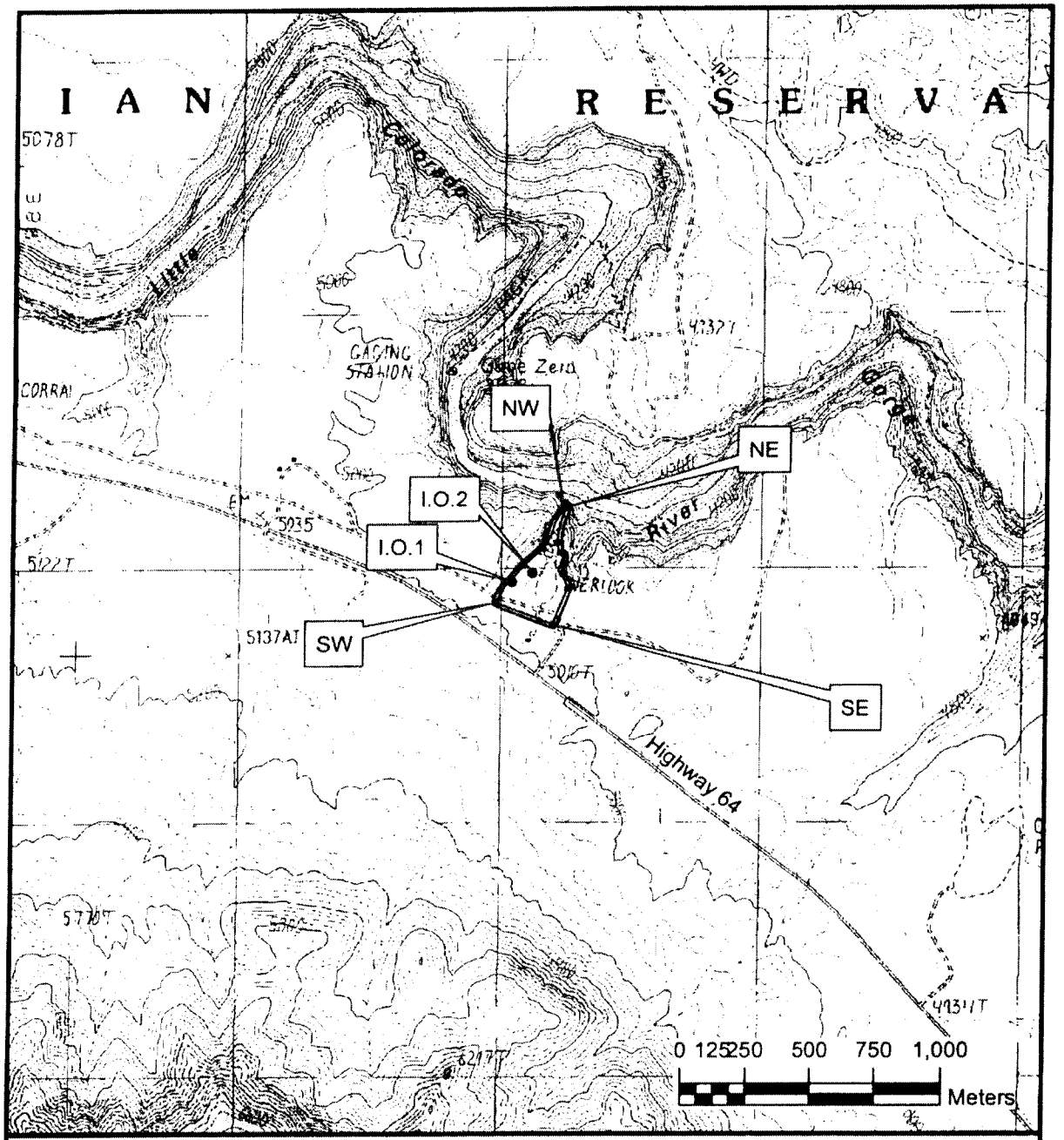


Figure 2. *ETD-06-003*: Archaeological Survey Map: Little Colorado River Tribal Park Viewpoint for the Navajo Parks & Recreation Department located west of Cameron, Cameron Chapter, Coconino County, Arizona.

