



ADVERTISEMENT FOR BIDS

SPECIAL PROVISIONS

BIDDERS DOCUMENTS

TRACS/Proj. No.:

069 YV 280 F028801C 069-A-NFA
CORDES JCT-PRESCOTT HIGHWAY (SR 69)
(SR 69 @ SR 169)

Contracts and Specifications Group
205 S. 17TH Ave., 2nd Floor, M/D 121F
Phoenix, Arizona 85007-3217

ARIZONA DEPARTMENT OF TRANSPORTATION

ADVERTISEMENT FOR BIDS

BID OPENING: FRIDAY, OCTOBER 02, 2026, AT 11:00 A.M. (M.S.T.)

TRACS NO	069 YV 280 F0288 01C
PROJECT NO	069-A-NFA
TERMINI	CORDES JCT-PRESCOTT HIGHWAY (SR 69)
LOCATION	SR 69 @ SR 169

ROUTE NO.	MILEPOST	DISTRICT	ITEM NO.
SR 69	280.60 to 281.00	NORTHWEST	103036

The amount programmed for this contract is \$9,566,000. The location and description of the proposed work are as follows:

The proposed project is located in the Town of Prescott Valley and Dewey-Humboldt in Yavapai County at SR69 and SR169. The proposed work consists of constructing a roundabout and any other intersection improvements as needed at the intersection. The work also includes drainage improvements, signing and marking, roadway lighting, and other related work.

The time allowed for the completion of the work included in this contract will be 290 working days.

The Arizona Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to §§ 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, Disadvantaged Business Enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

Contract documents, and other project documents, if applicable, are available as electronic files, at no charge, from the Department's website through the ADOT Contracts and Specifications Group (<https://azdot.gov/business/contracts-and-specifications/current-advertisements>).

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

To submit a valid bid, the bidder must (1) have prequalification from the Department as necessary for the project, and (2) be included on the project Plansholder List as a Prime.

The Application for Contractor Prequalification may be obtained from the Contracts and Specifications website.

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

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

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

Persons that require a reasonable accommodation based on language or disability should contact ADOT's Contracts and Specifications Office by phone (602) 712-7221. Requests should be made as early as possible to ensure the State has an opportunity to address the accommodation.

Las personas que requieran asistencia (dentro de lo razonable) ya sea por el idioma o discapacidad deben ponerse en contacto con ADOT (602) 712-7221.

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

Prior to the bid opening date, any questions pertaining to the project documents shall be submitted to the Department in a written format through the Bid Express (Bidx) website at <https://www.bidx.com/az/lettings>. Questions shall be submitted through the Questions and Answers (Q&A) link located within the corresponding letting date and project proposal number links. The Department may not answer all questions, and any decision on whether a question is answered will be within the sole discretion of the Department. Any questions received less than three working days prior to the bid opening date may not be answered.

The Engineering Specialist assigned to this project is: Vian Rashid, vrashid@azdot.gov, any correspondence with the Engineering Specialist is subject to posting onto Bidx through the project's Q&A link. Answers to questions will not be given verbally, but will be posted exclusively to the Bidx website.



For Brahma Singh, PE,
Group Manager,
Contracts & Specifications

Project Advertised on: 06/18/2026

SPECIAL PROVISIONS

FOR

ARIZONA PROJECT

069 YV 280 F028801C

069-A-NFA

CORDES JCT – PRESCOTT HWY (SR69)

SR69 @ SR169

ROUNDABOUT

PROPOSED WORK:

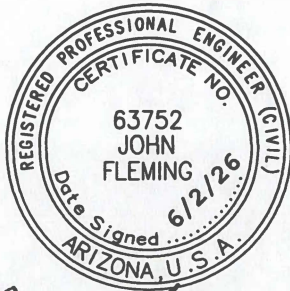
The proposed project is located in the Town of Prescott Valley and Dewey-Humboldt in Yavapai County at SR69 and SR169. The proposed work consists of constructing a roundabout and any other intersection improvements as needed at the intersection. The work also includes drainage improvements, signing and marking, roadway lighting, and other related work.

PROFESSIONAL ENGINEER SEALS:

These Special Provisions represent the combined efforts of the following organizations:

- (1) AZTEC Engineering Group,
- (2) Arizona Department of Transportation,

A representative of each organization has affixed their seal below, which attests that portions of these Special Provisions were prepared under their direction.



John Fleming
AZTEC Engineering Group



E. LeRoy Brady

Arizona Department of Transportation
Roadside Development Section

(SPC00ST, 06/19/25)

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 2021,

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 Engineering Group, Manual of Approved Signs, available on the Department's website,

Arizona Department of Transportation, Traffic Engineering Group, Temporary Traffic Control Design Guidelines, dated April, 2025, available on the Department's website,

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

The Proposal Pamphlet which includes the following documents:

These Special Provisions,

Appendix A – Subgrade Acceptance Chart,

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

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

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

Executive Order 2009-09, November 13, 2009,

Bidding Schedule,

Proposal,

Surety (Bid) Bond, 12-1303,

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

Certification With Respect to the Receipt of Addenda,

Participation in Boycott of Israel Certification Form,

Forced Labor of Ethnic Uyghurs Ban Certification Form, Rev. November 2022.

BID SUBMISSION:

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

Proposal,

Bidding Schedule,

Surety (Bid) Bond, 12-1303,

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

Certification With Respect to the Receipt of Addenda,

Participation in Boycott of Israel Certification Form, and

Forced Labor of Ethnic Uyghurs Ban Certification Form, Rev. November 2022.

PROPOSAL GUARANTY:

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

CONTRACT DOCUMENTS:

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

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

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

Statutory Performance Bond, 12-1301, September, 1992

Statutory Payment Bond, 12-1302, September, 1992

Contract Agreement, 12-0912, August, 2000

Certificate of Insurance, 12-0100, June, 1998

A copy of each document may be obtained by making a request to Contracts & Specifications.

MATERIAL AND SITE INFORMATION:

Projects requiring materials, excavation, or site investigation may have additional information available concerning the material investigations of the project site and adjacent projects. This information, when available and applicable, may be examined in the Office of the Bridge Group-Geotechnical Services, located at 205 S. 17th Avenue, Phoenix, AZ 85007-3212. 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.

(NOGOAL, 06/09/16)

NONDISCRIMINATION:

Policy:

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

(TITLEVI, 08/19/21)

STANDARD TITLE VI SPECIFIC ASSURANCES:

The Arizona Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, Disadvantaged Business Enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

GENERAL REQUIREMENTS:

BLM Material Sources:

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

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

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

Environmental Mitigation Measures:

The contractor's commitments are identified in the Environmental, Permits, Issues, and Commitments (EPIC) Plan Sheet 1F. The contractor shall follow the requirements specified in the EPIC plan sheet 1F, Subsection 104.16 of the specifications and these Special Provisions.

In addition, the contractor shall pay attention to the project specific environmental commitments that are specified in Section 10 of the EPIC Plan Sheet 1F.

Use of Prohibited Products:

The contractor shall not commit any of the following actions:

- (1) Deliver, install, or include any prohibited product under this contract.
- (2) Propose to deliver, install, or include any prohibited product under this contract.
- (3) Enter into a new contract to procure or obtain any prohibited product.

For the purpose of this Section, "Prohibited Product" is defined as any telecommunication or video surveillance equipment, systems, or services produced by:

- (1) Huawei Technologies Company.
- (2) ZTE Corporation.
- (3) Hytera Communications Corporation.
- (4) Hangzhou Hikivision Digital Technology Company.
- (5) Dahua Technology Company.
- (6) Any subsidiary or affiliate of the entities mentioned in this Section.

The contractor shall identify the known subsidiaries and affiliates of the aforementioned from the following Website:

https://umd.service-now.com/itsupport?id=kb_article_view&sysparm_article=KB0014132&sys_kb_id=28015b70dbe0e3849382f1a51d96193f

Transition of Select AASHTO Standard Test Method to Arizona Test Method Equivalent:

Whenever reference is made in the specifications to an AASHTO Test Method, the reference shall be construed to mean it's equivalent Arizona Test Method as listed in the table below.

TEST METHOD TRANSITION TABLE	
AASHTO Standard	Equivalent Arizona Test Method
R 66	103
R 97	104
R 90	105
T 11, T 27	201
T 85	210
T 84	211
T 335	212
T 99	225
	226
T 224	227
T 191	230
T 272	232
T 310	235
T 288, T 289	236
T 176	242
T 99	245
T 272	246
T 304 Method A	247
T 24	317
T 329	406
R 68, T 245	410
T 355	412
T 166	415
R 47	416
T 209	417
T 287	421
T 269	424
T 308	427
	428

Temporary Drainage:

For the duration of construction, the contractor shall provide temporary drainage to facilitate a minimum 12' width in each travel direction being free from standing water during a storm event. No areas of standing water shall be within travel lanes 30 minutes after the end of a storm event. Areas of standing water on shoulders shall be less than 50 square yards in extent. The contractor shall ensure positive drainage is maintained through all phases of construction. Temporary drainage shall comply with the requirements of the SWPPP plan, and temporary drainage measures shall be approved by the Engineer 7 days prior to their construction.

There shall be no measurement or payment for temporary drainage, the cost being considered included in the installation of any temporary pavement.

Coordination between Control of Noxious Plants and Seeding:

All unpaved construction disturbed project areas shall ultimately be stabilized with the Class II Seeding unless otherwise stabilized by equivalent permanent stabilization measures as approved by the Engineer. As a part of Integrated Vegetation Management, the contractor shall re-establish diversified native vegetation through seeding after successful control of noxious plants as approved by the Engineer in accordance with an ADOT construction Professional Landscape Architect's (PLA) evaluation. The well-established diversified plant community through seeding of desirable native species will be able to effectively compete and resist the spread of non-native invasive weed species from re-invasion / re-infestation.

The contractor shall avoid herbicide persistence in subsequent desirable seeding establishment. Pre-emergent herbicide shall NOT be applied on all project seeding areas during Control of Noxious Plants. The time period and length of an herbicide product that remains active in soil, which is the acceptable herbicide Soil Persistence or Soil Residual Life, shall be approved by the Engineer in accordance with an ADOT construction PLA's evaluation. As herbicides vary in their length of time to persist in soil, the contractor shall demonstrate information / method(s) on how the application of herbicide(s) will NOT harm the expected desirable seed species germination and establishment as specified in the Items 9240181 and 9240182 of these Special Provisions.

Erosion, Sediment Control and Stormwater Quality Protection:

The contractor shall give attention to the impact of the construction operations upon the natural landscape and shall take care to maintain the natural surroundings undamaged. The contractor shall minimize soil disturbance by implementing Low Impact Development (LID) methods to control erosion as close as possible to the source of disturbance.

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

In addition to what is shown in the plans and/or details, the contractor shall apply perimeter/containment control Wattle Best Management Practices (BMPs) or temporary stormwater quality Control Measures (CMs) on the down-slope perimeter of construction

disturbed areas, unpaved on-site staging/storage, and unpaved on-site stockpiling at no additional cost to the Department. The contractor shall also apply wattles parallel to the slope contours and beyond the toe of guardrail end treatment pads newly disturbed slopes. To prevent sediment from bypassing the perimeter control BMP/CM end, the end of the BMP/CM shall be turned up the slopes for a minimum of three (3) feet to form an "L" shape. No portion of the BMPs/CMs shall be installed within six (6) feet from the edge of the pavement. BMPs/CMs shall not be placed over any driveways or access roads that intersect with the roadway mainline. Unless otherwise called out in the plans/details and approved by the Engineer, such BMPs/CMs shall not be placed on the flow path of inlets and outlets of drainage facilities. All BMPs/CMs shall be installed in accordance with the manufacturer's instructions. Moreover, perimeter/containment control BMPs/CMs shall be applied outside and above adjacent wetlands, as well as water courses unless otherwise called out in the plans/details and approved by the Engineer. The contractor shall adjust the field layout of erosion control and sediment prevention elements according to the actual limits of soil/ground disturbance as approved by the Engineer. The contractor shall also observe ADOT traffic safety standards when installing perimeter/containment control BMPs/CMs in the traffic clear zone/recovery area.

With the approval of the Engineer, the contractor may choose to replace straw/excelsior Wattles/Logs with equivalent or enhanced BMP/CM products of compost Logs/Wattles, bio-socks, filter socks, compost socks, or compost tubes covered with dense geotextile fabric as the outer layer at no additional cost to the Department. Such replacement may be applicable to protect sensitive biological resources (native species and/or habitats) within the project limit or its vicinity. The color of BMP/CM products of compost Logs/Wattles, bio-socks, filter socks, compost socks, or compost tubes shall be harmonized with the natural surrounding existing ground cover as approved by the Engineer in accordance with the ADOT construction Professional Landscape Architect's (PLA's) evaluation. Black color exterior surface layer of such compost BMP/CM products shall be prohibited. For paved or rocky surfaces, the compost perimeter/containment control and stormwater quality protection BMPs/CMs shall have enough weight so that no staking shall be required for flat construction zones, and gentle slopes of less than five percent (5%). The equivalent compost BMP/CM products stated above shall demonstrate the same or better stormwater pollutants loading/filtering capacities as well as qualities in comparison with straw/excelsior Wattles/Logs. All fabric materials of compost perimeter/containment control and stormwater quality protection BMPs/CMs shall be biodegradable. No separate measurement or direct payment will be made for the replacement of the straw/excelsior Wattles/Logs with compost BMP/CM products; the cost being considered is included in the price of the respective contract item of Wattles/Logs.

Compost material used for perimeter/containment control and stormwater quality protection BMPs/CMs shall not discharge harmful levels of pollutants/nutrients that impair stormwater quality. The Engineer shall randomly sample/exam a minimum of three (3) compost-filled BMPs/CMs by opening the outer fabric layer. Non-compost materials such as: animal manures/wastes, city biosolids, rocks, tree barks, unspecified wood chips, construction debris, soil clumps, and/or other unspecified inert material shall NOT be allowed within the compost BMP/CM products.

Wattles/logs, silt fences, bio-socks, filter socks, compost socks, or compost tubes shall be deemed as temporary stormwater quality CMs/BMPs. The non-biodegradable and/or non-photodegradable components of such temporary CMs/BMPs shall be removed when the

project site has achieved stabilization as approved by the Engineer. Rock materials used for temporary stormwater quality protection CMs/BMPs may be left on-site to cover unpaved disturbed soil area for permanent stabilization as approved by the Engineer. If approved, on-site rock materials shall be flattened and re-graded to match with the final unpaved finished grade.

The contractor shall also apply the Rock Protection CMs/BMPs (Detail E2, Item 8101029) behind all applicable new culvert flared end sections, metal safety end sections, and/or new headwalls/endwalls in accordance with project plans and site conditions. Make necessary field adjustments to ensure the layout/installation of Rock Protection CMs/BMPs are accomplished according to the actual site locations compared with project plans/details as approved by the Engineer.

The contractor shall propose the locations and install the temporary STABILIZED CONSTRUCTION ENTRANCE/EXIT GRAVEL PADs (ITEM 8101018, E5) on the unpaved new construction access roads as approved by the Engineer. Minimum three (3) STABILIZED CONSTRUCTION ENTRANCE/EXIT GRAVEL PADs have been estimated in accordance with project plans and site conditions.

All Rock Mulch and Rock Riprap used for erosion/sediment control shall be placed and shaped as shown on the CMs/BMPs' plans/details. Rock Mulch/Riprap materials shall be fractured/crushed rocks in angular shape for effective erosion/sediment control and energy/velocity dissipation as defined in Section 810 / 913 of Specifications. Unless otherwise called out in the plans/details/estimates or as directed by the Engineer, natural river-run materials, especially the rounded natural river rocks/cobblestones and pebbles are not acceptable. The color of Rock Mulch and Rock Riprap shall be harmonized with the natural surrounding rock/inert artificial existing ground cover material as approved by the Engineer in accordance with the ADOT Construction PLA's evaluation.

The contractor is responsible for maintaining the functional longevity and good working conditions of all stormwater quality protection CMs/BMPs during the entire contract time. No separate measurement or direct payment will be made for the maintenance and/or replacement of such CMs/BMPs to assure manufacturer-specified functionality; the cost being considered is included in the price of the respective contract items.

The contractor is also responsible for protecting Storm Drain Inlets within the project limits from pollutants/contaminants discharged by construction at no additional cost to the Department.

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

During construction, the contractor shall minimize vehicular travel or equipment operation on the unpaved soil areas to maximum extent practicable (MEP). The contractor shall develop and implement procedures to avoid earth disturbance, soil compaction, and damage to vegetative cover from vehicular travel or equipment operation during inclement weather or unsuitable soil conditions. The contractor shall stabilize all construction disturbed soil areas at no additional cost to the Department. Furthermore, the contractor shall minimize off-site sedimentation including minor miscellaneous dirt, dust, rock fragments or construction debris by eliminating the tracking of such contaminants from construction sites.

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

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

Erosion and Sediment Control beyond the Project Limits:

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

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

If the contractor elects to obtain off-project site for staging, stockpiling, material storage, maintenance yard, or waste disposal, the contractor shall meet the requirements for erosion control, sediment prevention, and stormwater quality protection measures within the written agreements with facility and/or the land owner, as well as environmental permits for such operations.

(101DEFN, 04/21/22)

SECTION 101 DEFINITIONS AND TERMS:

101.02 Definitions:

Acceptance: of the Standard Specifications is hereby deleted:

Characteristic: of the Standard Specifications is revised to read:

A measurable or an observable property of a material, product, or item of construction.

City, County, Township, or Town: of the Standard Specifications is hereby deleted:

Contract Bonds (Performance Bond and Payment Bond): the title and text of the Standard Specifications is revised to read:

Contract Bonds:

Surety Bonds that include Performance Bond and Payment Bond.

Highway, Street, or Road: of the Standard Specifications is revised to read:

A general term denoting a public way for purposes of travel, vehicular, pedestrian or by other means, including the entire area within the right-of-way.

Roadbed: of the Standard Specifications is revised to read:

The graded portion of a highway, prepared as a foundation for the pavement structure and shoulders.

Roadside Development: of the Standard Specifications is revised to read:

Activities which provide for the preservation of landscape materials and features; the rehabilitation and protection against erosion of all areas disturbed by construction through seeding, sodding, mulching and the placing of other ground covers; or such planting and other improvements as may increase the effectiveness and enhance the appearance of the highway.

State: of the Standard Specifications is revised to read:

The State of Arizona, acting through its authorized representatives.

(104TPDDC, 08/21/25)

SECTION 104 SCOPE OF WORK:

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

Prior to construction, alterations to contract phasing, detours, and Maintenance and Protection of Traffic plans shall be reviewed by the Engineer at the preconstruction conference or a pre-activity meeting based on the contractor's preliminary schedule and proposed contract phasing.

SECTION 104 SCOPE OF WORK:

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

(D) General Traffic Control Information:

The project shall be constructed in accordance with the most recent versions of Part VI of the Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition, with the Arizona Supplement to the 2009 MUTCD, the Arizona Department of Transportation Traffic Control Design Guidelines (TCDG), and the traffic control plans. The contractor is responsible for establishing the traffic control necessary to provide a safe and efficient work zone without unduly delaying traffic. Alterations and modifications to the traffic control plans and special provisions will be considered if they conform to the references listed above. Any changes or revisions to the traffic control requirements in the traffic control plans and Special Provisions shall be approved in advance by the Engineer.

Should the contractor elect to prepare traffic control plans that deviate from those included in the contract plans, the contractor shall develop and submit a traffic control plan for the Engineer's approval, in accordance with these Special Provisions and as specified in Section 701 of the Specifications at no cost to the Department.

The temporary removal or covering of existing signs shall be in accordance with Section 701-3.11 and 701-5.10 of the Standard Specifications. All existing signs in conflict with the construction signs shall be removed or covered in place, as directed by the Engineer. The contractor shall store and reinstall items which have been removed or relocated in a manner approved by the Engineer at no additional cost to the department.

Traffic control devices shall not be permitted to remain stockpiled on the shoulder until the next closure.

Temporary traffic control devices shall not be set up in advance of closure unless approved by the Engineer. Traffic control devices shall not be installed more than 30 minutes before the beginning of a closure and shall be entirely removed from the roadway and shoulders within 30 minutes of the end of the closure and will not be permitted to remain stockpiled on the shoulder until the next closure.

For each changeable message board used on the project but not located in a protected location behind guardrail or another barrier, the contractor shall position ten Type I or ten Type II barricades – but not vertical panels — around the changeable message board. Each barricade shall have an affixed Type C steady-burning light for nighttime use. The contractor shall position changeable message boards and the barricades surrounding them only where and when approved by the Engineer.

(E) Schedules for Daily Traffic Control Activities:

The contractor shall provide a schedule of daily activities and corresponding traffic control schemes. The information shall be provided in advance or during the weekly construction meeting in accordance with Subsection 108.04 of the Standard Specifications, and shall

specify the limits of the work activities and related traffic control plan by location, direction and time.

The schedule and the related traffic control shall be developed in such a way that access or alternative access is maintained at all times to all adjacent residential developments, commercial and public rights of way. The schedule should be developed in such a manner that it can be released to other agencies and the public. The schedule shall be updated as necessary.

No work shall begin until written approval of a Traffic Control Plan (TCP) is received from the Engineer. The listed items in these special provisions are not all inclusive and it shall be incumbent upon the contractor to provide details that will allow a full analysis of its particular operations.

Changeable message board legends shall be concurrently submitted with the TCP to the Engineer for review and approval.

The contractor shall be required to check on all traffic control barricades, signs and variable message boards twice daily and maintain as needed per the Standard Specifications.

All lane restrictions and closures will be subject to the following:

- Any work requiring a closure and restriction will need to have an approved TCP.
- The contractor shall maintain the existing number of lanes on SR 169 and SR 69, except as specified in Table 104-1.
- All temporary lanes shall be a minimum of 11' wide.
- Any exceptions must be approved by the Engineer.
- There will be no full closures of SR 169 or SR 69 allowed. Traffic control plans for lane restrictions shall be provided to the Engineer for review and approval a minimum of 14 calendar days prior to needing the lane restriction.

Special Events Restrictions:

The contractor is advised that ADOT may receive advance notice of special events which may affect construction or closures. The contractor shall schedule the project work in such a manner as to avoid traffic restrictions during special events. Special event accommodations will be coordination with ADOT Communication Division, the Northwest District, Town of Prescott Valley and Town of Dewey-Humboldt and other project stakeholders. Special events shall be defined as activities which draw 30,000 or more community members and whose attendance/enjoyment may be negatively impacted because of ongoing roadway restrictions.

A list of known nearby venues with potential special events are listed below. This list is not intended to be all inclusive. It shall be the responsibility of the contractor to coordinate with ADOT Communications group to identify all special events, with their specific dates during

project construction. Note that all listed venues also host various other events such as concerts, festivals and community events.

Local events in the Quad City area are provided for information only for the contractor to plan their operations effectively. Daytime lane closures are not allowed at any time during construction.

Event	Approximate Month
Prescott World's Oldest Rodeo, Prescott Fairgrounds and Downtown	Late June/ Early July 2027
Mortimer Farms Corn Festival	August 2027
Mortimer Farms Sunflower Festival	September 2027
Findlay Center	September 2027
Agua Fria Festival – Downtown Dewey-Humbolt	September 2027
Mortimer Farms Pumpkin Patch, Etc.	October 2027 (All month long)
Findlay Center Activities	Actively ongoing - Dog Shows, State Wrestling, Concerts, PBR Rodeo and others

There will be no restrictions to the number of through lanes on SR 169 and SR 69 allowed when a special event is occurring.

Holiday Restrictions:

There will be no lane closures allowed on holidays or weekends which adjoin a holiday.

The restricted holidays include:

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

There will be no closures or lanes restrictions of SR 69 and SR 169 allowed from November 25, 2026 through January 4, 2027 and November 24, 2027 through January 6, 2028.

Allowable Lane Closures:

Table 104-1 Allowable Short Term Through Lane Closure Periods	
Roadways:	Weekday Nightly Lane Closures (Sunday-Thursday Night)
SR 69 and SR 169	9:00 PM to 6:00 AM (Sunday-Thursday)

Lane closures will not be allowed over a weekend (defined as Friday at 6 AM through Sunday 9 PM)

For each 15-minute interval in which the short-term lane closures (Table 104-1) are not removed outside of the allowable time period, the contractor shall be assessed a sum as calculated by the Engineer based on the table below, which shall be deducted from monies due or becoming due to the contractor.