1 inch equals 2,000 feet DATUM 1927
USGS 7.5' Map is: Coconino Point 1988.
Map Drawn by: Ezekiel P. Yazzie 2006.

Scale 1:24,000

N W E S

ETD,Inc.

Legend

- UTM Points
- IOs
- Boundary
- 15m Buffer

CULTURAL RESOURCES COMPLIANCE FORM
HISTORIC PRESERVATION DEPARTMENT
PO BOX 4950
WINDOW ROCK, ARIZONA 86515

ROUTING: COPIES TO
AZ SHPO
REAL PROPERTY MGT/330
XX DCD3

NNHPD NO. **HPD-06-1038**
OTHER PROJECT NO.
DCD3 06-047

PROJECT TITLE: **A Cultural Resource Inventory for the Proposed Improvement of 4.45 Miles of Six (6) Navajo Routes, Near Cameron, Coconino County, Arizona**

LEAD AGENCY: BIA/NR

SPONSORS: 1. Navajo Department of Transportation, Navajo Division of Community Development, PO Box 4620, Window Rock, Arizona 86515
2. Cameron Chapter, PO Box 85, Cameron, Arizona 86020

PROJECT DESCRIPTION: The proposed undertaking will involve the construction of 4.45 miles of paved road over much of an existing dirt road. The right-of-way will be 150-ft wide. Proposed construction activities include, grading & backfilling within the right-of-way, installation of drainage culverts, & paving of the road surface. The road projects consist of Dooh'a'hii Road (0.9 mile), Kinyaa'a'nii Lane (0.5 mile), T'o'dihil Road (1.55 mile), Hush'on Valley Road (0.75 miles), Adams Road (0.5 mile) & Little Colorado Gorge Road (0.25 mile). The area of potential effect is 80.9 acres. Ground disturbance will be intensive & extensive with the use of heavy equipment.

LAND STATUS: Tribal Trust

CHAPTER: **Cameron**

LOCATION: T29N, R9E - Sec. 33, 32, 29, 28, 27, 14, 15 & 5; Cameron South, Cameron North & Coconino Point Quadrangles, Coconino County, Arizona G&SRPM&B

PROJECT ARCHAEOLOGIST: **Lenora Etsitty**

NAVAJO ANTIQUITIES PERMIT NO.: NTC

DATE INSPECTED: **06/06/06 to 06/08/06**

DATE OF REPORT: 09/25/06

TOTAL ACREAGE INSPECTED: **161.8 ac**

METHOD OF INVESTIGATION: Class III pedestrian inventory with transects spaced 15 m apart.

LIST OF CULTURAL RESOURCES FOUND: **(1) Site (AZ-N-5-29), (11) In-Use Sites (IUS 1-11), (1) Isolated Occurrence (IO)**
LIST OF ELIGIBLE PROPERTIES: **(1) Site (AZ-N-5-29)**
LIST OF NON-ELIGIBLE PROPERTIES: **(11) IUS 1-11 & (1) IO**
LIST OF ARCHAEOLOGICAL RESOURCES: **(1) Site (AZ-N-5-29)**

EFFECT/CONDITIONS OF COMPLIANCE: **No historic properties will be affected with the following conditions:**

Site AZ-N-5-29 shall be avoided. The site boundary falls within the survey corridor.
1. Site boundary will be flagged by a qualified archaeologist prior to ground disturbing activities.
2. All construction activities will be confined to the existing right-of-way.
3. The site shall be temporarily fenced & an archaeologist shall monitor all ground disturbing activities within 50-ft of the site boundary.
4. All future maintenance activities shall avoid the site by a minimum of 50-ft from the site boundary.
5. A brief letter/report documenting the result of the monitoring will be submitted to NNHPD Compliance Section, within 30 days fo the monitoring.
6. Markers will be placed along road to ensure future maintenance activities do not damage site.

Prior to any disturbance of any borrow area, material source area, staging area, outside of the area documented, NDOT/BIA shall ensure that the area evaluated for cultural resources might be affected by this undertaking. The evaluation shall take place in consultation with the Navajo Nation Historic Preservation Department.

In the event of a discovery [*"discovery"* means any previously unidentified or incorrectly identified cultural resources including but not limited to archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices], all operations in the immediate vicinity of the discovery must cease, and the Navajo Nation Historic Preservation Department must be notified at (928) 871-7132.

FORM PREPARED BY: TAMARA BILLIE
FINALIZED: October 18, 2006

Notification to
Proceed Recommended: Yes XX No ____
Conditions: Yes XX No ____

Tamara Billie — 10/18/06
Alan S. Downer, Navajo Nation Historic Preservation Officer — Date

Navajo Region Approval: Yes ✓ No ____

ACTING Regional Director — 11-9-06
Date

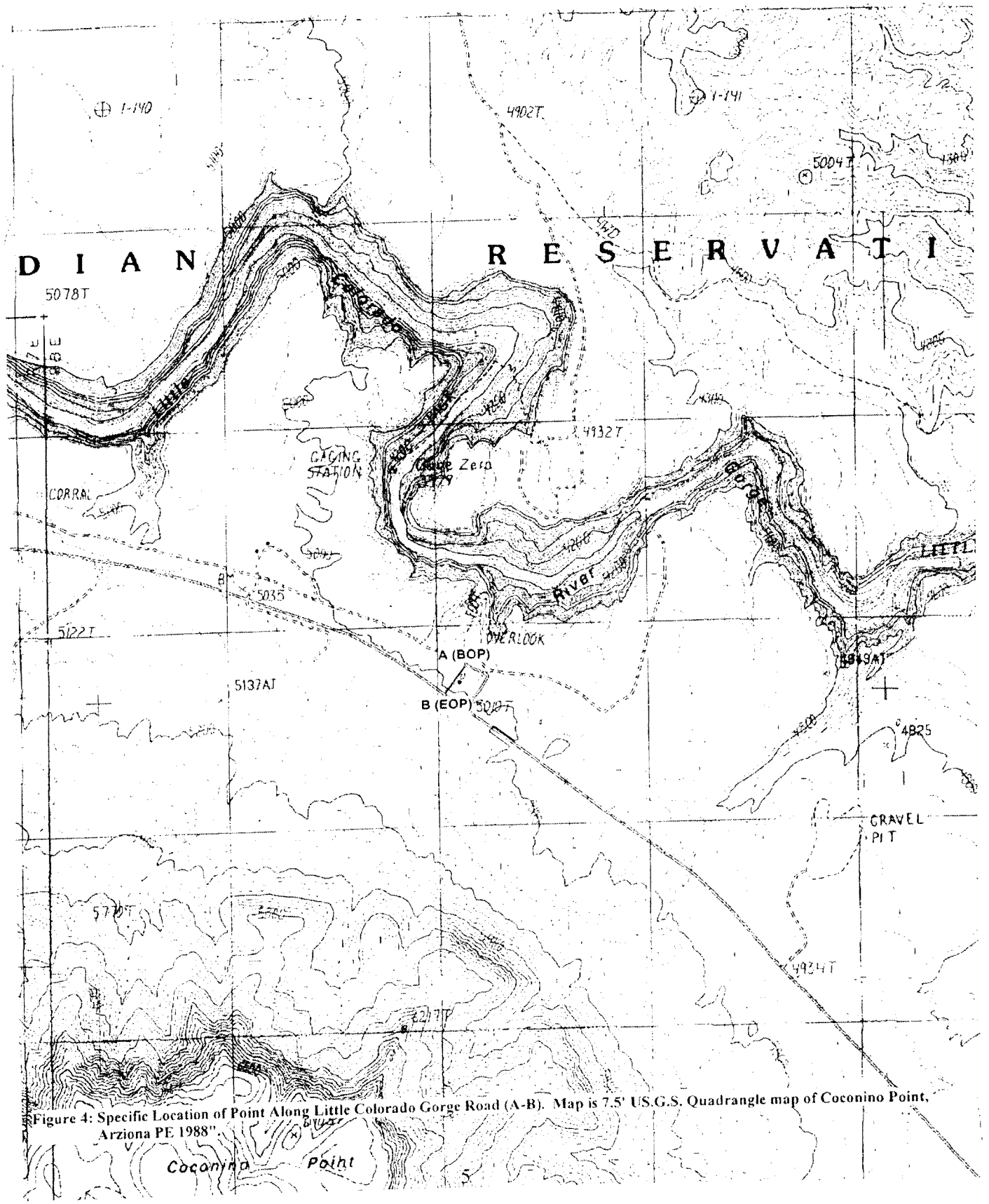


Figure 4: Specific Location of Point Along Little Colorado Gorge Road (A-B). Map is 7.5' U.S.G.S. Quadrangle map of Coconino Point, Arziona PE 1988".