Liquidated Damages	
Closure times	15-minutes
SR 69 / SR 169	\$ 400

Before the lanes are reopened to traffic, the Engineer shall be satisfied that traffic can move unimpeded through the project at the posted speed and the safety and convenience of the travelling public is not affected. The Engineer will be the sole judge of whether or not the lane(s) can be re-opened to traffic.

The contractor will be permitted a single full closure of the private driveway at the west leg of the SR 69/169 intersection. The closure will be permitted during a weekend from 9:00 PM Friday to 6:00 AM Monday. The TCP for the full closure shall be submitted to ADOT for review 21 calendar days prior to needing the full closure. Any construction activities at any other driveways on the west side of SR 69 will not be permitted at the same time as the full closure.

(F) Project Specific Traffic Control Requirements:

Object Protection:

During construction of the SR 169/69 intersection the contractor shall provide positive protection (temporary concrete barrier with end treatments) separating traffic from all obstructions, fixed objects and non-breakaway poles that are not protected behind guardrail or concrete barrier located within the 18-foot recovery area from the edge of the traffic lane or as directed by the Engineer. All temporary devices used to provide positive protection shall be approved by the Engineer and placed in accordance with the 2011 AASHTO Roadside Design Guide. The cost of the traffic control items for the object protection shall be paid per Section 701 of the Specifications and the project plans.

Any obstruction or object within 18 feet of the traveled way throughout the project limits shall have positive protection.

Access for the Protection of Pedestrians:

Access for pedestrians shall be maintained at all times within the work zone.

The contractor shall designate a minimum of one route across SR 169 and SR 69 at the intersection. This route will be designated on each traffic control plan for review and approval by the Engineer.

At all times the contractor shall conduct his work to safeguard pedestrians within the vicinity of the intersection of SR 69/SR169. Any holes or trenches left open overnight shall be protected at the end of each workday. If required or approved by the Engineer, the contractor shall provide Type II barricades and Type A flashing lights connected by warning tape, ribbon rope, a plywood covering or other protection over the holes. No measurement or direct payment will be made for work site protection measures (e.g., temporary chain link fence, plywood or other protection over holes, warning tape, ribbon rope, etc.), the cost being considered as included in price of the contract items. For sidewalk, crosswalk, and other pedestrian facility closures or relocations, pedestrian detours shall be provided per Figures 6H-28 and 6H-29 in the MUTCD.

(104SWDEQ, 02/10/20)

SECTION 104 SCOPE OF WORK:

104.09 Prevention of Stormwater Pollution: of the Standard Specifications is revised to read:

(A) General:

The contractor shall follow the requirements of Section 402 of the Clean Water Act (CWA), 33 USC 1251 and other water quality regulations. The CWA regulates discharge of pollutants into the waters of the United States and provides quality standards for surface waters. Section 402 of the CWA provides stormwater pollution prevention regulations. ADEQ's Aquifer Protection Permit (APP) Program regulates temporary concrete washout facilities. The APP Type 1 Permit (APP 1.12) applies only when projects disturb one or more acres and are covered under the Arizona Department of Environmental Quality Construction General Permit.

The contractor shall minimize ground disturbance to the natural surroundings. No ground disturbing activities shall occur until all applicable permits have been obtained. The applicable permit requirements must always be met.

The contractor shall provide adequate information to the contractor's personnel, including employees of any subcontractors, to ensure that all personnel understand requirements of the applicable permits that are relevant to their job functions.

(B) Clean Water Act, Section 402, Arizona Pollutant Discharge Elimination System (AZPDES):

(1) General Requirements:

The contractor shall be responsible for preparing and processing all documents and implementing the requirements of the Arizona Pollutant Discharge Elimination System (AZPDES) "General Permit for Discharge from Construction Activities to the Waters of the United States," for pollution prevention issued by the Arizona Department of Environmental Quality (ADEQ). That document is hereinafter referred to as the Construction General Permit (CGP) and is available on ADEQ's website.

The work shall include providing, installing, and maintaining, temporary and permanent pollution prevention control measures and removing and disposing of temporary pollution prevention control measures. Control Measures, as hereinafter referenced, shall be deemed to include pollution prevention control as described in the CGP. Control Measures may be temporary or permanent.

The contractor's schedule shall allow sufficient time for the following submittal, review, and approval times:

Table 104-1 Submittal, Review, and Approval Timeframes	
Contractor submittal of Erosion Control Coordinator (ECC) qualifications	By the pre-construction conference
Department review and approval of ECC qualifications	within seven calendar days of receipt
Department review and approval of subsequent submittals (if required)	within seven calendar days of receipt
Contractor submittal of SWPPP to Engineer	By the pre-construction conference
Department review and approval of subsequent submittals (if required)	within seven calendar days of receipt
Engineer/contractor joint review of SWPPP	within 10 calendar days after contractor submittal of SWPPP with ADOT approval of the ECC
Approved Notice of Intent (NOI) submittal and review times	as described in the CGP

No increase in contract time will be granted for the contractor's failure to provide acceptable submittals within the specified timeframes.

(2) Stormwater Pollution Prevention Plan (SWPPP):

The SWPPP shall include all information and permit requirements specified in the CGP, and shall also be consistent with applicable state or local programs.

Unless otherwise approved by the Engineer and documented in the SWPPP, 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 Control Measures 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 SWPPP, along with proposed Control Measures for each sub-area. The SWPPP shall also include the sequence of construction for each sub-area, and installation of the required temporary or permanent Control Measures.

The contractor shall give installation of permanent Control Measures priority over reliance on temporary measures. Permanent 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.

The project plans may include erosion/sediment control plans and details along with a Control Measure Index Sheet (CMIS) to assist the contractor in preparing the SWPPP. The contractor and the contractor's ECC, or other qualified designee, as described in Subsection 104.09(B)(3), shall review the contract documents, and prepare the SWPPP for review by the Engineer. The contractor shall use the Department's SWPPP Template to prepare the SWPPP. The template is available on the Department's Water Resources website.

The 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 the review and approval procedure. The Engineer and contractor shall jointly approve and sign each revision to the SWPPP before implementation. Any revisions made by the contractor to amend the approved SWPPP will require two to seven calendar days for review.

The contractor shall prepare the SWPPP for the Engineer's review including all information specified herein. The contractor shall submit the SWPPP to the Engineer at the preconstruction conference.

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

When agreement has been reached, the Engineer and contractor's ECC will sign the SWPPP. The Engineer's signature will constitute approval of the SWPPP. Upon approval of the SWPPP, the contractor and the Engineer shall each file a Notice of Intent (NOI) as specified in Subsection 104.09(B)(6). The Engineer will provide a copy of the Department's NOI to the contractor to be included in the SWPPP.

The SWPPP shall be maintained in accordance with the CGP. A current copy shall be maintained at a location approved by the Engineer and amended as necessary from the time the contractor files its NOI until the NOI is submitted. The SWPPP shall be available for inspection by entities identified in the CGP, and for use by the Engineer.

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

In accordance with the CGP, the Engineer and the contractor shall confirm the frequency of inspections appropriate for the project. The contractor shall identify the frequency in the SWPPP. The contractor shall inform the Engineer when each inspection will be performed a minimum of 72 hours in advance so the Engineer can jointly perform the inspection if desired.

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 maintained in the SWPPP.

(3) Erosion Control Coordinator (ECC):

The contractor shall designate an erosion control coordinator (ECC) to be responsible for approval and implementation of the SWPPP, as well as all other applicable requirements of the CGP. The contractor's ECC shall have the qualifications described in Subsection 104.09(B)(4).

The contractor shall not assume that the person proposed as ECC will be accepted by the Department merely because the experience and education requirements listed herein have been met.

After approval, the contractor shall designate the ECC as a duly authorized representative of the contractor in accordance with, and as defined in, the CGP. Documentation of the delegation of a duly authorized representative shall be included as part of the SWPPP.

The ECC 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. Corrective measures shall be completed in the timeframe required by the CGP and included in the SWPPP as required by the CGP.

The ECC shall at all times be aware of the contractor's work activities, schedule, and effect of the work on the environment. Should the ECC not be present at the project site on a full-time basis, the contractor shall establish procedures to ensure that its ECC is promptly notified of any damage or displacement of the required erosion control measures, whether from construction, vandalism, or other causes.

The contractor bears all risks and liabilities for the failure of its ECC to properly implement the requirements of the CGP.

Failure of the contractor to properly maintain the Control Measures required in the approved SWPPP may be cause for the Engineer to reject the ECC and issue a stop work order, as specified in Subsection 104.09(B)(7).

(4) ECC Certification Requirements:

The ECC shall have successfully completed the mandatory 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. No other training can be substituted.

The training class certification is valid for three years. Within 60 days of the end of the three year period, in order to maintain the training class certification, the ECC shall 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. The refresher class will be required every three years thereafter, prior to the expiration date listed on the previous certificate. Should more than three years (and 60 day grace period) elapse from completion of either the training class or refresher class, the contractor's ECC will be required to successfully complete the two-day training class in order to again be eligible for consideration.

In addition, the contractor's ECC shall have documented experience equal to a minimum of one year from either of the following two categories:

- (a) Experience in the implementation of SWPPPs. The ECC's experience shall demonstrate full-time responsibility for directly supervising construction personnel in the installation, inspection, and maintenance of pollution prevention measures.
- (b) Experience in stabilization of disturbed areas in environments similar to those on the project.

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 ECC has completed the training class or refresher class. To be considered for approval, the contractor's documentation shall include a copy of the proposed ECC's certification.

(5) Acceptance of ECC and SWPPP:

The contractor shall submit documentation indicating the qualifications of the ECC to the Engineer for approval no later than the pre-construction conference. The Engineer will review the proposed candidate's information within seven calendar days. The contractor may begin development of the SWPPP prior to approval of the ECC. However no clearing, grubbing, earthwork, or other work elements that may be subject to the requirements of the CGP shall be started until the ECC has been approved, the SWPPP finalized and implemented, the NOI completed and filed, and the CGP authorization received by the contractor and the Engineer. If sampling is required, the SWPPP and SAP shall also be reviewed and approved by ADEQ prior to ground disturbance by the contractor.

(6) Notice of Intent:

After the project SWPPP has been approved by the Engineer, the Engineer and the contractor will each complete separate Notice of Intent (NOI) forms for the project. The contractor shall submit the NOI to ADEQ as required by the CGP.

Unless notified otherwise by ADEQ, the contractor will be authorized to begin implementation of the approved SWPPP seven calendar days after acknowledgement of receipt of both NOIs by ADEQ or whenever an authorization certificate is issued by ADEQ, whichever occurs first.

(7) Non-Compliance:

The Engineer may reject the contractor's ECC if, in the opinion of the Engineer, the conditions of the CGP or the SWPPP are not being fulfilled. Rejection of the contractor's ECC shall be for failure to complete any of the following:

- (a) 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 ECC shall fully implement, to the satisfaction of the Engineer, the requirements of the approved SWPPP within three working days.
- (b) Should any corrective measures required in the CGP not be completed within the time periods specified therein, the Engineer will notify the contractor in writing. The contractor's ECC 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.
- (c) Should the Engineer determine that routine maintenance of the project's Control Measures is not being adequately performed; the contractor will be notified in writing. Within three working days, the contractor's ECC shall demonstrate, to the satisfaction of the Engineer that such steps have been taken to correct the problem.

In the event of the ECC's failure to comply with the CGP or any of the above requirements, the Engineer will direct the contractor to stop all affected work and propose a new ECC as soon as possible. However, all Control Measures 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 ECC 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 ECC to properly fulfill the requirements of the SWPPP.

(8) Notice of Termination:

Upon written approval of the Engineer, the contractor shall complete and submit a Notice of Termination (NOT) to the Engineer for approval. After approval by the Engineer, the contractor shall submit the NOT to ADEQ.

The NOT shall be submitted as described in the CGP.

A copy of the SWPPP and the NOT shall be provided to the Engineer within seven days of the contractor receiving acknowledgement from ADEQ. The copies may be either electronic or hard copies.

(C) Aquifer Protection Requirements (Concrete Washout Facilities):

If the contractor's work requires the use of temporary concrete washout facilities, the contractor shall comply with the requirements of ADEQ's APP Type 1 Permit (APP 1.12). APP 1.12 covers wastewater to an impoundment from washing concrete from trucks, pumps, and ancillary equipment. The contractor shall address concrete washout activities in the project SWPPP.

(D) Measurement and Payment:

Measurement and payment for work specified in the SWPPP will be made in accordance with the requirements of Section 810. Control Measures specified in the contract which are 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 Control Measures is included in the bidding schedule, the contractor may be reimbursed for such additional Control Measures proposed by the contractor but not included with the plans or specifications. Such additional Control Measures must be approved in writing by the Engineer before use. Items for Control Measures 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 SWPPP, the SAP, 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, the contractor's pollution prevention practices and requirements, or maintenance of the Control Measures during a suspension of work, the costs being considered as included in contract items.

No measurement or payment will be made, except as specified below for external laboratory testing, for labor, equipment, and materials required in the SAP, the cost being considered to be included in contract items.

If an item is included on the bidding schedule for Construction Monitoring (Laboratory Testing), the contractor will be reimbursed for those samples tested, as required in the approved SAP, by an accredited laboratory approved by the Arizona Department of Health Services. The contractor will be reimbursed for the invoice amount of each required test, plus an additional markup of ten percent of the invoice amount. No measurement or payment will be made for in-field testing and related equipment, the cost being considered to be included in contract items.

No measurement or payment will be made for temporary concrete washout facilities, the cost being considered to be included in contract items.

Unless otherwise specified, no measurement or payment will be made for maintenance of temporary and permanent 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 CGP for pollution prevention due to stormwater runoff during construction, as specified above in Subsection 104.09, Prevention of Stormwater Pollution.

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 maintain Control Measures in working order during any stoppage of work. Based on the nature of the work stoppage, the contractor and the Engineer shall determine the maintenance requirements. The contractor shall comply with the CGP including inspection of the project.

(104ENVIR, 06/17/21)

SECTION 104 SCOPE OF WORK:

104.12 Environmental Analysis: the fifth and sixth paragraphs of the Standard Specifications are revised to read:

If the contractor elects to do an environmental analysis and use any site, source, or access for the reasons listed above, they choose to do so at their own risk. It is the contractor's responsibility to exercise due diligence when selecting these sites and areas. The contractor shall bear all costs associated with the use of proposed sites, sources, and accesses.

The contractor shall promptly advise the Engineer that it is preparing the environmental analysis and shall submit to the Engineer for review and consultation. The Department will review the submittal and send it to the appropriate agencies and/or jurisdictions for consultation or return it to the contractor for revision. The contractor shall allow a minimum of 60 calendar days after submittal, or subsequent resubmittals, 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 due to the Department's actions in the aforementioned review process, the contractor may seek, and the Engineer may grant, an extension of time in accordance with the terms of Subsection 108.08 of the specifications. 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 the delay resulting due to the Department's actions in the review process. A time extension request will not be considered or granted for any other reason. No time extension will be granted for a fixed completion date contract.

104.12 Environmental Analysis: the items (G) and (O) of the seventh paragraph of the Standard Specifications is revised to read:

- (G) 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 (SHPO) standardized format. The survey shall identify all historic properties within the area of potential effect (APE), as defined by the National Historic Preservation Act (36 CFR 800.4). This includes the materials source, processing area, and the haul road. Additionally, the survey report shall identify the effects of the proposed source on any historic properties within the APE, and recommend measures to avoid, minimize, or mitigate those effects. The survey report shall be prepared by the contractor in accordance with SHPO and ASM formatting style for the Historic Preservation Specialist's initial review. After the initial review, the Department will consult with the landowner, SHPO, and Tribes for a minimum of 35 days for the final approval of the survey report.
- (O) A description of the impact on federally or state protected or other agency-specific special status wildlife and plants and their habitat, as defined in ADOT's consultant biological procedures on the Department's website. Compliance with the Arizona Native Plant Law shall be coordinated through the Arizona Commission of Agriculture and Horticulture.

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

Guidance and forms for preparing the environmental analysis are available on the Department's website through the Environmental Planning Group, or by calling Environmental Planning Group at 602-712-7767.

(104VEPC, 03/20/25)

SECTION 104 SCOPE OF WORK:

104.13 Value Engineering Proposals by the Contractor: the third paragraph of the Standard Specifications is revised to read:

Any cost savings generated to the contract as a result of VEP offered by the contractor and approved by the Department will be shared between the contractor and the Department, with

the contractor receiving 60 percent and the Department receiving 40 percent, as specified in Subsection 104.13(D) of the specifications.

104.13(C) Conditions: of the Standard Specifications is modified to add:

- (13) The contractor may submit a previously approved VEP from another project.

104.13(D) Acceptance, Rejection and Payment: the seventh paragraph of the Standard Specifications is revised to read:

- (6) The executed supplemental agreement shall provide that the contractor be paid 60 percent of the net savings amount as reflected by the difference between the cost of the revised work and the cost of the related construction required by the original contract computed at contract bid prices. The net savings will take into account the contractor's cost of developing the VEP and implementing the change, and reducing this amount by the Department's cost for investigating and evaluating the VEP, including any ascertainable collateral costs to the Department. Such collateral costs may include increased costs for maintenance, operation, related work items, additional work items, or elements of related or additional work items.

(104ENVST, 09/19/24)

SECTION 104 SCOPE OF WORK:

104.16 Environmental Standard Work: of the Standard Specifications is hereby modified as follows:

(F) Specific Vegetation Protection Program: is hereby added to the Standard Specifications:

The contractor shall control noxious and invasive plant species throughout the duration of the project in accordance with the requirements of these special provisions.

All disturbed soils that are not landscaped or otherwise permanently stabilized by construction shall be seeded in accordance with the requirements of Item 8050003 of these special provisions.

The contractor shall not disturb unpaved areas without the approval of the Engineer or as stated in the Environmental, Permits, Issues, and Commitments (EPIC) plan sheet 1F of the project plans. If any unpaved areas are disturbed as a result of the contractor's operation and without the approval of the Engineer, the contractor shall seed the areas with species native to the project vicinity. All seeded areas shall be covered by straw mulch with tacking agent. The contractor shall provide the seed mix to the Engineer for approval prior to placing any seeding. No measurement or payment will be made for seeding, the cost being considered as included in the price of contract items.

(105TPDDC, 08/21/25)

SECTION 105 CONTROL OF WORK:

105.18 Opening Sections of Project to Traffic: of the Standard Specifications is modified to add:

Damage to the project resulting from a third-party shall be reported to the Engineer. Damages to permanent project features, determined by the Engineer as eligible for payment in accordance with the requirements of Subsection 104.04 of the specifications, will be paid for in accordance with Subsection 109.04 of the specifications.

(107UINSLMTS, 02/20/25)

SECTION 107 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

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

Without limiting any liabilities or any other obligations of the contractor, the contractor shall provide and maintain, if commercially available, the minimum insurance coverage listed below until all obligations under this contract are satisfied:

- (A) General Liability insurance with a minimum combined single limit of \$1,000,000 each occurrence applicable to all premises and operations, and a minimum general aggregate limit of \$2,000,000. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, independent contractors, products and completed operations. Further, the policy shall include coverage for the hazards commonly referred to as XCU (explosion, collapse and underground). The products and completed operations coverage shall extend for one year past acceptance, cancellation or termination of the work. The policy shall contain a severability of interests provision.
- (B) Comprehensive Automobile Liability insurance with a combined single limit for bodily injury and property of not less than \$1,000,000 each occurrence with respect to contractor's owned, hired, or non-owned vehicles, assigned to or used in performance of the work.
- (C) Workers' Compensation insurance to cover obligations imposed by Federal and State statutes having jurisdiction of its employees engaged in the performance of the work, and Employers' Liability insurance with a minimum limit of \$1,000,000. Evidence of qualified self-insured status will suffice for this subsection.

(107UTIL, 04/17/25)

SECTION 107 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

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

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

NORTHWEST DISTRICT

Prescott Area:

(928) 777-5874 1109 E. Commerce Drive
(928) 777-5861 Prescott, AZ 86305
northwestpermit@azdot.gov

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

Arizona Public Service

Bobby Garza

P.O. Box 53933
Phoenix, AZ 85072-3933
MS: 3177
602-361-6840
Baldemar.Garza@aps.com

APS has overhead and underground facilities within the project limits and shall be protected in place.

AT&T

Joseph Forkert

2231 Brookhurst Street, Suite 203
Huntington Beach, CA 92646
714-963-7964
Joef@forkertengineering.com

ATT leases fiber optic cable from QWEST (CenturyLink/Lumen) that is within the project limits and shall be protected in place.

CableOne (Sparklight)

Douglas Hamilton

3201 Tower Road
Prescott, AZ 86305
928-443-3305
Douglas.Hamilton@cableone.biz

CableOne/Sparklight has overhead fiber optic cable within the project limits and shall be protected in place.

CenturyLink/Lumen
Andre Hatcher
602-430-9388
ahatcher@terratechllc.net

CenturyLink/Lumen has overhead and fiber optic cable, as well as underground copper communication lines within the project limits and shall be protected in place.

Contractor shall notify Terra Technologies LLC and Lumen of the Preconstruction meeting so that a representative may be in attendance.

Should the contractor locate or expose an unknown Lumen facility, please contact Lumen as soon as possible.

CenturyLink/Lumen has the following adjustments:

Facility	Station Range	Offset	Mitigation
Communication Manhole Frame and Cover	SR169: 1+64.73	49.23' Lt	CenturyLink/Lumen to be adjusted to finished grade in coordination with the contractor
Communication Manhole Frame and Cover	SR169: 8+05.51	49.58' Lt	CenturyLink/Lumen to be adjusted to finished grade in coordination with the contractor.

Contractor shall coordinate directly with CenturyLink/Lumen to schedule the manhole adjustment prior to the concrete sidewalk being constructed. A minimum of 2-week notice shall be provided to Lumen to commence the work. Adjustment to finished grade is anticipated to be complete in 2 calendar days.

Also, an existing copper cable located at Station 1+69.42 along the north side of SR 169 (38.55' Lt) was potholed and found to be shallow in nature. This line will have approximately 1' vertical clearance with the proposed storm drain pipe being constructed below the direct bury cable. Contractor shall coordinate directly with CenturyLink/Lumen 1-week prior to the installation of the storm drain pipe to ensure proper oversight of the installation. Contractor shall take necessary measures to protect the direct bury copper cable in place.

Town of Prescott Valley
Lisa Vaughan, PE
928-759-5506
lvaughan@prescottvalley-az.gov

The Town of Prescott Valley has underground waterlines and steel casings for future sanitary sewer within the project limits and shall be protected in place.

SERVICE CONNECTION STATEMENT:

The following utility company is the service provider to facilities within the project limits. The contractor shall secure service connections as part of project construction, and in accordance with the specifications on the plans and the special provisions as described in 9240010:

Arizona Public Service
Brenda Carter
2200 E. Huntington Drive
Flagstaff, AZ 86001
Brenda.carter@aps.com

The contractor is cautioned to use care when operating near these facilities.

107.15(F) Sewage Discharge Damage Assessments: of the Standard Specifications is revised to read:

The Department will assess sanctions in accordance with the Table 107.15-1 below for each 24-hour period, or portion thereof, for each unplanned breakage that occurs in an active sanitary sewer line as a result of the contractor's operation. The rate of these sanctions is based on the type and quantity of effluent discharged as determined by the Engineer.

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

The sanctions specified in this subsection will be independent of any penalties imposed by others.

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

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

TABLE 107.15-1 SANCTIONS (EACH 24-HOUR PERIOD, OR PORTION THEREOF)		
Volume of Discharge	Raw Sewage or Industrial Wastewater	Treated Effluent
Less than 10,000 gallons	\$5,000	\$1,000
10,000 to 99,999 gallons	\$10,000	\$2,000
100,000 to 1 million gallons	\$25,000	\$3,000
Greater than 1 million gallons	\$40,000	\$5,000

These sanctions will be assessed for each 24-hour period, or portion thereof, until the contractor has completed all of the following tasks:

- (1) Stopped the discharge;
- (2) Repaired the damaged pipe;
- (3) Restored normal service; and
- (4) Fully cleaned and disinfected the site to the satisfaction of the Engineer.

Upon completion of tasks (1), (2), and (3) above, and prior to completion of Task (4), the sanctions for the current 24-hour period will be at the rate shown in Table 107.15-1. However, for each subsequent 24-hour period, the assessment will be 1/2 of the rate shown in Table 107.15-1.

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

As an example, the amounts assessed each 24-hour period for an unplanned discharge of 20,000 gallons of raw sewage, in which the contractor completes tasks (1), (2), and (3) within the second 24-hour period but does not complete full cleanup until the third 24-hour period, will be as follows:

First 24-hour period:	\$10,000
Second 24-hour period:	\$10,000
Third 24-hour period:	\$5,000

For this example, the total sanction will be \$25,000 (\$10,000 + \$10,000 + \$5,000).

(108SUBLT, 10/20/22)

SECTION 108 PROSECUTION AND PROGRESS:

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

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

(108PRCN, 08/19/21)

SECTION 108 PROSECUTION AND PROGRESS:

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

At the preconstruction conference the contractor shall submit a progress schedule showing the order in which the contractor proposes to carry out the work, the dates on which the contractor and its subcontractors will start the work, including procurement of materials, equipment, etc.; the ordering of articles of special manufacture; the furnishing of drawings, plans and other data required under Subsection 105.03 of the specifications for the review and approval of the Engineer; the inspection of structural steel fabrication; and the contemplated dates for the completion.

108.04 Prosecution and Progress: the third paragraph of the Standard Specifications is revised to read:

At a mutually convenient location and time, the contractor shall meet weekly with the Engineer to discuss construction activities; however, a meeting may be waived if mutually agreed to, due to weather conditions, work progress, or for other reasons. At the meetings, the contractor shall provide the Engineer with a detailed, written schedule of construction activities and phases of work for the current week, forthcoming three week period as well as the construction activities which were performed during the previous week. This schedule shall detail the anticipated start dates and anticipated completion dates of work activities. The weekly schedule should reflect, at a minimum, all activities from the most recently updated project schedule. For work which was completed during the previous week, this schedule shall detail the actual start and completion dates of work activities as well as indicate the status of major ongoing activities. Upon the second occurrence of the contractor failing to provide an accurate schedule as describe herein and after written notification by the Engineer of the first occurrence, the Department will deduct \$500 from the contractor's progress payment per each occurrence thereafter. Minutes of the weekly meetings will be kept by the Engineer and a copy given to the contractor for review and acceptance.

(108TIME, 10/15/20)

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 290 working days, and will be known as the "Contract Time."

(108RSLD, 6/19/2025)

SECTION 108 PROSECUTION AND PROGRESS:

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

SCHEDULE OF LIQUIDATED DAMAGES			
Original Contract Amount		Liquidated Damages Per Day	
From More Than:	To and Including:	Calendar Day or Fixed Date:	Working Day:
\$ 0	\$ 500,000	\$ 300	\$ 1,000
\$ 500,000	\$ 1,000,000	\$ 850	\$ 1,700
\$ 1,000,000	\$ 2,000,000	\$ 1,250	\$ 2,650
\$ 2,000,000	\$ 5,000,000	\$ 2,100	\$ 3,800
\$ 5,000,000	\$ 10,000,000	\$ 3,300	\$ 6,850
\$ 10,000,000	\$ 30,000,000	\$ 7,300	\$ 10,550
\$ 30,000,000	\$ 60,000,000	\$ 9,350	\$ 17,750
\$ 60,000,000	\$ 90,000,000	\$ 19,900	\$ 27,850
\$ 90,000,000	-----	\$ 27,450	\$ 38,400

(108SCHLVL1, 08/19/21)

SECTION 108 PROSECUTION AND PROGRESS: of the Standard Specifications is modified to add:

108.12 Schedules:

(A) Definitions:

Activity:

A discrete, identifiable task or event that contributes to completing the project and can be used to schedule and monitor the work.

Activity ID:

A unique alphanumeric identification code permanently assigned to an activity.

Baseline Schedule:

A Critical Path Method (CPM) schedule illustrating the contractor's committed plan to complete the work within the contract time and used to compare the progress of the work.

Constraint:

A limitation placed on a scheduled activity that affects the start or end date of an activity.

Critical Path:

The longest continuous chain of activities which establishes the minimum overall project duration.

Critical Path Method (CPM):

A network-based planning technique that uses activity durations and relationships to calculate a schedule for the project.

Data Date:

The date from which a schedule is calculated, where all activities occurring earlier than the data date are complete and all activities occurring on or after the data date are planned.

Duration:

The estimated time required to complete an activity as recorded on the Project Schedule.

Float Suppression/Sequestering:

The process of utilizing zero free float techniques that allows an activity to start as late as possible by using all available free float of that activity, by the utilization of overly generous activity durations, or by using overly restrictive calendar non-working periods.

Free Float:

The amount of time an activity may be delayed without delaying the early start date of its successors.

Longest Path:

The longest continuous path of activities through a project, which controls project early completion.

Look-Ahead Schedule:

A computer-generated schedule that shows the previous week's work and the work planned for the current and next three weeks.

Milestone:

An activity, with no duration, that is typically used to represent the beginning, end, interim stages and significant events of the project, or contractually required dates.

Monthly Progress Schedule:

A monthly update to the approved baseline schedule.

Narrative:

A written report explaining the Project Schedule in detail.

Predecessor:

An activity that affects the start or finish date of another activity with a logically tied relationship.

Preliminary Schedule:

A CPM schedule that shows the Baseline Schedule for the first 60 calendar days of contract time and, the work breakdown structure and milestones for the entire contract.

Project Schedule:

A logic-based critical path for all work leading up to and including substantial completion or final acceptance that is used for tracking the performance of the work. The term “Project Schedule” will refer to one or more of the following:

- (a) Baseline Schedule,
- (b) Monthly Schedule, or
- (c) Recovery Schedule.

Record Schedule:

A CPM schedule that shows the actual start and finish date of each activity, durations, and all changes.

Recovery Schedule:

A CPM schedule that shows the activity changes to recover the time lost due to incompleteness of the work within the contract time as specified in the Monthly Progress Schedule.

Scheduler:

An individual, who creates, maintains and revises the Project Schedule using applicable software.

Successor:

An activity whose start or finish date is affected by the logically tied relationship with another activity.

Time Impact Analysis (TIA):

A forward-looking, prospective schedule analysis developed to demonstrate the impact of a change to the current schedule on its longest path.

Total Float (Float):

The cumulative duration of time an activity may be delayed without delaying the contract time or a contractual milestone.

Work Breakdown Structure (WBS):

A framework for organizing and ordering the work activities into hierarchical groups.

(B) General:

The contractor shall prepare, furnish, and use the Project Schedule to plan, monitor, and report the progress of the work. The schedule shall demonstrate a detailed plan to complete the work in accordance with the contract time and be used in communication to coordinate activities among all affected parties.

The contractor shall provide a Scheduler to create and maintain all schedules, updates, Narratives, reports, and TIA related to this project. The Scheduler shall be proficient in CPM schedule development, analysis of resources applicable to the required detail of the Project Schedule, and shall be able to perform the required tasks using the specified software.

The Scheduler shall be present at all schedule meetings, in person or via teleconference, and made available for discussion or meetings when requested by the Engineer. The contractor project management personnel, subcontractors, and suppliers shall actively communicate with the Scheduler to develop and maintain accurate updates of progress and schedule revisions throughout the duration of the contract.

The Department's review and comment on a schedule for compliance with this specification does not do the following:

- (1) Imply or constitute approval of particular construction methods or relieve the contractor of its responsibility to provide sufficient materials, equipment, and labor to complete the project in accordance with the contract;
- (2) Attest to the validity of assumptions, activities, relationships, sequences, resource allocations, or other aspects of the schedule;
- (3) Imply the contractor is entitled to a Supplemental Agreement extending the contract time or adjusting the contract price;
- (4) Relieve the contractor from compliance with the requirements of the contract or result in the approval of a deviation, exception to or other variation from the contract. Failure to include an element of work required by the contract in the schedule does not release or relieve the contractor from responsibility to perform such work.

In preparing, developing and updating the Project Schedule the contractor shall not utilize:

- (1) Float suppression techniques in the schedule, including interim dates imposed by the contractor other than project milestone(s);
- (2) The inclusion of activities or constraints in a path or chain leading to a project milestone which are unrelated to the work as specified in the contract;
- (3) Activity durations or sequences determined by the Department to be unreasonable in whole or in part.

The contractor shall not use preferential sequencing, whereby activities that could be performed concurrently and are established in the Project Schedule as sequential simply to consume float. The contractor shall not indicate artificial activity durations by inflating activities in the schedule to consume float and influence the Critical Path. Sequestering of float is cause for rejection of the contractor's schedule submittal. If float sequestering is identified, the contractor shall revise the schedule appropriately.

Total Float is a commodity available to both the Department and the contractor for sequential use until depleted and not for the exclusive use or financial benefit of either party. A schedule showing an early completion date shall show the time between the scheduled completion date(s) and the required contract completion deadline(s) as Total Float.

The Department will not be liable to the contractor for delays by any party when the contractor completes the work prior to expiration of contract time.

If a delay in performing the work is caused by the Department, the contractor shall immediately notify the Department in writing that a revision to the contract is necessary in accordance with Subsection 104.02 and Subsection 104.03 of the specifications. The contractor shall include a description of the cause of delay, the projected amount of Total Float to be used, and the revised Monthly Progress Schedule showing the use of the Total Float in the Monthly Progress submittal. The contractor shall work cooperatively with the Department, other contractors, and third parties to identify and implement, to the maximum extent possible, no-cost measures to recover all schedule delays, regardless of the cause of the delays.

The contractor shall coordinate with the Department, local governmental entities, utility companies, railroad companies, and any third party entities when developing and maintaining the Project Schedule. The contractor shall coordinate its planning and scheduling efforts as required to address conflicts and comments received from adjacent projects and other entities.

(C) BLANK:

(D) Baseline Schedule:

The contractor shall submit a Baseline Schedule before or at the Preconstruction Conference for the Engineer's review and approval.

The Baseline Schedule shall be in the following format:

- i. Project ID: The schedule project ID shall match the filename format in Subsection 108.12(K) of the specifications. The project name shall be the route number followed by the project description.
- ii. Activity ID: Each activity shall be assigned a unique identification number. Activity ID numbers shall not be changed or reassigned for the duration of the contract. Within each group of the WBS, activity ID's shall be numbered sequentially in increments of 10 in the order of their start date or by finish

date of a finish milestone. Milestone activities shall begin with “M”. Use 10 characters or less.

- iii. Activity Name: Each activity shall be defined with a unique name that contains the description of work. Each name shall at a minimum consist of a verb or work function (i.e. remove, excavate, form, install), an object (i.e. curb, pipe, footing) and a location (i.e. street, station, bridge number). For example, “Install Barrier Dtl C – S1 120+25 Lt”. The activity quantity may be included after location.

The contractor shall create an activity name using the following:

- a) Use 50 characters or less;
- b) Use “S1, S2, ...” for stage naming if applicable;
- c) Do not use all capital letters;
- d) Keep names readable, but use abbreviations as needed. Do not use periods when abbreviating. All abbreviations shall be consistent; and
- e) Location is not required if object name is specific, such as “CMP #201”.

The contractor shall provide a list of abbreviations and acronyms. The work related to each activity shall be limited to one stage, one area, one traffic control phase, and one responsible party of the contract.

- iv. Activity Code: Activities shall be assigned with project activity codes that will be used to classify, categorize and organize activities for reporting. Only use project level activity codes and not global or enterprise codes. At a minimum, all activities shall have an activity code for responsible party, stages, and phases. Additional activity codes shall be added if requested by the Department.
- v. Milestones: The contractor shall separately identify each project milestone, conforming to the scheduling requirements set forth in the contract.
- vi. Constraints: The contractor shall not use date constraints to logically begin or complete a project activity unless specific calendar dates are shown in the contract. Specific contract dates may only be applied as a constraint to a milestone activity and input as either a “Start on or After” or “Finish on or Before” date. No other constraint types shall be allowed.
- vii. Duration: Activity duration shall not exceed 20 calendar days unless approved by the Engineer. Activity durations shall be at least one calendar day. Durations shall represent the anticipated productivity rates that factor in all limitations to the productivity. Long lead activities such as procurement and Level of Effort activities may exceed 20 calendar days.

- viii. Relationships: All activities shall have at least one predecessor and one successor except for the project start and project end milestones. Negative lags or negative floats shall not be allowed. Predecessors and successors shall not be linked to the same activity with different relationship types. The start of an activity shall have a Start-to-Start or Finish-to-Start relationship with preceding activities. The completion of an activity shall have a Finish-to-Start or Finish-to-Finish relationship with succeeding activities. Do not use Start-to-Finish relationships. Do not use Finish-to-Start relationships with a lag or overlap.
- ix. If applicable, the schedule shall include but not be limited to all activities below:
1. Mobilization/Demobilization;
 2. Right of Way Acquisition;
 3. Submittal development;
 4. Submittal review and acceptance;
 5. Submittal and approval of material samples and mix designs;
 6. Submittal and approval of shop drawings;
 7. Long lead items, material and equipment procurement;
 8. Procurement of permits;
 9. Environmental commitments and mitigation activities;
 10. Equipment and plant setup;
 11. Fabrication of special items;
 12. Erection and removal of falsework and shoring;
 13. Utility and railroad relocations;
 14. Cure times for concrete;
 15. Cure times for pavement before striping;
 16. Landscape and seeding establishment periods;
 17. Test periods;
 18. Major traffic stage changes;

19. Substantial completion;

20. Punchlist completion; and

21. Final cleanup;

- x. The schedule shall be in detail to allow day-to-day monitoring and review of the contractor's operations. It shall show the order and interdependence of activities and the sequence of work.
- xi. The contractor shall detail the Critical Path activities and logic ties in the schedule to show the work sequencing. The contractor shall use the CPM software to determine the controlling activities in the critical path. The critical activities shall be prominently distinguished on all reports by the use of color or pattern.
- xii. The contractor shall provide the number of activities to assure adequate project planning and allow for monitoring and evaluation of work progress.
- xiii. The contractor shall provide activities as necessary to depict third-party work related to the contract. Third-party work activities may include but is not limited to railroads, utilities, real estate, and government agencies.
- xiv. Seasonal, winter shutdown, traffic, special event, environmental, or other contract restrictions shall be considered and included in the schedule for all work. These restrictions shall be addressed with project calendars and shown as non-work days for each major work type. Global calendars shall not be used. Examples of major work types are earthwork, concrete paving, structures, asphalt, drainage, landscaping, etc. The contractor shall include project calendar for curing time if applicable.
- xv. The duration for each activity shall include the anticipated production rate and the time for anticipated weather stoppages. The contractor shall not reserve random non-work days in a project calendar to account for weather stoppages.
- xvi. The schedule shall have a Data Date of the start date shown in the Notice of Award letter.
- xvii. When processing the schedule in the software, the contractor shall use the following options:
 - 1. When scheduling progressed activities use Retained Logic;
 - 2. Calculate start-to-start lag from Early Start;
 - 3. Define critical activities as Longest Path;
 - 4. Compute Total Float as $\text{Finish Float} = \text{Late Finish} - \text{Early Finish}$; and

5. Calendar for scheduling relationship lag as predecessor activity calendar.
- xviii. The bar chart schedule plot shall be accompanied by a schedule report of the network with a tabulation of the following data for each activity:
1. Activity ID;
 2. Activity name;
 3. Original duration;
 4. Early start date;
 5. Early finish date;
 6. Late start date;
 7. Late finish date;
 8. Predecessors;
 9. Successors;
 10. Free float;
 11. Total float;
 12. Primary constraint date;
 13. Calendar; and
 14. Responsibility for activity - e.g., prime contractor, subcontractor, supplier, etc.

(E) BLANK:

(F) BLANK:

(G) Recovery Schedule:

If the Project Schedule indicates a late completion of the work by 28 or more calendar days, the contractor shall prepare a Recovery Schedule which demonstrates how the contractor intends to reschedule the activities to regain compliance with the contract.

Within ten working days of receipt of the Engineer's written direction, the contractor shall submit the Recovery Schedule to the Engineer. The contractor shall not be required to prepare a Recovery Schedule if the contractor requests and demonstrates, in writing, entitlement to extension of a completion deadline due to a Department caused delay, and the

Engineer concurs that a Recovery Schedule is not required at that time. If the Engineer disputes the contractor's entitlement to a completion deadline adjustment, the contractor shall, within five working days, submit a Recovery Schedule that does not include a completion deadline adjustment.

Within five working days after a rejection by the Engineer of the Recovery Schedule, the contractor shall resubmit a revised Recovery Schedule incorporating the Department's comments. When the Engineer accepts the contractor's Recovery Schedule, the contractor shall, within five working days after the Engineer's acceptance, incorporate such schedule in the Project Schedule, deliver the same to the Department, and proceed in accordance with the approved Recovery Schedule.

All acceleration costs required to bring the contract work back into compliance with project milestones and the contract time due to a contractor caused delay shall be borne solely by the contractor. Whenever a Recovery Schedule is required, the contractor shall provide the following information:

- i. Transmittal letter;
- ii. Bar chart schedule plot;
- iii. Electronic copy of the file used for the proposed Recovery Schedule; and
- iv. Narrative describing all proposed changes to the Project Schedule in detail, with justification for the changes, including the following:
 1. Changes to activity original durations;
 2. Changes to activity relationships and schedule logic;
 3. Cause of schedule slippage and actions taken to recover schedule within the shortest reasonable time (e.g., hiring of additional labor, use of additional construction equipment, and expediting of deliveries);
 4. Float consumption;
 5. Identification of activities that have been added, deleted, or modified; and
 6. Changes to the Project Schedule's Critical Path.

(H) Revisions to Contract:

If the contractor receives a request for extra work from the Department or submits a contract change request in accordance with Subsection 104.02 of the specifications asserting that an event, situation, or change affects a Critical Path of the Project Schedule, the contractor shall prepare and submit a TIA showing the cumulative effect of the change on the completion or

fixed milestone date along with a written report describing the time impact in a form satisfactory to the Department complying to Subsection 104.03 of the specifications.

Each TIA shall include a fragmentary network (fragnet) demonstrating the following information:

- i. How the contractor proposes to incorporate a time extension provided for in a Supplemental Agreement;
- ii. The impact to the Project Schedule;
- iii. The sequence of new and/or existing activity revisions that are proposed to be added to the Project Schedule that is in effect when the change or delay is encountered;
- iv. The proposed method for incorporating the delay and its impact to the Project Schedule; and
- v. The computation of two finish dates. The first finish date shall be computed without consideration of impacts by the proposed revision. The second finish date shall be computed with consideration of impacts by the proposed revision.

If a proposed change in planned work results in altering the Critical Path or extending the schedule completion date, the contractor shall submit a Revised Schedule and a TIA within 15 calendar days of the proposed change.

(I) Record Schedule:

The contractor shall prepare a Record Schedule that includes actual start and actual finish dates for all activities. The Record Schedule, once approved, serves as the final update of the Project Schedule. The contractor shall include a written certification with the Record Schedule submittal signed by the Project Manager of the contractor in accordance with the following:

“To the best of my knowledge, the enclosed final update of the project Schedule reflects the actual start and completion dates of the activities for the project contained herein.”

The contractor shall submit the Record Schedule to the Engineer for review. Final acceptance will not be issued until the Record Schedule has been approved.

(J) Schedule Meetings and Three Week Look Ahead Schedule:

a. Baseline Schedule Presentation Meeting:

At a time agreeable to the Engineer, the contractor shall conduct a Baseline Schedule presentation meeting within seven calendar days after submitting the proposed Baseline Schedule. The purpose of this meeting is for the contractor to present and explain the

contractor's schedule and construction phasing plan. At a minimum, the following is to be covered at the joint review of the schedule:

- (a) WBS;
- (b) Sequence of work - step through the schedule activity by activity;
- (c) Construction phasing including traffic control phasing and changes;
- (d) Resources to include number of construction personnel and production rates used; and
- (e) Critical Path review.

b. Weekly Project Meeting and Look-Ahead Schedule:

At the weekly project meetings, the contractor shall provide the Engineer with a detailed, Look-Ahead Schedule. The Look-Ahead Schedule is a computer generated bar chart schedule plot that shows the previous week's work and the work planned for the current and next three weeks. The contractor shall base the Look-Ahead Schedule on the Project Schedule and provide a greater breakdown of the Project Schedule activities for the purpose of materials inspection and testing. The Look-Ahead Schedule shall clearly note and explain all departures from the Project Schedule. The contractor shall reference the Project Schedule activity ID numbers, WBS, and define subsequent specific daily operations for all work activities scheduled to be performed during the four-week period. The contractor shall identify work being performed by Disadvantaged Business Enterprise (DBE) firms as separate activities. At least one day before the weekly construction activity meetings, the contractor shall submit weekly Look-Ahead Schedules to the Engineer.

(K) Submittals:

Two 11 x 17 inch hard copies and one pdf copy of each schedule in color listed herein shall be provided to the Engineer. The contractor shall furnish to the Engineer for project use an electronic copy of the schedule. The electronic copy shall be Primavera P6 .xml file format prepared in Primavera software.

The filename of schedules shall be submitted in the following format:

SCHEDULE FILENAME FORMAT	
Preliminary Schedule	TTTTT-YYMM-PSVV
Baseline Schedule	TTTTT-YYMM-BSVV
Monthly Progress Schedule #1	TTTTT-YYMM-MPS01VV
Monthly Progress Schedule #2	TTTTT-YYMM-MPS02VV
Recovery Schedule	TTTTT-YYMM-RCYSVV
TIA Schedule	TTTTT-YYMM-TIASVV
Record Schedule	TTTTT-YYMM-RCDSVV
3 Week Lookahead Schedule	TTTTT-YYMM-LASVV
Schedule Narrative	TTTTT-YYMM-NARVV

Note:

- (1) TTTT: First 5 digits of project TRACS number.
- (2) YYMM: Current 2 digit year and month.
- (3) VV: 2 digit version number (01, 02, etc.).

All bar chart schedule plots shall be in color and have a size and scale acceptable to the Engineer. Include a title block and a legend on each page. The plot layout shall include a schedule activity table with corresponding bar chart. The activity table shall be grouped by the WBS and include the activity ID, activity name, duration, start date, finish date, and total float. All activities in the bar chart shall be plotted on their start and finish dates. Show relationship lines and data date line. The bar chart shall be time-scaled in two-line format with a date interval set to year/month and type set to calendar.

The contractor shall provide two 8.5 x 11 inch hard copies of the narrative and monthly report with an electronic pdf copy.

The contractor shall provide a schedule log file generated by the software in a .txt file format with all schedule submittals. The log file shall have the same filename as the schedule file. The contractor shall review the log file prior to submittal to verify that the electronic schedule is in compliance with this specification.

(L) Software:

The automated system software shall be Primavera P6.

(109RRBB, 04/18/24)

SECTION 109 MEASUREMENT AND PAYMENT:

109.04(D)(3) Equipment: the first paragraph of the Standard Specifications is revised to read:

Equipment which the Engineer considers necessary for the performance of work will be eligible for payment at the established rates only during the hours that it is operated except as otherwise allowed elsewhere in these specifications. Equipment hours will be recorded to the nearest one-half hour. For the use of equipment owned by the contractor and approved by the Engineer, the contractor will be paid the rental rates, as modified herein, outlined in the Rental Rate Blue Book® (RRBB) for Construction Equipment which is updated by EquipmentWatch™, a division of Fusable, 3200 Rice Mine Road NE, Tuscaloosa, Alabama 35406, phone (888) 307-1713. All rate determinations will be based on the RRBB quarterly rate revisions that are applicable at the time equipment is being used.

(109FAEU, 08/15/24)

SECTION 109 MEASUREMENT AND PAYMENT:

109.04(D)(3)(a) Rental Rates (Without Operators): the equation of the first paragraph of the Standard Specifications is revised to read:

The hourly equipment rental rate (HERR) will be determined by the following formula:

$$\text{HERR} = F \times \left[\frac{1.15 \times R}{176} \right] + \text{HOC}$$

Where: F= Adjustment Factor to R is 0.933

R= Current RRBB Monthly Rate

HOC= Hourly Operating Cost

(109WFADF, 05/15/25)

SECTION 109 MEASUREMENT AND PAYMENT:

109.04(D)(6) Statements: the title and text of the Standard Specifications is revised to read:

109.04(D)(6) Forms:

The contractor shall prepare the Weekly Force Account Detail form for each week of force account activity. The Weekly Force Account Detail form is a standardized, fillable form made available by the Department on the ADOT Construction Group's website.