NNDFW Review No. 10ETD10

BIOLOGICAL RESOURCES COMPLIANCE FORM
NAVAJO NATION DEPARTMENT OF FISH AND WILDLIFE
P.O. BOX 1480, WINDOW ROCK, ARIZONA 86515-1480

It is the Department's opinion the project described below, with applicable conditions, is in compliance with Tribal and Federal laws protecting biological resources including the Navajo Endangered Species and Environmental Policy Codes, U.S. Endangered Species, Migratory Bird Treaty, Eagle Protection and National Environmental Policy Acts. This form does not preclude or replace consultation with the U.S. Fish and Wildlife Service if a Federally-listed species is affected.

PROJECT NAME & NO.: State Route 64 Turning Lane at Little Colorado River Gorge Viewpoint #1

DESCRIPTION: The Navajo Parks and Recreation Department (NPRD) is proposing to widen State Route 64 to facilitate a turning lane into the tribal park. The project would also include the construction of a new access road and installing a turn out within Arizona Department of Transportation's right-of-way.

LOCATION: T29N, R8E, Section Unplatted, Little Colorado River Tribal Park, Coconino County, Arizona

REPRESENTATIVE: Eunice L. Tso, Project Manager, ETD, Inc.

ACTION AGENCY: NPRD

B.R. REPORT TITLE / DATE / PREPARER: Survey Report/16 FEB 2011/ EnviroSystems Management, Inc.

SIGNIFICANT BIOLOGICAL RESOURCES FOUND: Area 3. Project is within a Raptor Sensitive Area (RSA).

POTENTIAL IMPACTS

NESL SPECIES POTENTIALLY IMPACTED: [1] Fickeisen Plains Cactus (Pediocactus peeblesianus var. fickeiseniae), NESL G3; and [2] Beath Milk-vetch (Astragalus beathii), NESL G4

FEDERALLY-LISTED SPECIES AFFECTED: NA

OTHER SIGNIFICANT IMPACTS TO BIOLOGICAL RESOURCES: NA

AVOIDANCE / MITIGATION MEASURES: [1] All project personnel and equipment must remain in the project area. Ground disturbance outside the proposed action area is strongly discouraged.

CONDITIONS OF COMPLIANCE*: [1] Substrates for Beath Milk-vetch and Fickeisen Plains Cactus are present in the project area. A pre-construction survey is required for Beath Milk-vetch (Astragalus beathii) and Fickeisen Plains Cactus (Pediocactus peeblesianus var. fickeiseniae) during the appropriate field seasons. The survey must include a 200-ft. buffer outside the proposed action area. The survey report must be submitted to the NNHP for a final review.

FORM PREPARED BY / DATE: Pamela A. Kyselka/02 MAR 2011

NAVAJO FISH AND WILDLIFE P.O. BOX 1480 WINDOW ROCK, AZ 86515

02 March 2011

10ETD10

Eunice L. Tso, Project Manager
ETD, Inc.
2101 North Fourth Street
Suite 201
Flagstaff, Arizona 86004

Ms. Tso,
The Navajo Nation Department of Fish and Wildlife (NNDFW) reviewed Navajo Nation Parks and Recreation Department's proposed project at the Little Colorado River Gorge Viewpoint #1. The purpose of this letter is to inform you that we are granting the proposed project a Conditional Approval. The project is approved with the following condition:

(1) Substrates for Beath Milk-vetch and Fickeisen Plains Cactus are present in the project area. A pre-construction survey is required for Beath Milk-vetch (*Astragalus beathii*) and Fickeisen Plains Cactus (*Pediocactus peeblesianus* var. *fickeiseniae*) during the appropriate field seasons. The survey must include a 200-ft. buffer outside the proposed action area. The survey report must be submitted to the NNHP for a final review.