The form shall detail the labor, equipment, and material charges utilized to accomplish the force account work along with all supporting documentation. The contractor shall furnish copies of original receipts (paid invoice cost) for materials, rental equipment cost, including freight and transportation charges, copies of rental rate blue book equipment sheets and certified payrolls.

If materials used on the force account work are not specifically purchased for such work but are taken from the contractor's stock, then instead of invoices, the forms shall contain or be accompanied by an affidavit of the contractor certifying that such materials were taken from stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the contractor.

Force account work shall be tracked daily; however, the contractor shall compile no more than one full week's worth of daily records into a Weekly Force Account Detail form. Each reporting period runs from Saturday through Friday. The contractor shall submit the form within 30

calendar days of the respective week's force account performance. The completed form shall be submitted to the Engineer for review and approval. The Engineer will review the form and supporting documentation against the ADOT Inspector's Daily Force Account Reports, and will verify that the form is timely, complete, and accurate. Payment will not be made until the contractor has furnished applicable forms, detailing the costs of the force account work, including but not limited to the following information:

- (a) Labor: name, classification, date, daily hours, hourly rate and fringe rate, and certified payrolls for each foreman and laborer.
- (b) Equipment: dates, equipment number, description, operator name, hours used, approved stand-by hours, monthly rental rate, hourly operating cost and rental rate blue book sheets for each unit of equipment.
- (c) Rental Equipment (Third Party): invoice, dates used, vendor name, description of equipment, operator name, hours used, invoice rate, hourly operating cost and rental rate blue book sheets for each rental equipment.
- (d) Materials: invoice, date used, supplier name, description, quantity, unit of measure and unit cost.
- (e) Transportation: freight and express charges on materials, FOB jobsite.

(109SUBPAY, 10/20/22)

SECTION 109 MEASUREMENT AND PAYMENT:

109.06(B)(5) Payment Reporting and Sanctions: the eighth paragraph of the Standard Specifications is revised to read:

For each month that the contractor fails to submit timely and complete payment information the Department will retain \$5,000 as sanctions from the monies due to the contractor. After 90 consecutive days of non-reporting, the sanctions will increase to \$10,000 for each subsequent month which the contractor fails to report until the information is provided. These sanctions will be in addition to all other retention or liquidated damages provided for elsewhere in the contract.

109.06(B)(8) Non-compliance: of the Standard Specifications is revised to read:

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

- (a) Sanctions. These sanctions will be in addition to all other retention or liquidated damages provided for elsewhere in the contract:
 - (i) The Department will withhold two times the dollar amount not paid to each subcontractor;
 - (ii) If full payment is made within 30 days of the Department's payment to the contractor, the amount withheld by the Department will be released; and
 - (iii) If full payment is made after 30 days of the Department's payment to the contractor, the Department will release 75 percent of the funds withheld. The Department will retain the remaining 25 percent of the monies withheld as sanctions.
- (b) Additional Remedies. If the contractor fails to make prompt payment for three consecutive months, or any four months over the course of one project, or if the contractor fails to make prompt payment on two or more projects within 24 months, the Department may, in addition, invoke the following remedies:
 - (i) Withhold monthly progress payments until the issue is resolved and full payment has been made to all subcontractors, subject to the sanctions described in paragraph (a) above;
 - (ii) Terminate the contract for default in accordance with Subsection 108.10 of the specifications; and/or
 - (iii) Disqualify the contractor from future bidding, temporarily or permanently, depending on the number and severity of violations.

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

(109FUEL, 02/10/12)

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

109.12 Fuel Cost Adjustment:

(A) General:

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

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

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

(B) Measurement:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(C) Payment:

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

(109BITUMADJ, 06/19/25)

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

109.16 Bituminous Price Adjustment:

(A) General:

The term "bituminous material" as used herein shall include asphalt binder, asphalt rubber and emulsified asphalt.

The Department will adjust monthly progress payments as appropriate for market fluctuations in the price of bituminous material.

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

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

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

(B) Measurement:

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

The IC for the month in which the project was bid will be compared with the CP for the appropriate current month. The 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 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 for adjustment will be based on contractor-furnished invoices, except as described herein.

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 of IC. For emulsified asphalts containing polymer, adjustments in compensation will be made at 66 percent of either the increase or decrease.

The tons of Bituminous Material (Asphalt-Rubber) to which the adjustment is applicable will be 80 percent of the total quantity of the item used. The adjustment is not applicable to the 20 percent of the material which constitutes the crumb-rubber additive.

The tons of Bituminous Material (TR+) to which the adjustment is applicable will be 92 percent of the total quantity of the item used. The adjustment is not applicable to the 8 percent of the material which constitutes the crumb-rubber additive.

The tons of bituminous material in Asphaltic Concrete mixes, subject to price adjustment shall be calculated as follows, based on the approved mix design target values and the quantity of Asphaltic Concrete placed—regardless of the actual percentage of binder incorporated:

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

$$PA = (CP - IC) \times ACP \times F$$

Where: PA = Price Adjustment monetary amount (plus or minus in dollars)
CP = Current index price (dollars per ton)
IC = Initial Cost at time of bid (dollars per ton)
ACP = Asphaltic Concrete Placed (tons)
F = Eligible Asphalt Cement %

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

- (1) For mixes without reclaimed asphalt pavement (RAP):

F = Approved Mix Design Target Asphalt Cement %

- (2) For mixes with RAP:

F = Approved Mix Design Target Asphalt Cement % – Mix Design RAP Asphalt Cement contribution %

- (3) For mixes using PG TR+ Terminal Blend (8 % Crumb Rubber):

F = 0.92 x (Approved Mix Design Target Asphalt Cement %)

- (4) For mixes using Asphalt-Rubber Blend (20 % Crumb Rubber):

F = 0.80 x (Approved Mix Design Target Asphalt Cement %)

- (5) 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.

(C) Payment:

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

Price adjustments will be calculated using the measurement methods described above. Only the tons of virgin asphalt binder determined by those methods will be subject to a bituminous material price adjustment.

No price adjustment will be made for the RAP binder in the mix.

No price adjustment will be made for the 8% of binder comprising crumb rubber when (TR+) is used.

No price adjustment will be made for the 20% of binder comprising crumb rubber in the asphalt-rubber material blend.

No compensation will be made for changes that may have occurred since the time of bidding and which may be the result of any increase in the IC 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.

(201PAY, 07/15/21)

SECTION 201 CLEARING AND GRUBBING:

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

When clearing and grubbing is not included as a contract pay item, full compensation for any clearing and grubbing necessary to perform the construction operations designated on the project plans or specified in the Special Provisions shall be considered as included in the price of contract item.

SECTION 202 REMOVAL OF STRUCTURES AND OBSTRUCTIONS: the first paragraph of the Standard Specifications is hereby deleted:

SECTION 202 REMOVAL OF STRUCTURES AND OBSTRUCTIONS:

202-3.03 (B)(C) Removal of Pavement: of the Standard Specifications is modified to add:

Upon removal, disposal of the existing asphaltic concrete shall be the responsibility of the contractor.

ITEM 2020047 – REMOVAL OF SIGNS:

Description:

The work under this item shall consist of furnishing all labor, equipment, and materials to remove all sign panels, posts and foundations, including sign panel assemblies and hardware on overhead sign structures from the locations indicated on the plans.

A sign assembly includes all posts, foundations and panels at each location. A sign assembly may include one or multiple sign posts, foundations and panels.

Construction Requirements:

The removal of the signs shall be in accordance with the requirements of Subsection 202-3.06.

All removed sign panels, posts, foundations and hardware, shall become the property of the contractor and disposed of offsite in accordance with Subsection 201-3.02 of the Standard Specifications.

Backfill and compaction shall be in accordance with Subsection 202-3.01 of the Standard Specifications.

Method of Measurement:

Removal of Signs will be measured by the unit for each sign assembly removed.

Basis of Payment:

The accepted quantities of Removal of Signs, measured as provided above, will be paid at the contract unit price complete in place, as specified and described herein and shown on the project plans.

ITEM 2020055 – REMOVE AND SALVAGE (TRAFFIC SIGNALS):

Description:

The work under this item shall consist of removing and salvaging existing traffic signal cabinet meter pedestal, signal poles, foundations, mast arms, pull boxes, conduit, signal detection equipment and/or conductors at the locations shown on the plans and as specified herein.

Construction Requirements:

Existing signal poles shall not be removed until temporary signal system is in place as required in the plans for the respective MOT traffic control phase, or until authorized by the Engineer. The contractor shall remove and salvage existing signal poles and equipment and associated hardware per Section 202 of the specifications.

Existing signal pole foundations shall be removed to a depth of 2 feet below finished grade and become the property of the contractor, in accordance with the requirements of Section 202 of the specifications. All voids shall be back filled and made level with the surrounding ground. The contractor shall restore any landscape disturbance by the signal pole foundation removals at the location of the signal pole foundation removal.

The existing ADOT traffic signal equipment (including but not limited to the signal indications, detection equipment, controller cabinet, luminaire arms, meter pedestal), signal poles, breakaway bases and mast arms shall be salvaged to the ADOT yard.

The controller cabinet shall be used for temporary traffic control as identified in the plans and salvaged after the use to ADOT.

ADOT Yard
6989 E. 2nd St.
Prescott Valley, AZ 86314

The contractor shall transport all equipment to the ADOT yard in the same condition as it was removed. Contact Chris Summers at (928) 642-2195 to coordinate delivery two weeks prior to delivery.

Method of Measurement:

Remove and Salvage (Traffic Signals) will be measured as lump sum.

Basis of Payment:

The accepted quantity of Remove and Salvage (Traffic Signals), measured as provided above, will be paid at the contract unit price lumpsum, complete in place, as specified and described herein and shown on the project plans, including restoring existing landscaping.

(202ACMIL, 10/21/21)

ITEM 2020077 - REMOVE BITUMINOUS PAVEMENT FROM AC (MILLING FRICTION COURSE):

Description:

The work under this item shall consist of milling the existing asphaltic concrete friction course at the locations and depths shown on the plans, as directed by the Engineer, and in accordance with the requirements of these specifications.

Construction Requirements:

The milling equipment shall be specifically designed to remove material to a controlled line and grade. The equipment used shall be capable of removing the existing asphaltic concrete friction course uniformly throughout the milled area at the required cross-slope and within 1/8

inch of the specified removal depth. The milling shall be accomplished in a manner which does not destroy the integrity of any underlying pavement surface.

If during milling operation, it is determined that the required average milling depth is greater than the specified milling depth, the contractor shall immediately notify the Engineer and document the situation. Upon approval of the Engineer, the contractor shall proceed with the milling operation. Payment for the removal of additional material will be in accordance with the requirements of Subsection 109.04 of the specifications.

The milled surface shall have a maximum mean macrotexture depth of 0.177 inches, as determined in accordance with Arizona Test Method 742.

At the start of the milling operation, the contractor shall mill a 500-foot test section. The milled surface of the test section shall be evaluated by the Engineer for compliance with the maximum mean macrotexture depth requirement. If the milled surface is in compliance with the macrotexture requirement, the contractor can begin milling operation. If the milled surface is not in compliance with the macrotexture requirement, the contractor shall make adjustments to the milling operation and then mill another 500-foot test section.

During milling operation, the mean macrotexture depth shall be determined at a minimum frequency of one test per one-half mile per lane. If, at any time, during the milling operation the Engineer determines that the macrotexture requirement is not being achieved, the contractor shall stop milling. The milling operation shall not resume until the Engineer is satisfied that the macrotexture requirement can be met or until successful completion of another test section. The forward speed of the milling machine during milling operation shall not exceed the speed used for the test section. The forward speed of the milling machine shall be checked throughout each production day, or at the discretion of the Engineer.

The profile of the milled surface, in both the longitudinal and transverse directions, shall not vary by more than 1/8 inch over a distance of 10 feet.

Under no circumstances shall the milling of existing asphaltic concrete friction course begin until the mix design for replacement asphaltic concrete has been approved by the Engineer.

The extent of removal of existing asphaltic concrete friction course 1" or deeper shall be in keeping with the contractor's ability to produce, haul, place and compact replacement asphaltic concrete so that at all times the length of milled surface is at a minimum. If the contractor's production of replacement asphaltic concrete is stopped for any reason, the milling of asphaltic concrete friction course shall either cease or shall be reduced. The Engineer will be the sole judge as to whether the milling shall cease or be reduced. The Engineer's decision will be based on the stoppage in asphaltic concrete production, the expected length of the stoppage, depth of the material being milled, and the time of day.

The length of milled surface at any one time shall not exceed two miles, or one-half the length of the work, whichever is less unless approved otherwise by the Engineer. Asphaltic concrete friction course shall not be milled unless new asphaltic concrete is placed on the milled surface and the lane opened to traffic before the end of each day's work if required by the Engineer.

In the event of circumstances beyond the control of the contractor, such as equipment breakdown, or if the production of the replacement asphaltic concrete has been stopped by the Engineer and the contractor is unable to comply with the requirements in the preceding paragraph, the contractor shall provide and maintain such traffic control devices that the Engineer deems necessary under the circumstances in order to provide safe and efficient passage through the work zone.

If the Engineer deems it to be warranted, the Engineer will require that the contractor provide for the surface drainage of areas where the pavement surface has temporarily been removed.

Pavement, to be removed by milling, adjacent to manholes, valve boxes, small radius curbs and other fixed objects that produce confined areas shall be removed with milling equipment specifically designed to operate in restricted areas and capable of removing asphaltic concrete friction course of the specified thickness without damage or displacement of the adjacent object. At the discretion of the Engineer, such areas may be excluded from macrotexture testing.

If the milled material is not used on the project, it shall become the property of the contractor.

Method of Measurement:

Remove Bituminous Pavement from AC (Milling Friction Course) will be measured by the square yard.

Basis of Payment:

The accepted quantities of Remove Bituminous Pavement from AC (Milling Friction Course), measured as provided above, will be paid for at the contract unit price per square yard, which price shall be full compensation for the work, complete in place, as described and specified herein.

No measurement or direct payment will be made for loading, hauling and disposing of the milled material.

ITEM 2020152 – REMOVE DETOUR:

Description:

The work under this item shall consist of removing those project detours designated to be removed when no longer needed and restore the areas to the grades shown on the plans in order to complete the intersection improvements.

Construction Requirements:

The contractor shall completely remove the detours and restore the areas to the grades shown on the plans and as directed by the Engineer. Once the bituminous surfacing and the base material shall be broken up and picked up separately and stockpiled individually at sites designated by the Engineer, the remaining detour roadways shall be removed and the natural subgrade shall be restored as nearly as practicable to the condition existing prior to the construction of the detour.

Removal of detours shall be in accordance with the requirements of Subsection 202-3 and 205-3 of the specifications.

Prior to removing the detours, the contractor shall neatly saw cut the mainline original edge of pavement. After removing the detours, the contractor shall ensure that the area is per the final plans or is suitable to complete construction of the intersection improvements.

Method of Measurement:

Remove Detour will be measured by the square yard of paved detour surface area removed.

Basis of Payment:

The accepted quantities of Remove Detour, measured as provided above, will be paid for at the contract unit price per square yard, which price shall be full compensation for the work, complete in place. Payment shall include removal of all asphalt concrete pavement and base materials used to construct the detours, excavation embankment used for detours, grading, repairing or filling voids due to the removal of detours, and hauling and disposing of all materials as provided herein.

No separate payment shall be made for stockpiling of removed materials, the cost being considered as included in the contract item for removal of detours.

SECTION 203 EARTHWORK:

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

The Subgrade Acceptance Chart as shown in Appendix A shall be used during construction for determining whether subgrade materials are suitable as outlined in Subsection 203-3.03 (D) of the ADOT Construction Manual.

(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 5 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		

(203STRBKFL, 10/21/21)

SECTION 203 EARTHWORK:

203-5.03(B)(1) Structure Backfill: the first paragraph of the Standard Specifications is revised to read:

Structure backfill material shall be selected from excavation or from a source selected by the contractor. It shall not contain frozen lumps, chunks of clay, or other objectionable material. Backfill material shall not contain salvaged asphaltic concrete materials. Backfill material to be used for metal piles or similar items of metal shall have a value of resistivity not less than 2,000 ohm-centimeters or the value shown on the plans. Backfill material shall have a pH value between 6.0 and 10.0, inclusive, when placed against metal installations, except aluminum. Backfill material shall have a pH value between 6.0 and 9.0, inclusive, when placed against aluminum installations. Backfill material shall have a pH value between 6.0 and 12.0, inclusive, when placed against installations other than metal. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

(203ERWK, 07/16/20)

SECTION 203 EARTHWORK:

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:

$PC + (2.83 \times PI)$ shall not exceed 87.

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).

(303RASBAB, 04/18/24)

SECTION 303 AGGREGATE SUBBASES AND AGGREGATE BASES:

303-2 Materials: of the Standard Specifications is revised to read:

Aggregate for the various classes of aggregate subbases and aggregate bases shall consist of stone, gravel or other approved inert material of similar characteristics, and shall be clean and free from vegetable matter and other deleterious substances.

Aggregate subbase and aggregate base material may be comprised of processed salvaged asphaltic concrete, processed salvaged aggregate base material, processed salvaged Portland Cement Concrete materials, virgin aggregate base materials or any combination of these materials meeting the requirements of Table 303-1. These materials may be from a specific project site or approved commercial source. Processed salvaged materials shall conform to the requirements specified in AASHTO M 319.

Aggregate subbases and aggregate bases shall conform to the requirements of Table 303-1:

TABLE 303-1										
Class of Aggregate	Percent Passing Sieve (Inch or No.)									PI, Max.
	3	1-1/2	1	3/4	1/4	4	8	30	200	
1		100	90 - 100				35 - 55		0 - 8.0	3
2		100	90 - 100			38 - 65	25 - 60	10 - 40	3.0 - 12.0	3
3										
4	100				35 - 70				0 - 10.0	5
5	100				30 - 75				0 - 10.0	5
6										

Notes:

The PI (Plasticity Index) will be determined in accordance with the requirements of AASHTO R 58, T 89, and T 90.

Classes 1, 2 and 3 are bases; Classes 4, 5 and 6 are subbases.

The requirements for Class 3 and for Class 6 will be specified in the Special Provisions.

For Class 1 through Class 4 aggregate, the amount of one fractured face coarse aggregate particles shall be at least 50 percent.

Resistance to abrasion for Class 1 through Class 4 aggregate will be determined in accordance with the requirements of AASHTO T 96 and shall meet the following requirements:

Maximum loss of 12 percent at 100 revolutions

Maximum loss of 40 percent at 500 revolutions

When determining gradation of aggregate subbase or aggregate base material containing processed salvaged asphaltic concrete materials, drying to a constant weight shall be performed at a temperature of 140 ± 5 F, in accordance with the requirements of AASHTO T 265.

Aggregate subbase and aggregate base material not conforming to the requirements of Table 303-1 for gradation and/or PI may be accepted by the Engineer upon the contractor's submittal of testing results demonstrating that the R-Value is at least 79 when determined by AASHTO T 190. At the contractor's option, the material may be reprocessed and re-compacted at no additional cost to the Department.

All metal reinforcement and expansion materials shall be removed from processed salvaged Portland Cement Concrete prior to its use in aggregate subbase and aggregate base material.

The contractor shall submit the testing information for the base and subbase materials which are intended to be used to the Engineer for approval. Any significant change in the materials shall be approved by the Engineer prior to use.

Mixing on grade shall be accomplished using a full depth reclamation machine or pulverizer, manufactured for this purpose. Motor graders, gannon boxes, auger scrapers, or other similar devices will not be allowed for mechanical mixing on grade.

If suitable in-place aggregate subbase or aggregate base materials are available, the contractor shall have the option of re-using such materials as processed salvaged aggregate base. Processed salvaged asphaltic concrete and salvaged Portland Cement Concrete materials may be blended with the processed salvaged aggregate subbase, processed salvaged aggregate base and virgin base aggregates. The blended material shall be homogenous mixture in which there is no segregation, crusts, lumps, or nesting, and shall be sampled and tested to meet the requirements specified herein.

303-3.01 Placement: of the Standard Specifications is modified to add:

When processed salvaged materials are utilized, either from in-place or from a commercial source, the Engineer may require a test section of 1000 feet be placed utilizing the processed materials and construction methods proposed for use by the contractor. Full operations shall

not proceed until the test section has been tested and approved by the Engineer. The contractor shall use the same equipment, material processing, and construction methods for the remainder of the construction, unless adjustments made by the contractor are approved in advance by the Engineer.

303-3.02 Compaction: of the Standard Specifications is revised to read:

Each layer of aggregate subbase and aggregate base material shall be compacted to a density of not less than 100 percent of the maximum density determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual, as directed and approved by the Engineer.

The moisture content shall be determined per AASHTO T 265 when determining density for aggregate subbase and aggregate base material containing processed salvaged asphaltic concrete and/or processed salvaged Portland Cement Concrete.

When AASHTO T 265 is utilized to determine moisture content, acceptance testing results for density will be furnished to the contractor up to 24 hours after performance of in-place density testing to allow sufficient time for moisture determination.

303-5 Basis of Payment: of the Standard Specifications is revised to read:

The accepted quantities of aggregate subbase and aggregate base, measured as provided above, will be paid for at the contract unit price per cubic yard, which price shall be full compensation for the work, complete in place.

(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

SECTION 401 PORTLAND CEMENT CONCRETE PAVEMENT:

401-2 Materials: the second paragraph of the Standard Specifications is revised to read:

Portland cement concrete pavement shall conform to the requirements of Section 1006. Material shall be accelerated strength concrete and shall attain a comprehensive strength of at least 3,000 psi in 12 hours and shall have a minimum 28-day compressive strength of 4,000 psi. Concrete shall be Class S, with size 57 coarse aggregate as designated in AASHTO M 43.

Materials furnished for joint seal shall conform to the requirements of Subsection 1011-8 of the specifications.

The contractor shall not place the concrete material until the mix design has been approved by the Engineer.

401-4.02 Pavement Smoothness: of the Standard Specifications is revised to read:

The pavement surface will be tested with a 10-foot straightedge. The surface shall not vary in any direction by more than 1/8 inch, except at longitudinal and transverse construction joints. The surface shall not vary by more than 1/4 inch across any longitudinal or transverse construction joint. Grinding will be required to ensure that these requirements are satisfied. The grinding, if needed, shall be done in a manner that does not form a smooth or polished pavement surface and shall not leave any exposed aggregate.

401-4.04 Pavement Thickness: the second through the last paragraphs of the Standard Specifications are hereby deleted:

401-6 Basis of Payment: the fourth through the ninth paragraphs of the Standard Specifications are hereby deleted:

SECTION 404 BITUMINOUS TREATMENTS:

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

The work under this section shall consist of furnishing all materials and constructing or applying bituminous treatments at the locations designated on the plans and in accordance with the requirements of the specifications and in conformity to the lines shown on the project plans or established by the Engineer.

The bituminous treatments include one or a combination of prime coat, tack coat, and fog coat. The bituminous treatments also include emulsified asphalt chip seal and hot applied chip seal both either with or without fog coat.

When a "hot applied" chip seal is called for on the plans and specifications, it refers to a chip seal using a performance grade asphalt cement or a crumb rubber asphalt as the bituminous material.

404-2.02 Aggregate Materials:

- (A) General:** the second and third paragraphs of the Standard Specifications are revised to read:

With the exception of precoated cover material, aggregate material shall be sampled for gradation acceptance from the final stockpile prior to being incorporated into the work. The aggregate for the precoated material shall be sampled prior to precoating.

- (B) Blotter Material:** of the Standard Specifications is revised to read:

Blotter material shall be natural or manufactured sand, volcanic cinders, or other approved material and shall be free of deleterious materials or foreign substances.

The gradation shall meet the following requirements when tested in accordance with the requirements of Arizona Test Method 201:

Sieve Size	Percent Passing
3/8 inch	100
No. 4	80 - 100
No. 16	45 - 80
No. 200	0 - 5.0

- (C) Cover Material:** of the Standard Specifications is revised to read:

Aggregate for cover material shall be clean gravel or crushed rock, shall be free of clay, and shall not contain calcium carbonate, caliche, synthetic materials, organic matter, or foreign substances. Cover material shall not be obtained from sweepings of previously applied cover material.

The gradation shall meet the following requirements when tested in accordance with the requirements of Arizona Test Method 201.

Sieve Size	Percent Passing	
	Class 1	Class 2
3/4 inch	100	
1/2 inch	97 – 100	100
3/8 inch	70 – 100	97 – 100
1/4 inch	0 – 10	70 – 100
No. 8	0 – 5	0 – 5
No. 200	0 - 2.0	0 - 2.0

Cover material shall meet the following requirements:

Aggregate Characteristics	Test Method	Requirement
Abrasion	AASHTO T 96	100 Rev., Max 9% 500 Rev., Max 40%
Carbonates	Arizona Test Method 238	Maximum 20%
Fractured Coarse Aggregate Particles	Arizona Test Method 212	Minimum 75% one fractured face, determined on plus No. 8 material
Flakiness Index	Arizona Test Method 233	Maximum 20%
Bulk Oven Dry Specific Gravity	Arizona Test Method 210	2.350 – 2.850
Water Absorption	Arizona Test Method 210	0.0 – 2.5%

(D) Precoated Cover Material: of the Standard Specifications is revised to read:

For hot applied chip seals, 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 evenly coated. The cover material shall have a minimum temperature of 250 degrees F at the time of precoating with asphalt cement. The cover material shall be precoated with approximately 0.40 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. Precoated cover material shall be dust free upon completion of coating and shall remain dust free prior to being incorporated into the work.

The aggregate for precoated cover material shall meet the requirements in Subsection 404-2.02(C) of the specifications prior to precoating with bituminous material.

No precoated cover material shall be stockpiled following precoating with asphalt cement for more than five calendar days prior to placement, unless otherwise approved by the Engineer.

404-2.03 Bituminous Treatment Material Types and Application Rates: of the Standard Specifications is modified to add:

The type of bituminous material for tack coat and approximate application rate shall be as specified in Subsection 404-4.02 of the specifications.

The bituminous material application rates provided in this Subsection are approximate, and are to be used for bidding purposes, and shall be modified as required herein. Final application rates for all materials shall be those required to ensure the most favorable outcome, as approved by the Engineer.

404-3 Construction Requirements:

404-3.01 Seasonal and Weather Limitations: of the Standard Specifications is revised to read:

(A) General:

At any time, the Engineer may require that the work cease or that the work day be reduced in the event that weather conditions, either existing or expected, are anticipated to have an adverse effect upon the bituminous treatment.

Placement shall cease for the remainder of the day if sustained wind velocities in excess of 15 MPH occur at the project site.

(B) Prime Coat:

Bituminous material used for prime coats shall be applied to an existing aggregate surface only when the ambient temperature in the shade is at least 70 degrees F and when the existing aggregate surface is slightly damp.

(C) Fog Coat:

Bituminous material used for fog coats shall be applied to an existing pavement surface only when the surface is dry, the pavement surface temperature is at least 60 degrees F but does not exceed 175 degrees F, and the ambient temperature at the beginning of the application is at least 50 degrees F and rising but does not exceed 110 degrees F. The application of bituminous material shall be stopped when the ambient temperature is 55 degrees F or less and falling.

(D) Chip Seal:

The contractor's bid submittal and initial construction schedule shall adhere to the beginning and ending dates shown in Subsection 404-4.04(A) of the specifications. Bituminous material used for chip seal coats shall only be placed when the existing pavement surface is dry, the surface temperature is at least 85 degrees F, and the ambient temperature at the beginning of the application of bituminous material is at least 65 degrees F and rising. The application of bituminous material shall be stopped when the ambient temperature is 70 degrees F or less and falling.

No placement of bituminous material for chip seals shall occur if ambient temperatures are forecasted to be at or below 40 degrees F at any time during the day or night after placement.

For hot applied chip seals, no placement shall occur if ambient temperatures exceed, or are forecasted to exceed, 110 degrees F the day before, the day of, or the two days after placement.

404-3.02 Equipment:

- (A) Distributor Truck:** the first sentence of the first paragraph of the Standard Specifications is revised to read:

Distributor trucks shall be so designed, equipped, maintained and operated that bituminous material at the specified temperature may be applied uniformly on variable widths of surface at readily determined and controlled rates from 0.03 to 1.00 gallons per square yard, with uniform pressure, and with an allowable transverse variation from any specified rate not to exceed 10 percent or 0.02 gallons per square yard, whichever is less.

- (A) Distributor Truck:** the first sentence of the fourth paragraph of the Standard Specifications is revised to read:

Distributor truck spray bars shall be equipped with the appropriate size nozzles adjusted to the proper angle with the associated adjustment wrench to achieve maximum overlap of spray and an even application.

- (B) Power Brooms:** of the Standard Specifications is revised to read:

Power brooms shall be of the rotary or pickup type, capable of completely removing excess blotter material, and cleaning without gouging or tearing the surface.

- (D) Aggregate Spreaders:** of the Standard Specifications is revised to read:

The application of blotter material shall be accomplished by means of a sand slinger or other equipment approved by the Engineer.

The application of cover material shall be accomplished by means of a calibrated spreader. The spreader shall be a self-propelled, computerized rate-controlled unit capable of an application width of 14 feet or greater. The spreader shall be in good mechanical condition, capable of applying the correct aggregate application rate uniformly across the spread width.

Chip spreader boxes shall be calibrated to ensure consistent discharge across all of the chutes except where the discharge is intentionally adjusted to compensate for site conditions and construction operations.

404-3.03 Traffic Control: of the Standard Specifications is hereby deleted.

404-3.04 Preparation of the Surface: of the Standard Specifications is revised to read:

The surface to be treated shall be thoroughly cleaned prior to applying bituminous material. Man holes, utility covers, and catch basins shall be protected prior to and during application of bituminous material. Self-propelled rotary power brooms, pickup brooms, and hand brooms shall be used immediately in advance of applying the bituminous material.

When a bituminous treatment is to be applied to an existing aggregate surface, the surface shall be uniformly smooth, firm and reasonably true to grades and cross sections as shown on the project plans, and shall be so maintained throughout the placing of the bituminous

treatment. In no event shall a bituminous treatment be placed on a soft, uneven base. All holes, depressions or irregularities shall be repaired. All loose and unsuitable material shall be removed and replaced by suitable material, which shall be compacted to produce a dense uniform surface conforming to the adjacent area.

When required, the existing aggregate surface on which the bituminous treatment is to be placed shall be lightly bladed, watered and compacted immediately prior to the application of bituminous material. In extremely dry areas, additional light applications of water may be required prior to the application of the bituminous material to facilitate penetration of the bituminous material.

404-3.05 Application of Bituminous Material: the first, second and third paragraphs of the Standard Specifications are revised to read:

The types, grades, and approximate rates of application of bituminous material shall be as specified in Subsections 404-2.03 of the specifications. The application rates for chip seal coats shall be determined by the contractor in accordance with the requirements herein, subject to approval by the Engineer.

The rates to be applied may vary substantially because of different surface conditions within the project limits. The actual bituminous material application rate shall not vary more than 10 percent from the application rate specified or approved by the Engineer.

The bituminous material shall be uniformly applied to the prepared surface at the rate specified or approved by the Engineer and in one application.

404-3.05 Application of Bituminous Material: the seventh, eighth and ninth paragraphs of the Standard Specifications are revised to read:

In the event that any spots are missed in the application, or any areas develop that do not have a uniform spread or penetration, such areas shall be remedied without delay.

Care shall be taken to prevent the spraying or splattering of bituminous material on adjacent pavements, structures, curb, guardrail, vegetation, or any other object outside of the area designated for spraying.

Removal and disposal of unused bituminous material shall be the contractor's responsibility and at no cost to the Department.

404-3.06 Application of Blotter Material: of the Standard Specifications is revised to read:

The approximate application rate of blotter material, when required as a part of a bituminous treatment, shall be as specified in Subsection 404-2.03 of the specifications; however, the Engineer will specify the exact rate to be applied based on the characteristics of the bituminous treated surface. The specified application rates are based on the wet weight of material.

Blotter material, at the time of spreading, shall be wet but free from running water. Blotter material shall be spread uniformly to the treated surface in one or more applications for a total

application rate as specified. Blotter material shall be applied at a time acceptable to the Engineer and before opening to traffic.

Any oversized aggregate or foreign material picked up during stockpiling or loading operations shall be eliminated before entering the spreader. Supplemental spreading or smoothing shall be done by hand methods where necessary.

Prior to final acceptance and when ordered by the Engineer, the contractor shall remove and dispose of any excess blotter material. Removal and disposal of excess blotter material shall be the contractor's responsibility and at no cost to the Department.

404-3.07 Joints: of the Standard Specifications is revised to read:

(A) General:

Transverse joints with the preceding work, at intersections, and at all existing pavements and structures shall be made by a method approved by the Engineer prior to the start of the work.

Longitudinal joints shall be overlapped between 2 to 6 inches.

Regardless of the width of the roadway to be sealed, the number of longitudinal joints shall be kept to a minimum. Longitudinal joints shall be located to the greatest degree obtainable to coincide with the painted lines between traffic lanes.

(B) Chip Seal:

Unless otherwise directed by the Engineer, transverse joints with the preceding work shall be made by placing building paper over the end of the previous application, and the joining application shall start on the building paper. Once the application process has progressed beyond the paper, the paper shall be disposed of as directed by the Engineer. Transverse joints at other locations shall be made by a method approved by the Engineer prior to the start of the work.

Joints shall be cleaned as deemed necessary by the Engineer prior to the application of bituminous material in the adjacent strip.

404-3 Construction Requirements: of the Standard Specifications is modified to add:

404-3.08 Opening to Traffic:

In the construction or application of bituminous treatments, no traffic or equipment will be permitted on the treated roadway surface until it has been established to the satisfaction of the Engineer that the treated roadway surface will not be damaged or marred under the action of traffic. No traffic of any description shall be allowed on any bituminous treatment until approved by the Engineer.

404-4 **Prime Coat:** the title and text of the Standard Specifications is revised to read:

404-4 **Bituminous Surface Treatment:**

404-4.01 **Prime Coat:**

The type of bituminous material and the approximate application rate shall be as specified in Subsection 404-2.03 of the specifications. The Engineer may adjust the actual application rate based on specific trials and visual observations performed on test areas for different base conditions.

When it is deemed necessary, areas having excess bituminous material shall be blotted with material as directed by the Engineer.

When directed by the Engineer, the surface of the completed prime coat shall be rolled with a pneumatic-tired roller.

The integrity of the prime coat shall be maintained at all times until the next course is placed or until final acceptance. In the event traffic has caused holes or breaks in the surface, such holes or breaks shall be repaired by the contractor.

404-4.02 **Tack Coat:**

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 each layer 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 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 (1) Below.	Not Allowed	0.12	0.7
Emulsified Asphalt (Other than Special Type)	Not Allowed	0.08	1.0
Asphalt Cement	0.06 to 0.08	0.06 to 0.08	1.0
Note: (1) 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.			

The Engineer may adjust the application rate.

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

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. All traffic on a tack coat surface shall be minimized to the greatest extent possible. In no event shall more tack coat be applied in one day than will be covered by the bituminous mixture during that same day.

404-4.03 Fog Coat:

The type of bituminous material and the approximate application rate shall be as specified in Subsection 404-2.03 of the specifications. The material shall be diluted with one part water to one part bituminous material. The specified application rate is based on the diluted material. The Engineer may adjust the actual application rate based on specific trials and visual observations performed on test areas for different pavement conditions.

When specified in Subsection 404-2.03 of the specifications, blotter material shall be applied following the application of bituminous material.

404-4.04 Chip Seal Coat:

(A) General:

The contractor shall prepare their bid submittal and initial construction schedule, submitted at the Preconstruction Conference as described in Subsection 108.03 of the specifications, based on the following beginning and ending dates for placement of the chip seal.

Average Elevation of Project, Feet	Beginning and Ending Dates
0 – 3499	March 15 – May 31
0 – 3499	September 1 – October 31
3500 – 4999	May 1 – September 30
5000 and over	June 1 – August 31

Any proposed placement deviating from the beginning and ending dates shall be detailed in the written schedule of construction submitted at the weekly meeting described in Subsection 108.04 of the specifications. No contract time extension will be granted for placement outside of the beginning and ending dates. Any placement deviating from the beginning and ending dates shall be at the sole risk of the contractor.

The type of bituminous material and the approximate application rate shall be as specified in Subsection 404-2.03 of the specifications. The type of cover material shall be as specified in Subsection 404-2.03 of the specifications.

The contractor shall determine the application rates and corresponding quantities of bituminous material and cover material for chip seal coat in accordance with Arizona Test Method 819. Application rates are subject to approval by the Engineer. Areas and locations anticipated to require adjustment to the rate(s) shall also be identified.

The application rates and performance of emulsified asphalt chip seals shall be evaluated using the Sweep Test in accordance with ASTM D7000.

The performance of hot applied chip seals shall be verified using the Vialit Retention Test in accordance with EN 1272-3, modified as necessary to account for the specific characteristics of the proposed chip seal.

The actual application rate shall be such that the aggregate is embedded approximately 70 percent (80 percent above 4,000 feet elevation) and excessive tracking of bituminous material does not occur under construction equipment or when opened to traffic.

The actual rate of cover material to be applied shall be such that no more than 5 percent of the chips applied are removed during sweeping and approximately 20 percent void space exists between the aggregate particles once realigned after opening to traffic.

The proposed application rate(s), locations requiring adjustment, and the associated basis for each adjustment, shall be submitted to the Engineer for approval no later than five days following completion of the Pre-Activity Walkthrough as described in Subsection 404-4.04(B) of the specifications and at least five days prior to placement of the test strip.

The basis for any anticipated adjustments shall include use of one or more of the following:

- (a) Sand Patch tests performed in accordance with *STP762 Pavement Surface Characteristics and Materials*; Haydon, C.E. (ASTM, 1982),
- (b) Appendix B of Chip Seal Guide for Application and Construction; Pavement Preservation Committee of the Arizona Chapter of The Associated General Contractors (AGC-Arizona Chapter, 2013),
- (c) Arizona Test Method 742 for mean macrotexture.

The approved application rate(s) and adjustments shall be clearly marked at the corresponding locations and remain visible to equipment operators prior to placement.

At least 10 days prior to chip seal placement, the contractor shall submit a minimum 75-pound sample of uncoated cover material to the Engineer for testing. In addition to the submitted cover material, the contractor shall also submit 3 full gallons of emulsion (5 to 8 gallons for hot applied) in 1-gallon cans in accordance with the requirements of Arizona Test Method 103. The contractor shall also submit 40 pounds of granulated rubber if included in the bituminous material.

(B) Pre-Activity Walkthrough:

Prior to placement, the contractor shall conduct a Pre-Activity Walkthrough with all parties expected to work on the chip seal.

Locations where adjustments in application rate may be appropriate shall be documented.

A location for a test strip, approximately 1,000 feet in length shall be identified. If additional test strip locations are desired due to varying surface conditions, these shall also be identified.

Other factors or site conditions such as turn or deceleration lanes, changes in surface characteristics, crack fill, and recent patchwork which may affect placement of the chip seal coat shall also be identified. A description of any affecting conditions and the corresponding locations and action to be taken to minimize their impact shall be documented.

In addition to the requirements herein, the items contained on the checklists provided in AGC-Arizona Chapter's Chip Seal Guide for Application and Construction shall be considered.

(C) Chip Seal Test Strip:

Prior to the start of placement, all equipment used in the placement of the chip seal coat shall be verified to be in satisfactory operating condition and in accordance with the requirements herein.

Cover material shall be verified to have appropriate moisture and be in a condition consistent with that in which it existed at the time initial acceptance samples were obtained. Bituminous material certifications shall be verified to indicate that the required type of material is on hand. The bituminous material shall be at the proper temperature prior to application.

The chip seal test strip shall be a minimum of 500 linear feet. The existing pavement surface to receive the test strip shall be verified to have been adequately swept and cleaned and meeting the requirements herein. Anticipated application rates shall have been marked and clearly visible to equipment operators.

During placement of the test strip, all equipment shall be observed to confirm proper operation. The application rate of both the bituminous material and cover material shall be measured and verified using a catch-and-weigh "tarp" method. The application rate of the bituminous material shall also be measured and verified by means of a volume per area calculation using the distributor trucks calibrated thermometer and volume measuring gauge or device.

Rolling shall immediately follow placement of the cover material and be verified to be in conformance with the requirements herein.

For emulsion chip seals, the contractor shall broom the surface to remove excess cover material only after the emulsion has fully broken and cured sufficiently for maximum chip retention.

Prior to any subsequent placement, the test strip shall be observed to have adequate embedment of the cover material without excessive void space between the chips, stacking of chips, or accumulation of chips on the shoulders. If the condition of the test strip is not acceptable, adjustments shall be made as appropriate, and an additional test strip shall be performed.

(D) Application of Bituminous Material for Chip Seal:

The following bituminous material application requirements for chip seal are in addition to the requirements specified in Subsection 404-3.05 of the specifications.

Bituminous material shall not be applied a distance ahead of the chip spreader that results in excessive lag of the rollers allowing hot applied bituminous material to cool or emulsified bituminous material to break prior to achieving adequate embedment of the cover material.

When inclement weather is expected, only the amount of hot applied bituminous material which can receive adequately embedded cover material, or only the amount of emulsified asphalt that can receive adequately embedded cover material and has sufficiently broken, shall be placed prior to the start of inclement weather.

(E) Application of Cover Material:

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.

When emulsified asphalt is used, the cover material shall be at a saturated surface-dry condition at the time of spreading.

For hot applied chip seals, and when project conditions require, precoated cover material shall be at a sufficient temperature to facilitate adequate embedment.

(F) Rolling Cover Material:

Following the spreading of cover material, the surface shall be promptly rolled with self-propelled pneumatic-tired rollers. A minimum of three rollers shall be provided; however, a sufficient number of rollers shall be provided to cover the entire width of the material spread in one pass of the compactors and rolling shall continue until a minimum of three passes has been completed.

For chip seals with a hot applied bituminous material the first roller pass shall occur as soon as possible but no longer than 2 minutes after applying the aggregate. The third pass shall be completed quickly enough to embed the aggregate before the binder cools, and no longer than 15 minutes after the binder is applied.

(G) Removal of Loose 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.

For chip seals with an emulsified bituminous material, initial removal of all loose cover material shall not commence prior to two hours after placement or at such time that the Engineer has determined that the emulsion has sufficiently cured.

For chip seals with a hot applied bituminous material, the removal of loose cover material shall commence approximately 30 minutes after the final rolling is completed.

Initial removal of loose cover material shall occur prior to opening to traffic. All loose cover material shall be removed from the paved surface by brooming within 24 hours after application.

After the traffic free period as specified in Subsection 404-4.04(H) of the specifications, but prior to final removal of loose cover material, all traffic permitted by the Engineer shall not exceed 25 miles per hour.

If 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.

(H) Minimum Traffic-Free Period:

The minimum traffic-free period for a newly applied emulsion chip seal coat shall be three hours. The contractor's hauling equipment may use the new seal coat surface during the traffic free period at a speed not to exceed 15 miles per hour but shall not make sharp turns of brake abruptly.

(I) Fog Coat on New Chip Seals:

When specified in Subsection 404-2.03 of the specifications, a fog coat shall be placed on the new chip seal following the curing period. The type of bituminous material and the approximate application rate shall be as specified in Subsection 404-2.03 of the specifications. The material shall be diluted with one part water to one part bituminous material. The specified application rate is based on the diluted material. The Engineer may adjust the actual application rate based on specific trials and visual observations performed on test areas for different pavement conditions.

When specified in Subsection 404-2.03 of the specifications, blotter material shall be applied following the application of bituminous material.

(J) Contractor Quality Control:

The contractor shall be responsible for the chip seal design, performing quality control testing on materials, and designating an individual charged with constant observation and monitoring.

Need for an adjustment to application rates or a correction to process or equipment shall be communicated immediately to the necessary personnel.

The initial condition of equipment, materials, and the project and pavement surface conditions shall be documented. The performance and results of the test strip shall be documented. Observations of monitoring activities and quantification of application rates during the test strip and production shall be documented no less frequently than every other placement run.

The cause for any adjustments, including quantifying tests performed, the adjustments made, and the result of such adjustments with regard to acceptability and performance of the chip seal coat shall be documented.

404-5 Tack Coat: of the Standard Specifications is hereby deleted.

404-6 Fog Coat: of the Standard Specifications is hereby deleted.

404-7 Chip Seal Coat: of the Standard Specifications is hereby deleted.

404-8 Method of Measurement: the fourth paragraph of the Standard Specifications is revised to read:

The contractor shall be responsible to determine the amount of cover material that will be required to complete the work from the source(s) from which the cover material is obtained.

404-8 Method of Measurement: the sixth paragraph of the Standard Specifications is revised to read:

Measurement for payment will be made only for the quantity of bituminous material and for the quantity of aggregate material used in accordance with the requirements of the specifications.

404-9 Basis of Payment: of the Standard Specifications is revised to read:

The accepted quantities of the work under this section, complete in place, measured as provided above, will be paid for at the contract unit price as designated in the bidding schedule, except the contract unit price for the quantities of bituminous material will be adjusted on the basis of the test results in accordance with the requirements of Section 1005 of the specifications.

No measurement or direct payment will be made for precoating the cover material, material for precoating, rolling and removal of loose cover material, and removal of loose blotter material.

The contract unit price for each item of bituminous material except tack coat will be considered to include all costs for furnishing, hauling, handling, spreading, and mixing of the material as required.

The unit price for bituminous tack coat is deemed to be the cost to furnish, transport, and store asphalt cement or emulsified asphalt at the project location. Payment for bituminous tack coat will be made at the unit price multiplied by the respective payment factor listed under Subsection 404-4.02 of the specifications, and adjusted to the nearest dollar.

Unless otherwise specified, the accepted quantity of bituminous tack coat, measured as provided above, will be paid at the contract unit price per ton adjusted as provided above which price shall be full compensation for furnishing, transporting, and storing the exact type, grade or designation of bituminous tack coat specified by the Engineer.

Unless otherwise specified, the accepted quantity of time to apply bituminous tack coat, measured as provided above, will be paid for at the contract unit price per hour which payment shall be full compensation for applying bituminous tack coat.

The bidding schedule quantity for tack coat is based on an estimated application rate of 0.06 gallons per square yard for each application shown on the project plans.

The unit price of bituminous material will be adjusted in accordance with the requirements of Subsection 109.16 of the specifications based on the "initial cost" of bituminous material between the date of bid opening and the date that the material is used on the project.

No measurement or direct payment will be made for furnishing, applying and removing blotter material, furnished in conjunction with the application of a prime coat.

No measurement or direct payment will be made for the maintenance or repair of a prime coat surface.

(409AGGR 06/19/25)

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

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

409-1 Description:

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:

The bidding schedule quantity of asphaltic concrete is based on an estimated unit weight of 146 pounds per cubic foot.

409-2.01 Mineral Aggregate:

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 – 3.0%
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 No. 4 material is required.)	Minimum 55
Fractured Coarse Aggregate Particles	AASHTO T 335	Minimum 85% with at least two fractured faces and minimum 92% with at least one fractured face (plus No. 4 material)
Uncompacted Void Content	AASHTO T 304 Method A	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 AASHTO T 11 and AASHTO 27, and shall conform to the requirements given below.

Mix Design Grading Limits				
Sieve Size	Percent Passing			
	1/2 Inch Mix		3/4 inch Mix	
	Without Admixture	With Admixture	Without Admixture	With Admixture
1-1/4 Inch	---	---	---	---
1 Inch	---	---	100	100
3/4 Inch	100	100	90-100	90-100
1/2 Inch	90 - 100	90-100	---	---
3/8 Inch	67 - 82	67 - 82	62 - 77	62 - 77
No. 8	40 - 48	41 - 49	37 - 46	38 - 47
No. 40	10 - 18	11 - 19	10 - 18	11 - 19
No. 200	1.5 - 4.5	2.5 - 6.0	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:

Asphalt cement shall be a performance grade (PG) asphalt binder, conforming to the requirements of Section 1005 of the specifications. The type of asphalt binder shall be PG 70-22 TR+.

The percent of asphalt cement used shall be based on the weight of total mix (asphalt cement, mineral aggregate, and mineral admixture).