Please contact me at 928-871-7065 with any questions that you have concerning the review of this project.

Sincerely,

Pamela A. Kyselka, Wildlife Biologist
Administration Section
Navajo Nation Department of Fish and Wildlife

CONCURRENCE

Gloria Tom, Director
Navajo Nation Department of Fish and Wildlife

cc: nnhp_file
BIA, Harrilene Yazzie

Appendix B

Environmental Assessment

Finding of No Significant Impact

United States Department of the Interior

Bureau of Indian Affairs
Navajo Region
P. O. Box 1060
Gallup, New Mexico 87305

MC 620: Division of Environmental, Cultural & Safety Management

Ms. Eunice L.Tso
ETD, Inc. – Suite 201
2101 N. Fourth Street
Flagstaff, Arizona 86004

Dear Ms.Tso:

The Environmental Assessment (EA), EA-06-170 for the Navajo Nation Parks and Recreation Department (NPRD) proposed Little Colorado River Tribal Park Viewpoint 1 Improvement Project on approximately 12.5 acres of Navajo Tribal Trust land along the edge of the Little Colorado River Gorge, west of Cameron, Coconino County, Arizona, has been reviewed in the Division of Environmental, Cultural and Safety Management, Navajo Regional Office. Viewpoint 1 is one of two overlook areas that are managed by the NPRD. The existing facilities on the site include: a gravel parking lot; a scenic overlook point; a walking trail leading to the overlook; arts and crafts vendor booths; sheltered picnic tables; and portable restroom facilities. A report entitled *"Conceptual Site Plan for Two Viewpoint Areas within the Little Colorado River Tribal Park"* completed in March 2006, presents strategies for the long-term development of visitor facilities and services. The NPRD will use the development plans to renovate and upgrade the existing facilities. A Finding of No Significant Impact (FONSI) has been determined for the proposed action which will not have a significant impact on the quality of the natural and human environment. An environmental impact statement for the proposed project is not required.

If you have questions, you may contact Ms. Harrilene J. Yazzie, Regional NEPA Coordinator, at (505) 863-8287.

Sincerely,

Acting Regional Director, Navajo

Enclosure

FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT DOCUMENT, EA-06-170
LITTLE COLORADO RIVER TRIBAL PARK VIEWPOINT 1 IMPROVEMENT PROJECT

NAVAJO NATION PARKS AND RECREATION DEPARTMENT

Location: Coconino Point, AZ, Quadrangle, USGS 7.5-Minute Series Map
Unplatted and Projected, T29N, R8E, G&SRPM&B
Little Colorado River Tribal Park, Coconino County, Arizona

The proposed development plans are: 1) construct a small visitor center (less than 2,000 sq. ft); 2) construct all weather pathways from the parking lot to the gorge overlook area; 3) construct new signs and information boards along the pathways; 4) upgrade the portable toilet structures to permanent, clean, composting toilets; 5) upgrade features at the overlook area, such as replacing safety rails with a stone wall; 6) develop tent and RV camping areas that would have no water or power utilities; 7) construct eight new picnic table/armada areas; 8) construct a cultural demonstration area; 9) expand the gravel parking area from 1 acre to 1.8 acres; and, 10) construct a welcome booth at the entrance to the site. The project will encompass approximately 12.5 acres of Navajo Tribal Trust land located approximately 10 miles west of Cameron, Coconino County, Arizona, along Arizona State Highway 64 leading to the south rim of the Grand Canyon National Park. It is located inside the area that has been designated as the Little Colorado River Tribal Park, Cameron Chapter. The turn-out from Arizona State Highway 64 is poorly located with a blind rise to the east and has been the site of many accidents. The NPRD is working with the Arizona Department of Transportation (ADOT) to relocate the access route. Based on the final plans and design, NPRD will have a supplemental EA prepared to address this specific action. There is no electrical service at the Park. NPRD intends to use a solar powered system with a back-up diesel generator to provide electricity. There is no municipal water supply within the Park. NPRD intends to operate the overlook site without water. Bottled water will be sold at the visitor center. There is no wastewater system within the Park. NPRD intends to use composting toilets at the project site. Therefore, accessibility to electricity, water, and wastewater services is not an issue. The project is sponsored by the Navajo Nation Parks and Recreation Department, P.O. Box 2520, Window Rock, Arizona 86515.