The contractor shall provide the laboratory mixing and compaction temperature ranges to the mix design laboratory for each PG asphalt binder used for mix design purposes. The laboratory mixing temperature range is defined as the range of temperatures where the un-aged asphalt binder has a rotational viscosity of 0.17 ± 0.02 Pascal-seconds, measured in accordance with AASHTO T 316. The laboratory compaction temperature range is defined as the range of temperatures where the un-aged asphalt binder has a rotational viscosity of 0.28 ± 0.03 Pascal-seconds, measured in accordance with AASHTO T 316. The testing

required in AASHTO T 316 shall be performed at 275 degrees F and 350 degrees F, and a viscosity-temperature curve developed in accordance with ASTM D2493. The viscosity-temperature curve shall be included in the mix design report. For PG asphalt binders that have a maximum laboratory mixing temperature exceeding 325 degrees F or a maximum laboratory compaction temperature exceeding 300 degrees F, the laboratory mixing and compaction temperature ranges shall be specified in writing by the asphalt binder supplier. The laboratory mixing and compaction temperature ranges, as well as the actual laboratory mixing and compaction temperatures used, shall be reported on the mix design. The contractor shall ensure that the asphalt binder supplier information required in this paragraph is provided to all appropriate parties in a timely manner, and that copies are included in the mix design report. The laboratory mixing and compaction temperatures are for mix design purposes only. Field mixing and compaction temperatures are specified in Subsection 409-3 of the specifications.

409-2.03 Mineral Admixture:

Mineral admixture shall be either Portland cement, blended hydraulic cement, or hydrated lime conforming to the following requirements:

Material	Requirement
Portland Cement, Type I or II	ASTM C150
Blended Hydraulic Cement, Type IP or 1L	ASTM C595
Hydrated Lime	ASTM C1097

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 Practice and Procedure Directive No. 13, "Certification and Acceptance of Hydraulic Cement, Fly Ash, Natural Pozzolan, Silica Fume, and Lime".

409-2.04 Mix Design:

Utilizing mineral aggregate which has been crushed, processed, separated, and stockpiled, a mix design shall be formulated and submitted by the contractor to the Engineer. The mineral aggregate samples used for mix design purposes shall be representative of aggregate materials to be used during production.

The mix design shall be based on the mix design criteria and other requirements specified herein, utilizing asphalt cement and mineral admixture of the type and from the sources proposed for use in the production of asphaltic concrete.

Mix designs shall be developed utilizing a minimum ratio of three (3) for the lift thickness to nominal maximum aggregate size.

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. Limits for the usage of RAP shall be per ADOT Materials Practice 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 Practice 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 Practice 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) (1/2 inch Special Mix), 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 of the specifications. 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 (1/2 Inch Special Mix)	1-1/2 Inches
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.

Test results used in the formulation of the mix design must be from testing performed no earlier than 45 days prior to the date the mix design is signed by the mix design engineer. Historical abrasion values may be supplied on sources provided the testing was conducted within the past two years.

The mix design shall be submitted to the Engineer under a cover letter signed by an authorized representative of the contractor.

A copy of the mix design and representative samples of the 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 of the specifications. 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	3.8 – 4.2	(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.		

The contractor may make self-directed target changes to the approved mix design within the limits shown below. Requests for self-directed target value changes shall be made in writing and acknowledged by the Engineer prior to start of production. Self-directed target changes shall meet contract requirements for mix design criteria and grading limits.

MEASURED CHARACTERISTICS	ALLOWABLE SELF-DIRECTED TARGET VALUE CHANGES
Gradation (sieve size): 3/8 inch No. 8 No. 40 No. 200	$\pm 4\%$ from mix design target value $\pm 4\%$ from mix design target value $\pm 2\%$ from mix design target value $\pm 0.5\%$ from mix design target value
Asphalt Cement Content	+0.2% from mix design target value
Effective Voids	None

The contractor may propose target value changes to the approved mix design for the Engineer's approval. The Engineer will determine if the proposed target value change will result in mix production that meets the contract requirements for mix design criteria and grading limits. For acceptance purposes, target value changes will not be retroactive.

In no case shall the approval of mix design changes relieve the contractor of the responsibility for the results obtained by the use of such approved changes.

409-2.05 Sampling and Testing:

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 the plate method in AASHTO R 97. 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	AASHTO T 308 (for both Non-RAP and RAP mixes) (See Note)
Gradation	
Marshall Density	AASHTO R 68
Maximum Theoretical Density	AASHTO T 209
Effective Voids	AASHTO T 269
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 Construction Requirements:

409-3.01 General:

All courses of asphaltic concrete shall be compacted as required, smooth and true to the required lines, grades, and dimensions.

The asphaltic concrete hot plant shall conform to the requirements of Section 403 of the specifications.

The moisture content of the asphaltic concrete immediately behind the paver shall not exceed 0.5 percent. The moisture content will be determined in accordance with the requirements of AASHTO T 329.

Asphaltic concrete shall be placed only when the temperature of the surface on which the asphaltic concrete is to be placed is at least 65 degrees F.

At any time, the Engineer may require that the work cease or that the work day be reduced in the event that weather conditions, either existing or expected, are anticipated to have an adverse effect upon the asphaltic concrete.

All wheels and tires of compactors shall be wetted with water, or if necessary soapy water, or a release agent in order to prevent the sticking of asphaltic concrete. All other equipment surfaces shall be treated when necessary with a release agent. Only release agents evaluated through AASHTO Product Evaluation & Audit Solutions (formerly NTPEP) are acceptable for use. The results from AASHTO Product Evaluation & Audit Solutions (formerly NTPEP) testing, when tested in accordance with AASHTO T 383, shall conform to the requirements shown in the table below:

RELEASE AGENT TEST	REQUIREMENT
Asphalt Stripping Test	
Diluted	No Stripping
Non-Diluted (Full Strength)	No Stripping
Asphalt Performance Test	Less than or equal to 10.0% after the third cycle

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.

Pavers shall be equipped with a screed for the full width being paved, heated if necessary, and capable of spreading and finishing all courses of asphaltic concrete.

Pavers shall be equipped with automatic screed controls with sensors for either or both sides of the paver, capable of sensing grade from an outside reference line, sensing the transverse slope of the screed, and providing the automatic signals which operate the screed to maintain the desired grade and transverse slope.

Failure of the control system to function properly shall be cause for the suspension of the placing of asphaltic concrete.

The base or subgrade upon which asphaltic concrete is to be placed shall be prepared and maintained in a firm condition until asphaltic concrete is placed. It shall not be frozen or excessively wet.

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 of the specifications.

Longitudinal joints of each course shall be staggered a minimum of 1 foot with relation to the longitudinal joint of any immediate underlying course. Longitudinal joints shall be located within 1 foot of the center of a lane or within 1 foot of the centerline between two adjacent lanes.

The contractor shall schedule its paving operations to minimize exposed longitudinal edges. Unless otherwise approved by the Engineer, the contractor shall limit the placement of asphaltic concrete courses, in advance of adjacent courses, to one shift of asphaltic concrete production. The contractor shall schedule its paving operations in such a manner to eliminate exposed longitudinal edges over weekends or holidays.

409-3.02 Compaction:

Compaction shall consist of an established sequence of coverage using specified types of compactors. A pass shall be defined as one movement of a compactor in either direction. Coverage shall be the number of passes as are necessary to cover the entire width being paved.

The rolling sequence, the type of compactor to be used and the number of coverages required shall be as follows:

Rolling Sequence	Type of Compactor		No. of Coverages	
	Option No. 1	Option No. 2	Option No. 1	Option No. 2
Initial	Static Steel	Vibrating Steel	1	1
Intermediate	Pneumatic Tired	Vibrating Steel	2 - 6*	2 - 4*
Finish	Static Steel	Static Steel	1 - 3	1 - 3
Note:				
* Based on the roller pattern which exhibits the best performance.				

The Engineer shall select the option for compaction and, when pneumatic-tired compactors are used, will designate the tire pressure.

Steel wheel compactors shall not be used in the vibratory mode for courses of 1 inch or less in nominal thickness nor when the temperature of the asphaltic concrete falls below 180 degrees F. Steel wheel compactors shall weigh not less than 8 tons.

Initial and intermediate compaction shall be completed before the temperature of the asphaltic concrete falls below 200 degrees F. All edges shall be rolled with a pneumatic tired compactor, or other methods approved by the Engineer, while the mixture is still hot.

Compaction will be deemed to be acceptable on the condition that the asphaltic concrete is compacted using the type of compactors specified, ballasted and operated as specified and with the number of coverages of the compactors as specified.

409-3.03 Acceptance:

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 25 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 (i.e. reduction in serviceability, in years) of the asphaltic concrete if left in place. The engineering analysis shall also detail the potential root cause of the problem, any proposed corrective action, and the anticipated effect of such corrective action on the performance. The engineering analysis shall only include acceptance or referee test results, as applicable to the standard specifications. The engineering analysis shall include the expected additional cost to the Department (over original performance life) to maintain the pavement at an acceptable condition. The engineering analysis shall include supporting information such as pictures of the area, control charts, plant and field records, etc. 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.

The contractor may request that a sample with a failing test result(s) on gradation and/or asphalt cement content be allowed to remain in place without the completion of an engineering analysis if the application of a self-directed target value change as outlined in section 409-2.04 would have brought the failing test result(s) to within the specified tolerances. This proposal must be made to the Engineer in writing with justification. Once accepted, the material will be allowed to remain in place at the maximum negative pay factor(s). Maximum negative are defined as a minus \$3.00 per ton for mixture properties lots in reject for Gradation only, minus \$5.00 per ton for mixture properties lots in reject for Asphalt Cement Content and/or Effective Voids only, and minus \$5.00 per ton for mixture properties lots in reject for Asphalt Cement Content and/or Effective Voids and also Gradation.

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.

409-4 Method of Measurement:

Asphaltic concrete will be measured by the ton for the mixture actually used, which will include the weight of mineral aggregate, bituminous material, and mineral admixture. Measurement will include any weight used in construction of intersections, turnouts, curbs, spillways and spillway inlets, ditches, catch basin entrances, median strips, sidewalks, or other miscellaneous items or surfaces.

409-5 Basis of Payment:

409-5.01 General:

The accepted quantities of asphaltic concrete, measured as provided above, will be paid for at the contract unit price per ton for the bituminous mixture complete in place.

No direct payment will be made for the bituminous material and mineral admixture in the asphaltic concrete, or the bituminous material for tack coat and application of tack coat, the price being considered as included in the price paid for asphaltic concrete.

Asphaltic concrete may be measured, by volume, upon the execution of a supplemental agreement which will specify the manner in which the volume is determined. The volume will include the volume of mineral aggregate, bituminous material, mineral admixture, and any necessary blending material.

409-5.02 Reduction for Noncompliance:

A reduction in payment to the contractor for asphaltic concrete will be made for 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.

SECTION 411 ASPHALTIC CONCRETE FRICTION COURSE (MISCELLANEOUS):

411-2 Materials: of the Standard Specifications is modified to add:

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

Spread Rate (lb./ sq. yd.)	59
Asphalt Cement, %	6.5
Mineral Admixture, %	1.0

The spread rate specified above includes 25 percent for leveling to provide a minimum 1/2-inch thickness above the leveling thickness. The exact spread rate will be determined by the Engineer.

411-2.03 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 of the specifications. The type of asphalt binder shall be PG PG-70-22 TR+.

411-3.01 General: the fourth paragraph of the Standard Specifications is revised to read:

The temperature of asphaltic concrete or mineral aggregate upon discharge from the dryer shall not exceed 325 degrees F, unless otherwise approved by the Engineer.

411-3.02(A) General Requirements: of the Standard Specifications is revised to read:

The temperature of the asphaltic concrete just prior to compaction shall be at least 250 degrees F.

(501QCDRN, 07/15/05)

SECTION 501 PIPE CULVERT AND STORM DRAINS:

501-3 Construction Requirements: of the Standard Specifications is modified to add:

501-3.01(A) 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) Bedding and 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.

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
Backfill Material			
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
Bedding Material			
Gradation	ARIZ 201	Stockpile	1 per 300 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 50 CY

(501PIPE, 01/20/22)

SECTION 501 PIPE CULVERTS AND STORM DRAINS:

501-3.02(A)(1) GENERAL: the last paragraph of the Standard Specifications is revised to read:

Bedding material for all metal pipe shall have a value of resistivity not less than 2,000 ohm-centimeters unless otherwise specified or approved by the Engineer. Bedding material shall have a pH value between 6.0 and 10.0, inclusive, for all metal pipe installations except aluminum. Bedding material for aluminum pipe installations shall have a pH value between 6.0 and 9.0, inclusive. Bedding material shall have a pH value between 6.0 and 12.0, inclusive, for all concrete or plastic pipe installations. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

(601PCC, 09/21/23)

SECTION 601 CONCRETE STRUCTURES:

601-3.03(C) Pumping Concrete: of the Standard Specifications is revised to read:

Where concrete is conveyed and placed by mechanically applied pressure, the equipment shall be of suitable type and shall have adequate capacity for the work. The concrete shall not flow either over or through any piping, fittings or equipment which is fabricated of aluminum or aluminum alloys. The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced. Excessive segregation due to high velocity discharge of the concrete will not be permitted. When pumping is completed, the concrete remaining in the pipeline, if it is to be used, shall be ejected in such a manner that there is no contamination of the concrete or segregation of the ingredients. Standby equipment shall be readily available to replace initial pumping equipment should breakdown occur.

(605STRF, 8/21/25)

SECTION 605 STEEL REINFORCEMENT:

605-3.01 General: the sixth paragraph of the Standard Specifications is revised to read:

Reinforcement shall be accurately fabricated and placed as shown on the plans and shall be firmly held in place by wire ties at all intersections and splices with 16 gauge or heavier tie wires and with precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, or other approved supports at the spacing necessary to maintain the specified clearance of the reinforcement steel. The use of pebbles, broken stone, concrete masonry blocks, brick, metal pipe, or wood blocks will not be permitted for the purpose of spacing or support.

The contractor has the option to submit a request detailing the use of contract or buried bars, including supporting drawings, for review and approval by the Engineer.

For reinforcement spacing is greater than or equal to 12 inches in either the longitudinal or transverse directions, the reinforcement shall be tied at a minimum every alternate intersection.

Where reinforcement spacing is less than 12 inches in either the longitudinal or transverse directions, the reinforcement shall be tied at a minimum, every third intersection.

The contractor may submit a request detailing an alternative tying plan for review and approval by the Engineer.

SECTION 601 CONCRETE STRUCTURES:

601-5 Method of Measurement: of the Standard Specifications is modified to add:

Concrete Headwalls will be measured as a unit each.

601-6 Basis of Payment: of the Standard Specifications is modified to add:

The accepted quantities of Concrete Headwalls, measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work, complete in place, as described and specified herein and on the plans, including all concrete, reinforcing steel, forming, structural excavation, structural backfill, labors, equipment, materials, and incidentals necessary to complete the work.

(608 PANEL, 06/19/25)

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:

- (A) Extruded Aluminum Sign Panels with Direct-Applied, or Demountable Characters;
- (B) Flat Sheet Aluminum Sign Panels with Direct-Applied, Electronic-Cut, or Screen-Printed Characters;
- (C) Warning, Marker, and Regulatory Sign Panels;
- (D) Route Shields for Installation on Sign Panels; and/or
- (E) EXIT ONLY Panels for Installation on Sign Panels.

608-2.02 Extruded Aluminum Sign Panels with Direct-Applied, Digitally-Imaged, or Demountable Characters: the title and the third paragraph of the Standard Specifications are revised to read:

608-2.02 Extruded Aluminum Sign Panels with Direct-Applied or Demountable Characters:

The letters, numerals, symbols, borders and other features of the sign message shall be direct-applied, or demountable, and shall conform to the requirements of Subsection 608-2.08 or Subsection 608-2.09 of the specifications.

608-2.03 Flat Sheet Aluminum Sign Panels with Direct-Applied, Digitally Imaged, Electric-Cut or Screen-Printed Characters: the title and the fifth paragraph of the Standard Specifications are revised to read:

608-2.03 Flat Sheet Aluminum Sign Panels with Direct-Applied, Electronic-Cut, or Screen-Printed Characters:

Messages shall be reflectorized white or, if called for on the plans, opaque black, and shall be produced by either screen printing, direct-applying, or electronic cutting, as specified under Subsections 608-2.09 of the specifications.

608-2.05 Route Shields (For Installation on Sign Panels): The first paragraph of the Standard Specifications is revised to read:

Route shields may be demountable or direct-applied.

608-2.06 EXIT ONLY Panels (For Installation on Sign Panels): the first paragraph of the Standard Specifications is revised to read:

EXIT ONLY panels may be demountable or direct-applied. Demountable EXIT ONLY panels shall be attached to the sign panel with self-plugging aluminum blind rivets.

608-2.10 Digitally-Imaged Characters: the title and the text of the Standard Specifications are revised to read:

608-2.10 Digital Printing of Signs:

Digital printing of signs shall utilize a matched component system, including appropriate software and drivers in accordance with an APL certified retroreflective sheeting manufacturer's warranty requirements. Finished signs shall consist of a UV-protective clear overlay applied to the entire face of the sign. Any overlays shall also be compatible with the retroreflective sheeting manufacturer's matched component system and warranty. Digitally printed signs shall conform to the requirements of ASTM D4956 for daytime and nighttime requirements, as well as the requirements of the Department's Traffic Engineering Guidelines and Processes (TGP) 380 and Section 1007 of the specifications.

ITEM 6080120 – SIGN (RELOCATE):

Description:

The work under this item shall consist of furnishing all labor, equipment and materials to remove, store and re-install the existing sign panels, onto new posts and foundations as indicated in the plans. The work shall include any necessary excavation, backfill and hardware for sign removal and installation.

Materials:

All mounting hardware materials to mount the relocated signs shall be new and in accordance with Section 608-2.01 of the Standard Specifications.

Construction Requirements:

The relocation of the sign panels shall be in accordance with the requirements of Section 608-3.02 of the Standard Specifications.

Method of Measurement:

Sign (Relocate) will be measured by the unit for each sign assembly relocated.

Basis of Payment:

The accepted quantities of Sign (Relocate), measured as provided above, will be paid at the contract unit price each, which shall be full compensation for the work, complete in place, as specified herein and as shown on the plans.

Sign post and foundation will be paid for under their respective pay items.

ITEM 6110200 – METAL HANDRAIL (DETAIL D5):

Description:

The work under this item shall consist of furnishing, and installing metal handrail including railing, posts, fittings, and anchorages. The railing shall be fabricated and installed at the locations and in accordance with the details shown in the project plans and these Special Provisions.

Materials:

Materials shall conform to the requirements specified on the plans and these Special Provisions.

The contractor shall furnish three (3) complete copies of all mill reports on all steel materials furnished.

Metal Handrail shall be fabricated from welded or seamless steel, Schedule 40, of the size and thickness shown in Detail D5. Steel pipe members shall conform to the requirements of

ASTM F1043, Material Group IA-2 or Material Group IC Galvanized after forming. All steel pipes and fittings shall be galvanized according to ASTM A-123.

Structural steel bars and plates shall meet the requirements of ASTM F1043.

Construction Requirements:

Prior to beginning any work on the fabrication of the railing, the contractor shall submit shop drawings in accordance with Subsection 105.03 of the Standard Specifications, showing complete details. Details that deviate from the details shown in the project plans shall be approved by the Department Engineer and sealed by a Licensed Professional Engineer registered in the State of Arizona.

Certificates of Compliance shall be submitted to the Engineer in accordance with the requirements of Subsection 106.05 of the Standard Specifications.

Welding shall be performed in accordance with the requirements of Subsection 604-3.06 of the Standard Specifications and the current edition of the American Welding Society, Structural Welding Code, D1.1. All butt welds on exposed surfaces shall be ground flush with adjacent surfaces.

Railing panels shall be straight and true to dimensions. Posts shall be vertical and parallel with the deviation from the vertical for the full height of the panel not exceeding 1/8 inch.

For metal handrail installed on curved structures, either horizontal or vertical, the railing shall conform closely to the curvature of the structure.

The use of expansion anchors will not be permitted.

After erecting the Metal Handrail, field welds and damage to galvanizing shall be treated with a Zinc rich compound. Damage or abrasion to Handrail shall be repaired in the field in accordance with the Standard Specifications and these Special Provisions.

Method of Measurement:

Metal Handrail shall be measured by the linear foot complete in place. Measured horizontally from end post to end post along the face of the railing.

Basis of Payment:

The accepted quantities of Metal Handrail, measured as provided above, will be paid for at the contract price per linear foot, which price shall be full compensation for the work, complete in place, including welding, expansion joints, connections and as specified herein and shown on the plans.

(701FLGSV, 03/20/25)

SECTION 701 MAINTENANCE AND PROTECTION OF TRAFFIC:

701-3.13 Flagging Services: of the Standard Specifications is revised to read:

Flagging services shall consist of 1) Department of Public Safety (DPS) officers with agency vehicles, 2) local enforcement officers with agency vehicles, 3) local enforcement officers without agency vehicles, and 4) civilian flaggers. Local enforcement officers and DPS officers include those who meet the requirements of a Peace Officer under ARS Title 38, generally including anyone certified by the Arizona Peace Officer and Training Board. If available, DPS officers shall be used on Interstate Highways and Urban Freeways. Local enforcement officers will include uniformed officers from local police, tribal police, sheriff departments, or any other agencies that meet the requirements of a Peace Officer under ARS Title 38, generally including anyone certified by the Arizona Peace Officer and Training Board. An agency vehicle is defined as an agency-issued vehicle that meets the requirements of ARS Title 28. If local enforcement officers do not have access to an agency vehicle, a personal vehicle may be used, but it shall have a make and model similar in appearance of an agency vehicle, and shall be equipped with front and rear-facing red and blue lights. The personal vehicle, when applicable, shall be presented to the Engineer for acceptability prior to its use on the project by local enforcement officers. Approval of the personal vehicle will be at the sole discretion of the Engineer.

The contractor shall be responsible to procure DPS officers, local enforcement officers, and civilian flaggers. The Engineer will determine the types and the number of hours of flaggers as needed based on the project needs. Quantities shown on the traffic control plans and/or bidding schedule are approximate only and prepared for bidding purposes. When procuring DPS officers and local enforcement officers, the contractor shall contact the relevant agency at least two days, excluding weekends and holidays, 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.

Local enforcement and DPS officers shall not work more than 12 consecutive hour work shift without the permission of the State Construction Engineer 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 will be acceptable. Certification through other programs offering flagger training may be allowed upon by the State Construction Engineer's approval. Flagger certification must be current and updated at least once every four years.

701-6.07 Pilot Services, and Flagging Services: of the Standard Specifications is revised to read:

The accepted quantities of pilot vehicles, measured as provided above, will be paid for at the unit bid price for pilot vehicles with driver, which price shall be full compensation for the work, complete in place including, but not limited to, furnishing and maintaining the vehicle and furnishing the driver. Any hour worked after the eight hour regular time will be considered straight-time and will not be paid as overtime pay.

The accepted quantities of flagging services provided by the local enforcement officers (with agency vehicle), DPS officers, and civilian flaggers, 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, including the agency vehicle. Any hour worked after the eight hour regular time will be considered straight-time and will not be paid as overtime pay.

The accepted quantities of flagging services provided by the local enforcement officers without an agency vehicle, 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. Any hour worked after the eight hour regular time will be considered straight-time and will not be paid as overtime pay. No measurement or payment will be paid for the vehicle, regardless of the type of vehicle is an agency vehicle or not, the cost being considered as included in the price of the contract item.

In addition, the Department has estimated an additional two hours of travel time per officer per day in the quantities shown in the bid schedule. However, if more than two hours of travel time per day is required, such additional hours will be compensated in accordance with the requirements of Subsection 104.02 of the specifications if approved by the State Construction Engineer. Travel time is considered to be supplementary to the hours worked by the officer during a work shift.

(701EATERM, 08/19/21)

ITEM 7010025 - TEMPORARY IMPACT ATTENUATION DEVICE (IN-LINE ENERGY ABSORBING TERMINAL):

ITEM 7010026 - TEMPORARY IMPACT ATTENUATION DEVICE (IN-LINE ENERGY ABSORBING TERMINAL) (IN USE):

Description:

The work under these items shall consist of furnishing, installing, maintaining, and removing in-line energy absorbing terminals in conformance with the details shown on the project plans, and in accordance with the special provisions.

Materials:

In-line energy absorbing terminals shall meet the evaluation criteria for Test Level 3 per MASH (AASHTO Manual for Assessing Safety Hardware) for a speed of 62 miles per hour.

The delineation for the terminals shall conform to the requirements of the Standard Drawing M-34 or in accordance with the manufacturer's recommendations. The retroreflective sheeting type shall conform to the requirements of Section 1007 of the specifications.

The contractor shall provide, at the preconstruction conference, a certificate of compliance, conforming to the requirements of Subsection 106.05 of the specifications. The contractor shall include the project number on the submittal. The contractor shall submit the certification at least two weeks prior to the intended use of the terminal.

In regions that are subject to cold weather conditions, if the water filled In-line energy absorbing terminals elements that are prone to freezing are used, appropriate antifreeze agents shall be used in accordance with the manufacturer's recommendations. The antifreeze materials must be approved by the ADOT Environmental Planning and may require a leak containment as part of the system. If required by the ADOT Environmental Planning, system components containing chemicals must be labeled per OSHA requirements.

Construction Requirements:

The contractor shall install the in-line energy absorbing terminal at the locations shown on the project plans, in accordance with the manufacturer's instructions and to the satisfaction of the Engineer.

Any traffic control device which will require in-line energy absorbing terminal shall be installed by the contractor only after the Engineer's approval of the terminal's use.

At the preconstruction conference meeting, the contractor shall provide in writing, a plan to repair and/or replace any damaged unit during the construction for the Engineer's approval.

Any unit which has been excessively damaged prior to installation, as determined by the Engineer, shall not be used.

Any unit damaged during or after the installation by the contractor's operations shall be repaired or replaced with an undamaged unit by the close of that work shift, at no additional cost to the Department. Any unit damaged by the travelling public, the contractor shall replace the unit within 36 hours of identifying the damage.

Method of Measurement:

Temporary Impact Attenuation Device (In-Line Energy Absorbing Terminal) will be measured by the unit for each in-line energy absorbing terminal furnished and installed.

Temporary Impact Attenuation Device (In-Line Energy Absorbing Terminal) (In Use) will be measured by the each-day for each 24-hour day that an in-line energy absorbing terminal is in place and functional for the "in use" condition as specified in Subsection 701-4.01 (B) of the specifications.

Basis of Payment:

The accepted quantities of Temporary Impact Attenuation Device (In-line Energy Absorbing Terminal), measured as provided above, will be paid for at the contract unit price per each, which price shall be full compensation for the work including delineation, maintenance and removal of the terminal, complete in place.

Fifty percent of the contract unit price for the in-line energy absorbing terminal will be paid upon satisfactory installation and fifty percent of the contract unit price will be paid upon final removal of the installed terminal.

Measurement and payment for an in-line energy absorbing terminal which is damaged by the traveling public will be made in accordance with the requirements of Subsection 109.04 of the specifications.

The accepted quantities of Temporary Impact Attenuation Device (In-line Energy Absorbing Terminal) (In Use), measured as provided above, will be paid for at the contract unit price per each-day, which price shall be full compensation for work, as specified herein and as shown on the project plans, complete in place.

(703DTRMKR, 07/21/22)

SECTION 703 DELINEATORS AND MARKERS:

703-2.10 Flexible Delineator Posts: the fourth paragraph of the Standard Specifications is revised to read:

The flexible delineator posts shall be pigmented throughout the entire cross- section (or entire cross-section of the outer layer of multi-layered, multi-material units) so as to produce a uniform color which is an integral part of the material. The posts shall exhibit negligible color fading after 1,000 hours of Xenon Arc Exposure (ASTM G155). The posts shall be made of durable, ultraviolet-resistant, impact-resistant, non-warping, non-metallic, polymeric materials designed for a minimum of 120 months of outdoor service life.

(705PVMRK, 09/21/23)

SECTION 705 PREFORMED PLASTIC PAVEMENT MARKING: the title and text of the Standard Specifications are revised to read:

SECTION 705 PREFORMED POLYMER PAVEMENT MARKING:

705-1 Description:

(A) General:

The work under this section shall consist of furnishing all materials, preparing the pavement surface and applying preformed reflectorized pavement marking tape, or preformed thermoplastic longitudinal edge lines, skip lines, stop lines, yield lines cross walks, legends and symbols to the pavement in accordance with the details shown on the project plans and the requirements of the specifications.

All markings shall be reflectorized with glass beads or other retroreflective particles uniformly distributed throughout the entire cross section and bonded to the top surface of the material. All markings shall comply with the retroreflectance requirements of Subsection 705-2.05 of the specifications. When glass beads are used to reflectorize markings, the glass bead properties shall also comply with Subsection 705-2.06 of the specifications.

Certificates of Compliance conforming to the requirements of Subsection 106.05 of the specifications shall be submitted.

Preformed pavement marking tape or preformed thermoplastic longitudinal edge lines, skip lines, stop lines, yield lines, cross walks, legends, and symbols shall be limited to the following applications unless otherwise specified in the contract documents:

A list of approved manufacturers and distributors of Type I, II, III, and IV preformed pavement marking materials is shown on the Department's Approved Product Lists (APL). The most recent version is available on the Department's website from the ADOT Research Center, through its Product Evaluation Program.

(B) Preformed Pavement Markings - Type I (Permanent):

Type I shall be a general purpose high durability retroreflective, pliant, polymer layer for preformed long line and short line striping, symbols, and legends to be used for final permanent pavement markings. Type I shall be capable of performing as specified herein when subjected to high traffic volumes and severe wear conditions such as repeated shear action from crossover or encroachment on edge and channelization lines, starting, stopping, and turning movements.

(C) Preformed Pavement Markings - Type II (Temporary – Removable):

Type II shall be a removable preformed retroreflective pavement marking capable of performing as temporary pavement markings for long line and short line striping, symbols, and legends for the duration of a normal construction season. It shall be a nonmetallic mixture

of durable materials and shall be capable of being removed intact or in large pieces either manually or with a recommended roll up device. Type II shall be used on finished pavement surfaces where traffic control or channelization through the construction zone is temporary requiring removal prior to final pavement markings.

(D) Preformed Pavement Markings - Type III (Temporary –Nonremovable):

Type III shall be a nonremovable preformed retroreflective layer on a conformable metallic backing capable of performing as temporary long line pavement markings for the duration of a normal construction season. Type III shall be used in construction zones where removal is unnecessary due to placement of future paving courses or where pavement will be removed, obliterated or abandoned at the completion of the project.

(E) Preformed Thermoplastic Pavement Markings - Type IV (Permanent):

Type IV shall be a high durability, retroreflective, pliant, preformed thermoplastic product to be used for final permanent symbols, legends, and short line (transverse) stripes. Type IV shall be capable of performing as specified herein when subjected to high traffic volumes and severe wear conditions.

705-2 Materials:

705-2.01 Preformed Pavement Markings - Type I (Permanent):

(A) General:

Type I preformed pavement marking material shall consist of a prefabricated white or yellow layer of specified thickness and width that shall be capable of being affixed to Portland Cement Concrete or non-bleeding bituminous pavements per the manufacturer's requirements, either on the pavement surface or, when specified on the plans, inlaid into a cutout groove. The preformed polymer layer shall be weather resistant and through normal traffic wear shall show no appreciable fading, lifting, loss of skid resistance, or shrinkage or significant tearing, roll back, or other signs of poor adhesion throughout the useful life of the marking.

The polymer layer without adhesive shall be a minimum of 0.065 inch thick. The polymer layer as supplied shall be of good appearance, free of cracks and discolorations, and the edges shall be clean-cut and well-defined. The polymer layer shall have a precoated, factory-applied pressure sensitive adhesive backing. A surface preparation primer shall also be applied if recommended by the manufacturer. Whether the adhesive is precoated or supplied separately, the adhesive shall allow the polymer layer to be repositioned on the pavement surface to which it is applied before permanently fixing it in its final position with a downward pressure.

When an Oreotype contrast pavement marking material is to be used as shown on the plans, the entire length of the pavement marking shall have 2 inch-wide borders on each side across the width of the reflective base pavement marking (white, yellow or other color). These borders shall be non-reflective and black in color. The contrast pavement marking material,

including the borders, shall conform to the requirements for durability, skid resistance, thickness, and adhesion specified in Subsection 705-2.01(C) of the specifications.

When a Lead-lag type contrast pavement marking material is to be used as shown on the plans, Lead-lag pavement markings shall be used only on Portland Cement Concrete pavement surfaces, or as directed by the Engineer.

All white and yellow Type I pavement markings shall be warrantied by the manufacturer to retain color and adherence to the pavement, and to retain a minimum retroreflectance of 100 millicandelas/m²/lux for a minimum of two years for symbols, legends, and transverse pavement markings, and six years for longitudinal pavement markings. The warranty period shall begin after all pavement markings are installed and accepted by the Department. Failure to meet the specified retroreflectance on at least 90 percent of the longitudinal pavement marking in any 1000-foot segment, or 90 percent of a legend, symbol, or transverse pavement marking shall be considered a complete failure of that marking. The warranty shall state that the manufacturer will provide new material to replace defective Type I markings at no additional cost to the Department. The warranty shall also state that the replacement material shall conform to these specifications. The contractor shall submit a copy of the manufacturer's warranty to the Engineer along with the certificate of compliance required in Subsection 705-1(A) of the specifications.

(B) Composition Requirements:

The preformed pavement marking material shall consist of the following components:

Minimum Percent by Weight	
Resins and Plasticizers	20
Reflective Glass Beads*	20*
*Applicable only when glass beads are used to reflectorize Type I markings.	

(C) Physical Requirements:

(1) Color:

The pigments shall be selected and blended to provide a white or yellow marking layer which conforms to standard highway colors, when tested according to ASTM D6628, throughout the expected life of the layer.

(2) Bend Test:

The polymer layer shall be sufficiently flexible so that at a temperature of 78 to 82 degrees F an unmounted piece of material (without adhesive and paper backing), 3 by 6 inches in size, may be bent over a 1 inch mandrel until the end faces are parallel and 1 inch apart without showing any fracture lines in the uppermost surface.

(3) Tensile Strength:

The polymer layer (without adhesive or paper backing) shall have a minimum tensile strength of 40 pounds per square inch when a specimen 6 inches long by 1 inch wide is tested in accordance with the requirements of ASTM D638. The rate of pull of the test shall be 0.25 of an inch per minute. The test shall be conducted at a temperature between 70 and 80 degrees F. The elongation shall be no greater than 75 percent.

(4) Pull Test:

A 6-inch long by 1-inch wide section of the polymer layer (without adhesive and paper backing) shall support a dead load weight of 4 pounds for not less than five minutes at a temperature between 70 and 80 degrees F.

(5) Abrasion Resistance:

The polymer layer shall have a maximum loss in weight of 0.25 grams in 500 revolutions when abraded according to ASTM D4060.

(6) Skid Resistance:

The surface of the material shall provide a minimum resistance value of 45 British Pendulum Number (BPN) when tested according to ASTM E303.

705-2.02 Preformed Pavement Markings - Type II (Temporary - Removable):

Type II preformed pavement markings shall be a nonmetallic mixture of conformable materials and pigments intended for marking applications where removability is required. The marking material shall be white or yellow retroreflective layer conforming to standard highway colors.

The markings shall be precoated with a pressure sensitive adhesive capable of adhering to roadway surfaces under climatic and traffic conditions normally encountered in the construction work zone when applied in accordance with the manufacturer's instructions and without the use of heat, solvents or other additional adhesives. Newly applied markings shall be capable of being immediately exposed to traffic without pickup or distortion by vehicles. The markings shall be weather resistant and through normal traffic wear shall show no appreciable fading, lifting, shrinkage, tearing, and loss of skid resistance, roll back or other signs of poor adhesion throughout the useful life of the marking.

Temporary pavement markings shall be removable from asphalt and concrete pavement intact or in large sections by following the manufacturer's instructions. It shall be removable, either manually or with a rollup device, at pavement temperatures above 40 degrees F without the use of heat, solvents, grinding or sand blasting. Visible adhesive residue remaining after removal of temporary pavement markings shall be easily removable without damaging or scarring the pavement surface and without the use of solvents or grinding.

Pavement marking material without adhesive shall be a minimum of 0.045 inches thick. When supplied, the material shall be of good appearance, free from cracks, and edges shall be true, straight, and unbroken.

705-2.03 Preformed Pavement Markings - Type III (Temporary – Nonremovable):

Type III preformed pavement markings shall be a retroreflective layer on a conformable metallic backing intended for marking applications where removal is not a requirement. The marking material shall be white or yellow conforming to standard highway colors.

The markings shall be precoated with a pressure sensitive adhesive capable of adhering to roadway surfaces under climatic and traffic conditions normally encountered in the construction work zone when applied in accordance with the manufacturer's instructions and without the use of heat, solvents or other additional adhesives. Newly applied markings shall be capable of being immediately exposed to traffic without pickup or distortion by vehicles. The markings shall be weather resistant and through normal traffic wear shall show no appreciable fading, lifting, shrinkage, tearing, loss of skid resistance, roll back or other signs of poor adhesion throughout the useful life of the marking.

705-2.04 Preformed Thermoplastic Pavement Markings - Type IV (Permanent):

(A) General:

Preformed thermoplastic pavement markings shall be a resilient white, yellow, or other color thermoplastic material, composed of an ester-modified resin in conjunction with pigments, binders and glass beads that have been factory-produced as a finished product. The markings shall be resistant to the detrimental effects of motor fuels, lubricants, hydraulic fluids, and antifreeze. Preformed thermoplastic pavement markings shall be weather resistant and, through normal traffic wear, shall show no appreciable fading, lifting, or shrinkage or significant tearing, roll back, loss of skid resistance, or other signs of poor adhesion throughout the useful life of the marking.

The markings shall be capable of conforming to pavement contours, breaks and faults through the action of traffic at normal pavement temperatures. The marking shall have resealing characteristics, such that it is capable of fusing with itself or previously applied, worn thermoplastic pavement markings when heated with a common propane torch. The material shall not be brittle and must be sufficiently cohesive and flexible for one person to carry without danger of fracturing the material prior to application. Surface preparation primer shall also be applied if recommended by the manufacturer.

The material shall be supplied at a minimum thickness of 0.090 inches (90 mils). Symbols, legends, and short lines shall be capable of being affixed to bituminous and Portland cement concrete pavements by the use of the heat of a common propane torch. Any preheating requirements shall also be met by the use of the heat of a common propane torch and as recommended by the manufacturer.

Type IV preformed thermoplastic markings shall be suitable for use for one year after the date of manufacture when stored in accordance with the manufacturer's recommendation. Type IV marking materials supplied to the jobsite shall clearly display the date of manufacture, and shall be applied within one year of this date.

(B) Composition Requirements:

The preformed thermoplastic pavement marking material shall consist of the following components:

Component	Percent by Weight	
	White	Yellow
Binder (Min.)	18	18
Titanium dioxide (Min.)	10	-----
Yellow Lead-Free Pigment (Min.)	-----	1.5
Reflective glass intermix beads	30 – 45	30 – 45

(C) Physical Requirements:

(1) Color:

The pigments shall be selected and blended to provide a white or yellow preformed marking that conforms to standard highway colors, when tested according ASTM D6628, throughout the expected life of the preformed marking.

(2) Bend Test:

The preformed thermoplastic shall have flexibility at 50 degrees F such that when a specimen, measuring 6 inches long by 1 inch wide, is bent through an arc of 90 degrees at a uniform rate in 10 seconds (9 degrees per second) over a 1 inch mandrel, no cracking occurs in the test specimen. The specimen shall be conditioned prior to testing at 50 ± 2 degrees F for a minimum of four hours. At least two specimens tested shall meet the flexibility requirements at 50 degrees F for a passing result.

(3) Tensile Strength:

The preformed thermoplastic material shall have a minimum tensile strength of 150 pounds per square inch when tested in accordance with the requirements of ASTM D638. The rate of pull of the test shall be 10 to 12 inches per minute. The test shall be conducted at a temperature between 70 and 80 degrees F. The elongation shall be no greater than 20 percent.

(4) Bond Test:

The material shall exhibit a bond strength to Portland Cement Concrete pavement equal to or exceeding 180 pounds per square inch when tested at 73 ± 3 degrees F in accordance with the ASTM D4796.

(5) Abrasion Resistance:

The plastic film shall have a maximum loss in weight of 0.25 grams in 500 revolutions when abraded according to ASTM D4060.

(6) Skid Resistance:

The surface of the material shall provide a minimum resistance value of 45 BPN when tested according to ASTM E303.

(7) Impact Resistance:

When tested in accordance with ASTM D256, Method A, a 1 inch by 1 inch by 6 inch sample shall not break when an impact energy of at least 1.0 joule is applied. The test specimen shall be prepared in accordance with ASTM D4960 and shall not be notched.

705-2.05 Retroreflectance:

All white and yellow pavement marking materials shall have the following minimum retroreflectance values when measured by the Department, using an LTL-X Delta Retrometer or similar device, within 30 days after application to the roadway surface:

Table 1	
Long Line Markings	Retroreflectance (millicandelas/m²/lux)
White	500
Yellow	300

Table 2	
Symbols, Legends, Short Lines	Retroreflectance (millicandelas/m²/lux)
White	350
Yellow	200

For sections determined to be deficient in retroreflectivity, the pavement markings shall be removed in a manner approved by the Engineer, and new markings shall be re-applied in accordance with the manufacturer's recommendations. For long lines, the limits of reapplication shall start from the location of a passing test, across the failure area(s), to the next passing test location. The minimum length of reapplication shall be 0.4 miles. For symbols, legends and short lines, the entire defective unit shall be reapplied.

705-2.06 Glass Bead Properties:

(A) General Requirements:

When glass beads are used to achieve retroreflectivity, the beads shall be manufactured from glass of a composition designed to be highly resistant to traffic wear and to the effects of weathering.

(B) Physical Requirements:

(1) Roundness:

The roundness of the glass beads shall be determined in accordance with the requirements of ASTM D1155. A minimum of 75 percent of the beads shall be waterwhite true spheres free from imperfections of all types including air inclusions, film, scratches, clusters, and surface scoring.

(2) Refractive Index:

The glass beads used with the preformed pavement marking material shall have a minimum refractive index of 1.50 when tested by a liquid immersion method (Becke Line Method or equivalent, as specified in ASTM C1648) at a temperature of 25 ± 5 °C.

(3) Gradation:

The gradation of the glass beads shall conform to AASHTO M 247 Type 1 and Type 3.

(4) 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 of the specifications shall be furnished to the Engineer prior to use.

Heavy Metal	Concentration
Arsenic	< 75 ppm
Antimony	< 75 ppm
Lead	< 100 ppm

705-3 Construction Requirements:

The contractor shall install preformed pavement markings at the locations shown on the project plans, as specified in the Special Provisions, or as directed by the Engineer. Preformed marking tape shall be applied manually or with the tape applicators approved by the tape manufacturer. All markings shall be applied in accordance with the manufacturer's recommendations and as specified herein. Preformed pavement markings shall not be applied over other markings or old paint unless specified in the project plans, directed by the Engineer, or allowed by the manufacturer and approved by the Engineer prior to application.

Preformed pavement markings shall be applied to surfaces that are free of moisture and thoroughly cleaned of loose, foreign or other material that may adversely affect bonding. The contractor shall remove all dirt, dust, grease, oil or other detrimental material from the road surface. The method of cleaning the surface is subject to approval by the Engineer and shall include sweeping and the use of high pressure air spray.

When preformed markings are to be applied to new Portland Cement Concrete pavement, any curing compound present shall be removed by means of a high pressure water jet or sandblasting, followed by sweeping and high pressure air spray. The curing compound shall be removed at least 2 inches beyond the entire perimeter of each marking to be installed. In addition, a manufacturer approved primer-sealer shall be applied to both old and new Portland cement concrete pavement prior to application of preformed markings. The primer-sealer shall be applied at the manufacturer's recommended application rates prior to placing the preformed marking. The primer-sealer shall be allowed to set up for the manufacturer's specified cure or evaporation time, and shall be free of solvent and water when the preformed marking is applied.

Preformed pavement markings shall be applied immediately after the surface has been prepared or as soon as possible after placement and completion of new pavement. When Type I, II, or III markings are used, the road surface temperature, at the time of application, shall not be less than 60 degrees F and rising and the pavement surface shall be absolutely dry. For Type III temporary markings, the weather conditions noted above may be waived, at the Engineer's discretion, to obtain a traffic stripe prior to allowing traffic to traverse the roadway. Type II markings shall not be installed within 24 hours of any rainfall. In addition, if the possibility of rain is anticipated, as predicted by the National Weather Service, during the time required by the Engineer for installation of Type II markings, the contractor shall apply primer-sealer prior to application of the marking, regardless of the type or age of pavement surface. Type IV markings shall be applied in accordance with the manufacturer's recommendations for minimum temperature.

Despite the specified or recommended minimum surface temperature and surface condition, the Engineer may, at any time, require that the work cease or that the work day be reduced in the event that weather conditions, either existing or expected, are anticipated to have an adverse effect upon the preformed pavement marking.

The contractor shall use butt splices only and shall not overlap the marking material. All markings shall be thoroughly tamped with approved mechanical tampers.

For preformed thermoplastic pavement markings requiring heat application on asphaltic concrete surfaces, the materials shall be applied using the propane torch method recommended by the manufacturer.

The contractor shall immediately correct all misalignments when so ordered by the Engineer. The misaligned portions shall be removed and reinstalled in accordance with these specifications. All areas marked with preformed pavement markings shall be ready for traffic immediately after application.

Type II or Type III temporary pavement markings shall be maintained and replaced when necessary by the contractor until they are covered with the next overlay course or are removed because they are no longer applicable. The temporary pavement markings shall be removed immediately when no longer needed for traffic control or when the temporary pavement markings will be in conflict with the succeeding traffic pattern. This removal includes the removal of pronounced markings caused by the adhesive across lanes, transitions or tapers. Removable temporary marking material shall not be burned or ground off. Preformed pavement markings shall be removed by methods recommended by the

manufacturer and approved by the Engineer. Residual adhesive, ghosting, shadows or pavement scarring which might cause confusion during darkness or adverse weather conditions shall be removed immediately by the contractor when so ordered by the Engineer.

When Type I permanent pavement markings for final symbols, legends, and short lines are specified, Type I or Type IV pavement markings may be used, at the option of the contractor.

For the contrast pavement markings, the lead (white) reflective pavement markings shall be placed in 10-foot sections followed by 10-foot lag (non-reflective black) pavement markings. Lead-lag pavement markings shall be aligned longitudinally. Maximum gaps between the white and black reflective pavement markings shall not exceed 1 inch. All raised pavement markers should be placed midway between two white skip lines. Lead-lag pavement markings may be used only on the main line for lane line markings.

When the plans require Type I preformed long line or short line pavement markings to be placed in a groove, the contractor shall construct the sawcut groove in accordance with the requirements of the special provisions.

The application of preformed pavement markings shall be in accordance with the recommendations of the manufacturer of the material and these specifications. After application the pavement markings shall be immediately ready for exposure to traffic.

705-4 Method of Measurement:

Measurement of preformed pavement marking long lines and short lines will be made by the linear foot along the centerline of the pavement line and will be based on a 4-inch wide stripe. Measurement for pavement lines with a plan width greater or less than the basic 4 inches will be made by the following method:

$$\frac{\text{Plan Width of Striping (inches)} \times \text{Linear Feet}}{4 \text{ (inches)}}$$

If Oreo type contrast pavement markings are used, the Plan Width of Striping (inches) will be the width of the reflective base pavement marking (white, yellow or other color) plus the 2 inch-wide borders on each side across the width of the reflective base pavement marking. Measurement for Oreo type pavement markings will be based on the combined width of the black and white markings.

Preformed pavement marking symbols, such as diamonds; single, double, or triple arrows; or freeway arrows, will be measured by each unit applied, regardless of configuration. Each pavement symbol, as shown on the plans, will be considered a unit.

Preformed pavement marking legends, defined as a complete letter grouping such as "SCHOOL," "XING," "STOP," "RR," or "ONLY", will be measured by each unit applied. Each pavement legend, as shown on the plans, will be considered a unit.

Preformed pavement route-to-route freeway legends, defined as complete number and directional letter groupings, will be measured by each unit applied. Each complete route-to-route freeway legend, as shown on the plans, will be considered a unit.