The environmental assessment (EA) was reviewed in the Division of Environmental, Cultural and Safety Management, Navajo Regional Office. Based on the environmental assessment, and the mitigation measures specified in the document, it is determined that the proposed project will not have a significant impact on the natural and human environment. Therefore, in accordance with the National Environmental Policy Act, Section 102 (2) (C), an environmental impact statement will not be required.

The following references, incorporated in the environmental assessment, serve as the bases for this decision:

1. Agency and public involvement was solicited. Environmental issues relative to the proposed project were identified. Alternative courses of action and mitigation measures were developed in response to environmental concerns and issues.

2. The EA disclosed the environmental consequences of the proposed action and two viable alternatives including the "no action" alternative.

3. In compliance with the Endangered Species Act, informal consultation was held with the Navajo Department of Fish and Wildlife (NDFW), Natural Heritage Program (NHP). Bryce Marshall, Project Biologist, of *BIOME Ecological and Wildlife Research*, conducted a biological evaluation of the proposed project site. The NDFW reviewed the *Biological Evaluation: Renovation of a Scenic Viewpoint at the Little Colorado River Gorge, West of Cameron, Arizona* (Marshall 2006). The NDFW issued Biological Resources Compliance Form (BRCF), NNDF&WL Review No. 006-289 indicating conditional compliance with tribal and federal laws protecting biological resources. Conditions of compliance are: 1) surveys shall be required during the appropriate flowering time, from late March to late May for Beath's milk-vetch and from mid-March to the end of April for Fickeisen's plains cactus, prior to project implementation; 2) signs shall be posted to keep visitors on designated trails and to police the area of the viewpoint to ensure that off-trail pedestrian traffic is not allowed. Signs shall read "PLEASE STAY ON TRAIL, SENSITIVE BIOLOGICAL AND CULTURAL RESOURCES AREA-NO OFF-TRAIL FOOT TRAFFIC ALLOWED"; 3) should construction activities be conducted during the breeding season, February 1-July 15 for Golden eagle; March 1-July 31 for Peregrine falcon; and March 1-August 31 for Mexican spotted owl (MSO), biological evaluation surveys shall be conducted within one mile of the proposed project site for the raptors. If the renovation/construction activities occur outside the breeding seasons, the project may affect, but is not likely to adversely affect the Golden eagle, Peregrine falcon or the MSO (BRCF).

4. Potential impacts to floodplains and wetlands by the proposed project have been evaluated in accordance with Executive Orders 11988 and 11990. The project site is located along the Little Colorado River Gorge, about 350 feet above the bottom of the canyon (EA, Part 3.2.1.). The only surface water is the Little Colorado River Gorge. The banks of the river are considered riparian/wetland areas. Due to the distance of the river below the scenic overlook site, and the fact that there is no access to the river banks from the project site, no impacts to surface water resources, including riparian wetlands, is anticipated as a result of the project activities (EA, Part 4.2.1.).

5. Agriculture- there are no farming activities or livestock grazing on or near the project site. No prime or unique farmlands are found on or near the project site, thus, no impacts to local agricultural resources are anticipated as a result of the proposed action (EA, Part 4.9.2.).

6. Water Resources - no impacts to surface or ground water resources are anticipated as a result of the project activities (EA, Parts 4.2.1.& 4.2.2.).

7. In compliance with the National Historic Preservation Act of 1966, as amended, Section 106 consultation, and 36 CFR 800.9 (b), a cultural resources inventory was conducted on the project area by ETD, Inc., on February 23, 2006. The Navajo Nation Historic Preservation Department (NNHPD) issued Cultural Resources Compliance Form (CRCF) NNHPD No.HPD-06-248 indicating "No historic properties affected" (Appendix C-CRCF).

In the event of a discovery [discovery means any previously unidentified or incorrectly identified cultural resources including, but not limited to, archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices] all operations in

Appendix C

Subgrade Acceptance Chart