Removal of curing compound from new Portland cement concrete pavement and the application of primer-sealer shall each be measured by the linear foot for striping lines regardless of width, or unit each for symbols and legends, and in accordance with the items of work established in the bid schedule.

705-5 Basis of Payment:

The accepted quantities of preformed pavement markings, measured as provided above, will be paid for at the contract unit price for the type specified in the bidding schedule, which price shall be full compensation for the item, complete in place, including necessary pavement cleaning, primer, removal of Type II temporary markings, and maintaining Types II and III temporary markings in construction work zones.

No additional payment will be made for placement of Type I long line and short line pavement markings in sawcut grooves, the costs being considered as included in the contract price for the marking. Measurement and payment for sawcut grooves shall be in accordance with the special provisions.

Payment will be made for Type I and Type IV permanent pavement symbols, legends and short lines at the contract unit price, regardless of whether Type I or Type IV pavement markings are used.

The accepted quantities for removal of curing compound from new Portland cement concrete pavement and the application of primer-sealer, measured as provided above, will be paid for at the respective contract unit prices, under the items of work established in the bid schedule.

When Type II or III temporary preformed pavement markings are required for maintaining traffic through a construction work zone and are approved for use by the Engineer, but are not listed as pay items in the bidding schedule, they will be paid for in accordance with the provisions of Subsection 109.04 of the specifications.

Additional payment will be made for replacement of Type II or Type III temporary preformed pavement markings when the contractor is required by the Engineer to install marking materials on distressed pavements or during adverse weather conditions and subsequent failure occurs. Distressed pavement conditions are defined as alligator cracking, bleeding, or spalling of bituminous pavements and spalling of PCC pavements. Adverse weather conditions are defined as any occurrence where application is required at pavement temperatures less than 60 degrees F or when precipitation occurs within 24 hours before or after application. The Department will pay for the replacement, where failures occur, at the contract unit price for the initial occurrence.

In the event a second failure occurs when markings have been reapplied on distressed pavements or under weather conditions described above, the Engineer shall determine if conditions require primer, alternate methods of marking, or reapplication of preformed markings. Preformed markings will be paid for at the contract unit price. Primers or other

methods of markings deemed necessary by the Engineer to remedy second failures will be paid for in accordance with the provisions of Subsection 109.04 of the specifications.

(708 PTVCT, 07/17/25)

SECTION 708 WATERBORNE PAVEMENT MARKINGS:

708-2.01(D) Quantitative Requirements of Mixed Paints: the viscosity row of the Table 708-1 of the Standard Specifications is revised to read:

Table 708-1		
	White	Yellow
Viscosity: Krebs Units at $77 \pm 1^\circ \text{ F}$, ASTM D562	70 - 95	70 - 95

ITEM 7080301 – PAINT BULL NOSE:

Description:

The work under this item shall consist of furnishing all materials, equipment, and labor necessary to paint the ends of median islands yellow and white in accordance with the project plans, ADOT Standard Drawing M-1 and the requirements of these specifications.

Materials:

The paint shall comply with the requirements of Section 708 of the Standard Specifications.

Construction Requirements:

Paint Bull Nose shall be painted in accordance with Standard Drawing M-1 and at the locations shown in the plans. The work shall consist of preparing the curb, applying water-borne, lead free, rapid drying traffic paint and reflectorized glass beads to the top and face of the curb.

Method of Measurement:

Paint Bull Nose will be measured by the unit for each end of each median island painted in accordance with the plans.

Basis of Payment:

The accepted quantities of Paint Bull Nose, measured as provided above, will be paid for at the contract unit price for each, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.

(709PGMNT, 08/18/22)

SECTION 709 DUAL COMPONENT PAVEMENT MARKINGS:

709-2.02(A) Composition: of the Standard Specifications is revised to read:

The epoxy resin material shall be within the following compositional requirements:

Component	Percent by Weight	
	White	Yellow
White Pigment (Titanium Dioxide)	18 - 25	10 - 17
Organic Yellow Pigment	---	7 - 10
Epoxy Resin	75 - 82	73 - 83

The white pigmented pavement marking material shall be tested in accordance with ASTM D3723 and shall conform to the requirements specified in ASTM D476 (Type II).

709-2.02(K) Color: of the Standard Specifications is revised to read:

The colors of the applied markings shall comply with the requirements specified in ASTM D6628 and shall conform to the following:

- (1) The white color shall match Federal Test Standard Number 595B, color chip no. 37875; and
- (2) The yellow color shall match Federal Test Standard Number 595B, color chip no. 33583.

709-2.02(L) Yellowness Index: of the Standard Specifications is revised to read:

The initial yellowness index value of the white material shall be tested in accordance with ASTM E313. The sample shall be cured for 72 hours at room temperature (75 ± 2 degrees F) prior to testing. The initial yellowness index shall not exceed a value of 8.

The yellowness index value of the white material shall be tested in accordance with ASTM E313 and ASTM G154. The sample shall be cured for 72 hours at room temperature (75 ± 2 degrees F) and then exposed in the QUV chamber for 72 hours and 500 hours respectively. The yellowness index values shall not exceed the values shown in the table below.

Exposure Time (hours)	Yellowness Index
72	15
500	27

(731STRSUP, 03/18/21)

SECTION 731 STRUCTURAL SUPPORTS AND FOUNDATIONS FOR TRAFFIC SIGNAL AND HIGHWAY LIGHTING:

731-1 Description: of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing all materials and constructing new supports and foundations for traffic signal and highway lighting systems or modifying poles and mast arms of existing systems at the locations shown on the plans, and in accordance with the details shown on the plans and the requirements of these specifications.

Pole foundations shall include all conduits, elbows, anchor bolts, grounding wires and reinforcing steel. Cabinet foundations shall include conduits, elbows, anchor bolts and clearance pads.

731-2 Materials: of the Standard Specifications is revised to read:

Excavation and backfill shall conform to the requirements of Section 203-5.03 of the specifications. Concrete shall conform to the requirements of Sections 601 and 1006 of the specifications. Reinforcing steel and wire mesh shall conform to the requirements of Sections 605 and 1003 of the specifications.

Concrete for all foundations shall be Class S and shall have a required 28-day compressive strength of 3,500 pounds per square inch.

731-2.01 BLANK: the title and text of the Standard Specifications is revised to read:

731-2.01 Aluminum Poles and Mast Arms:

(A) General:

Standard aluminum poles assemblies for highway lighting shall include pole shafts, pole bases, and mast arms. Aluminum components of the pole, mast arm, base, and hardware shall conform to the details shown on the plans and in these specifications.

Each aluminum pole and mast arm shall be designed and manufactured as a complete assembly. The assembly shall be furnished and installed as a complete unit that is configured to the necessary dimensions with all the required components including mounting brackets and assembly, ground lugs, rain caps, hand hole covers, anchor bolts, nuts, washers and related hardware and accessories.

The design of the pole assembly (pole, mast arm, and luminaire attachment portion) shall be per the requirements of the 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th edition with 2015 interim revisions. The design of the poles, mast arms and luminaire mounting brackets shall be based on a wind speed of 90 miles per hour with a luminaire having an effective projected area of 1.5 square feet and a weight of 55 pounds.

The design shall also be based upon the worst case loading, derived by combining the loads caused by a 20 foot truss mast arm, except for S and T poles, design luminaire, design wind speed and other dead loads, as appropriate. Secondary deflections shall be accounted for in all designs.

Aluminum poles shall have a minimum design life of 50 years.

The pole and mast arm shall be supplied from the same manufacturer and of similar metal properties providing a uniform appearance.

(B) Pole and Mast Arm Assembly Design Parameters:

(1) Pole Shafts:

The tapered pole shaft shall be fabricated from a one-piece, seamless, round tapered tube of Aluminum Alloy 6063-T6, conforming to the requirements of ASTM B221, and shall be full-length heat treated after tapering and welding on the base and hand hole reinforcing to produce a T6 temper. The pole shafts shall either maintain a uniform taper rate from the base of the pole to the pole top or shall be non-tapered. The base plate shall be constructed to match the foundation bolt pattern for standard poles shown in the Standard Drawings for Aluminum Light Poles. No field splices of pole shafts shall be allowed. The pole shaft shall have an internal vibration damper.

The pole shaft shall be smooth with a uniform brushed sheen finish that is free from all dents, scratches, and shipping/handling marks. Poles that have a finish that is not uniform or that fails to meet the requirements of this specification will be rejected by the Engineer and shall be repaired or replaced to the satisfaction of the Engineer at no expense to the Department in accordance with Subsection 105 of the specifications.

All aluminum poles shall have a hand hole in the base of the poles and shall conform to the details shown on the Standard Drawings, with the exception that the hand hole shall use aluminum components and stainless steel screws.

An aluminum tag shall be permanently attached to the pole above the hand hole. The tag shall state the manufacturer's name, pole type, ADOT standard drawing number, pole length, and gage number.

(2) Truss Mast Arms:

The aluminum truss mast arms shall be fabricated by the same manufacturer as the aluminum pole manufacturer and from Aluminum Alloy 6063-T6 conforming to the requirements of ASTM B221.

The aluminum truss mast arms shall be smooth with a uniform brushed sheen finish that is free from all dents, scratches, and shipping/handling marks. Aluminum truss mast arms that have a finish that is not uniform or that fails to meet the requirements of this specification will be rejected by the Engineer and shall be repaired or replaced by the contractor to the satisfaction of the Engineer at no expense to the Department in accordance with Subsection 105 of the specifications.

(3) Welding:

Welding of all components of aluminum light poles shall conform to the American Welding Society (AWS) D1.2 Specifications for Class I Structures. All aluminum components and welding shall be identified and included in the Certificate of Analysis, which shall state compliance to AWS Specifications.

(4) Break-away Transformer Bases:

Break-away bases for light poles and flasher poles shall be a frangible pole mounting pedestal (base). Break-away bases shall be used on Type A, G, H, I, S, and T poles when indicated on the plans or specifications. Break-away bases shall be fabricated from 356 T6 aluminum alloys and shall have a stainless steel wheel abraded finish. The break-away bases shall have all the necessary hardware to make a complete and functional unit.

Bolts, nuts, and washers connecting the pole to the break-away base shall be fabricated from steel conforming to the requirements of ASTM F3125 Grade A325. Bolts shall be galvanized in accordance with the requirements of ASTM F2329. The 2-3/4 inch x 1/2-inch thick washers shall be zinc mechanically coated per ASTM B695-85 Class 50 or shall be galvanized per the requirements of ASTM F2329.

Welding of all components of aluminum break-away bases shall conform to the AWS D1.2 Specifications

Break-away bases shall be certified by the manufacturer to meet or exceed the change in momentum requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, and to be acceptable for use on Federal Aid projects. The manufacturer shall also certify that the break-away base has been tested and approved by the Federal Highway Administration (FHWA) and that the casting has the same chemistry, mechanical properties, and geometry as the casting used in the tests.

(5) Anchor Bolts, Nuts, and Washers:

All anchor bolts shall be fabricated from steel conforming to the requirements of ASTM F1554 Grade 55, shall be fully galvanized in accordance with the requirements of ASTM F2329, and shall conform to the requirements shown on the Standard Drawings. All anchor bolts shall be submitted for approval and a certificate of analysis shall be provided from the manufacturer that is in accordance with the requirements of Subsection 106.05 of the specifications.

(C) Submittals:

The contractor shall submit a Certificate of Analysis for all aluminum components in accordance with the requirements of Section 106.05 of the specifications. The contractor shall also submit shop drawings that have been sealed and signed by a registered professional engineer that show all the details of the poles assembly units to be furnished and installed. The shop drawings shall be complete in every aspect, including all dimensions, material specifications and appropriate details. The details shall include the configuration of the pole shaft, mast arm and mast arm mounting bracket, base plates, luminaire mounting bracket and the hand hole. All welds shall be shown and identified with standard AWS symbols. The

submittal shall include structural calculations along with the name of the engineer(s) who sealed the drawings and performed the calculations.

The contractor shall submit the supporting documents for review by the Engineer. The principal purpose of the review is to verify that suitable structural calculations have been made in the design of the pole and mast arm assembly. The contractor's engineer shall utilize accepted standard engineering principles. If a computer program is utilized, the contractor shall furnish the Engineer with all necessary information, such as formulas and assumptions, to conduct a meaningful review.

The Engineer shall provide written review comments to the contractor. The contractor shall respond to these comments and resubmit the calculations, if required. Fabrication shall not take place until the shop drawings have been approved.

If the contractor utilizes a pre-approved design from ADOT's Approved Product List (APL), submittal of the structural calculations is not required. Shop drawings for APL designs shall be submitted. Drawing numbers for the pre-approved designs found in the APL are available at <https://azdot.gov/business/engineering-and-construction/product-evaluation-program>.

731-2.02 **Standard Steel Poles:** the title and text of the Standard Specifications is revised to read:

731-2.02 **Steel Poles and Mast Arms:**

(A) General:

Standard steel poles assemblies for traffic signals and highway lighting shall include pole shafts, mast arms, and pole bases. Steel components of the pole, mast arm, base, and hardware shall conform to the details shown on the plans and in these specifications.

Each steel pole and mast arm shall be designed and manufactured as a complete assembly. The assembly shall be furnished and installed as a complete unit that is configured to the necessary dimensions with all the required components including mounting brackets and assembly, ground lugs, rain caps, hand hole covers, anchor bolts, nuts, washers and related hardware and accessories.

The design of the traffic signal and lighting supports shall be per the requirements of the 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th edition, with the 2015 interim revisions.

All pole lighting supports and mast arms shall be designed to withstand 90 miles per hour wind, and a 3-second Gust. Fatigue analysis is to be per Fatigue Category 2, without galloping. Truck Induced velocity shall be 55 mph wind speed.

Metal parts of standard steel poles and hardware shall conform to the details shown on the plans and the following specifications. Welding shall conform to the requirements of the American Welding Society, Structural Welding Code - Steel, D1.1, latest edition.

(B) Pole and Mast Arm Assembly Design Parameters:

(1) Poles Shafts:

Tapered pole shafts shall be fabricated from sheet steel of weldable grade which shall meet a minimum yield stress, after fabrication, of 50,000 pounds per square inch. A taper rate of approximately 0.14 inches in diameter per linear foot shall be required unless otherwise specified.

Standard pipe pole shafts shall be fabricated from standard weight structural steel which conforms to the minimum strength requirements of ASTM A53, or A500 Grade B. Each section shall be fabricated from not more than two pieces of sheet steel. When two pieces are used, the longitudinal welded seams shall be directly opposite one another. When the sections are butt-welded, seams shall be directly opposite one another. When the sections are butt-welded together, the longitudinal welded seams on adjacent sections shall be placed to form continuous straight seams from base to top of pole. Pole shafts shall be straight, with a permissive variation not to exceed one inch measured at the midpoint.

Pole shafts shall be galvanized in accordance with the requirements of ASTM A123. The visual appearance of the galvanized finish shall be uniform. Discoloration of the galvanized finish such as dark areas, dark streaks, dark rings or transportation handling marks which are considered excessive by the Engineer shall not be allowed. Pole shafts that have a finish unacceptable to the Engineer shall either be repaired or replaced to the satisfaction of the Engineer at no additional cost to the Department.

All steel poles shall have a hand hole in the base of the poles and shall conform to the details shown on the Standard Drawings. All welds shall be continuous and any exposed welds, except fillet welds, shall be ground flush with the base metal.

A metal tag shall be permanently attached to the pole above the hand hole stating the manufacturer's name, pole type per the Department's plans, pole drawing number, shaft length and gage number.

(2) Mast Arms:

Tapered mast arms for all pole types shall be fabricated from sheet steel with a minimum yield stress of 50,000 pounds per square inch after fabrication. Mast arms shall be fabricated according to the thickness requirements shown on the plans.

A taper rate of approximately 0.14 inches change in diameter per linear foot shall be required unless otherwise specified. All bolts, washers, and nuts for mast arms shall be high strength, shall be fabricated from steel which meets the requirements of ASTM F3125 GR A325, and shall be electro-galvanized in accordance with the requirements of ASTM F2329.

Mast arms shall be galvanized in accordance with the requirements of ASTM A123. The visual appearance of the galvanized finish shall be uniform. Discoloration of the galvanized finish such as dark areas, dark streaks, dark rings or transportation handling marks which are considered excessive by the Engineer shall not be allowed. Mast arms that have a finish

unacceptable to the Engineer shall either be repaired or replaced to the satisfaction of the Engineer at no additional cost to the Department.

A metal tag shall be permanently attached on the side of the mast arm near the base stating the manufacturer's name, pole type and name as shown on the plans, mast arm or pole drawing number, length, and gage number.

(3) Steel Pole Extensions and Twin Luminaire Brackets:

Pole extensions and twin luminaire brackets shall be fabricated from new pipe conforming to the requirements of ASTM A53 or A500 Grade B. All welding shall conform to the requirements of the American Welding Society, Structural Welding Code - Steel, D1.1, latest edition. Pole extensions and twin luminaire brackets shall be fully galvanized in accordance with the requirements of ASTM A123. Fabrication of the pole extensions and twin luminaire brackets shall be in accordance with the dimensions as specified in the plans.

(4) Standard Bases:

Poles shall have standard bases fabricated from structural steel plates conforming to the minimum strength requirements of ASTM A36. Exposed surfaces shall be finished smooth and all exposed edges shall be neatly rounded to a 1/8-inch radius. Standard bases shall be galvanized in accordance with the requirements of ASTM A123.

(5) Anchor Bolts, Nuts and Washers:

Standard anchor bolts, washers, and nuts shall be fabricated from steel conforming to the requirements of ASTM F1554 Grade 55. Anchor bolts, washers, and nuts shall be fully galvanized in accordance with the requirements of ASTM F2329. Anchor bolts shall conform to the requirements shown on Standard Drawings.

Welding shall not be performed on any portion of the body of these bolts. Certificates of Analysis conforming to the requirements of Subsection 106.05 of the specifications shall be submitted for high strength bolts, washers and nuts.

(C) Submittals:

The contractor shall submit a Certificate of Analysis for all steel components and welding in accordance with the requirements of Section 106.05 of the specifications. The contractor shall also submit shop drawings that have been sealed and signed by a registered professional engineer that show all the details of the poles assembly units to be furnished and installed. The shop drawings shall be complete in every aspect, including all dimensions, material specifications and appropriate details. The details shall include the configuration of the pole shaft, mast arm and mast arm mounting bracket, base plates, luminaire mounting bracket and the hand hole. All welds shall be shown and identified with standard AWS symbols. The submittal shall include structural calculations along with the name of the engineer(s) who sealed the drawings and performed the calculations.

The contractor shall submit the supporting documents for review by the Engineer. The principal purpose of the review is to verify that suitable structural calculations have been made

in the design of the pole and mast arm assembly. The contractor's engineer shall utilize accepted standard engineering principles. If a computer program is utilized, the contractor shall furnish the Engineer with all necessary information, such as formulas and assumptions, to conduct a meaningful review.

The Engineer shall provide written review comments to the contractor. The contractor shall respond to these comments and resubmit the calculations, if required. Fabrication shall not take place until the shop drawings have been approved.

If the contractor utilizes a pre-approved design from ADOT's Approved Product List (APL), submittal of the structural calculations is not required. Shop drawings for APL designs shall be submitted. Drawing numbers for the pre-approved designs found in the APL are available at <https://azdot.gov/business/engineering-and-construction/product-evaluation-program>.

731-2.04 Mast Arms and Tie Rods: of the Standard Specifications is hereby deleted:

731-3.02 Foundations: the sixth paragraph of the Standard Specifications is revised to read:

Signal and lighting pole foundations shall be set flush with the existing or new curb and sidewalk or flush with the finished grade where there is no curb or sidewalk, except in sloped areas they shall be as shown on the plans. The dimensions and locations of foundations shall be as specified on the plans; however, the Engineer may direct that changes be made in locations due to obstructions or other existing conditions. The contractor shall verify top of foundation elevations with the Engineer prior to foundation construction.

731-3.02 Foundations: the tenth paragraph of the Standard Specifications is revised to read:

Anchor bolts and conduit stubs shall be placed and held in proper alignment, position, and height during the placing and vibrating of concrete. All pole foundations shall set for seven days prior to pole installation.

731-3.02 Foundations: of the Standard Specifications is modified to add:

The stations and offsets for traffic signal poles shown on the plans and in the pole/equipment schedule are approximate. The final location of each pole shall be staked in the field by the contractor and approved by the Engineer, to ensure that the edge of pole foundation is immediately adjacent (1-inch maximum) to the back of sidewalk, back of wheelchair ramp, or integrated into the sidewalk ramp design. The intent of these criteria is to ensure that the pedestrian push button assemblies are accessible to wheelchair-bound pedestrians.

ITEM 7310197 - BREAKAWAY BASE FOR LIGHTING POLE OR SIGNAL FLASHER:

Description:

The work under this item shall consist of installing breakaway bases in accordance with the Plans, the ADOT Traffic Signals and Lighting Standard Drawings, and the requirements of Section 731 of the specifications.

Materials:

The breakaway base shall be constructed in accordance with the general requirements of Standard Drawing Nos. T.S 5 series, unless otherwise specified.

Construction Requirements:

Construction shall conform to Subsection 731-3 of the specifications.

Method of Measurement:

Breakaway Base for Lighting Pole or Signal Flasher will be measured as a unit of each for each base furnished and installed.

Basis of Payment:

Breakaway Base for Lighting Pole or Signal Flasher, measured as provided above, will be paid for at the contract unit price for each unit, complete in place, which price shall be full compensation for the work described and specified herein and on the project plans, including furnishing the base, all equipment, labor, materials, tools and incidentals required to provide a complete functional breakaway base.

SECTION 803 — LANDSCAPE PLATING MATERIALS:

803-1 Description: of the Standard Specifications is revised to read:

The work under this section shall consist of furnishing, placing, and compacting imported materials for plating embankment slopes, dikes, unpaved disturbed construction ground/soil surfaces, filling existing erosion rills and gullies, as well as other designated areas. The work shall include all excavation and backfilling, grading surfaces upon which imported materials will be placed on, eradicating existing undesirable vegetation with application(s) of mechanical/manual methods; furnishing and applying approved herbicide mixed in water for the decomposed granite / granite mulch areas; ensuring proper drainage and maintaining the areas free of weeds, trashes and debris during construction in accordance with project plans, as well as these specifications.

803-2.02 Decomposed Granite and Granite Mulch: of the Standard Specifications is modified to add:

The contractor shall not impair air and stormwater quality through selecting and installing rock materials to maximum extent practicable (MEP). Sedimentary rocks and/or rock materials that will naturally generate excessive fine particles beyond the specified amount as shown in the gradation requirements below shall not be allowed.

Decomposed granite/granite mulch shall be placed at the designated locations shown on the project plans and/or in these Special Provisions. Decomposed granite/granite mulch shall be approved for color and gradation requirements before final placement/installation on site in accordance with the project plans and/or these Special Provisions. Unless otherwise directed by the Construction Professional Landscape Architect (PLA) through the Engineer, the color to be used on the project shall be 'Gold' or similar decomposed granite/granite mulch color as approved by a Construction PLA in coordination with IDO Roadside Development Section prior to any processing or placement/installation.

The contractor shall provide a 0.25-ton material sample spread over an area minimum two inches thick for review. Criteria to be used for approval for project granite color(s) will be based on the following: similarity to the existing granite mulch color for this highway section and the material's appearance after being wet and then dried.

Gradation requirements for the 1-1/4-inch (1.25") granite mulch are as follows:

Passing Sieve	Percent
1¼ inch	100
¾ inch	60—80
½ inch	45—65
No. 40	5—20

803-3 Construction Requirements: of the Standard Specifications is modified to add:

The contractor shall receive approval from a Construction PLA through the Engineer for decomposed granite/granite mulch color before final installation.

Decomposed granite/granite mulch to be used on the project must meet the following additional requirements, in addition to providing documentation from the contractor to the Engineer:

- Copy of Environmental Permit for granite pit.
- Written acknowledgement from the granite supplier that the material can be provided with the quantity of granite mulch needed for the project.
- Written acknowledgement that granite supplier material will be provided within the contract construction time frame.

Unless otherwise directed/approved by the Engineer, granite mulch to be placed shall be spread and leveled away from any traffic recovery areas / clear zones.

The labeling of granite mulch shall first list on line one the name of the product, and on the second line shall appear the name of supplier. Text for labeling shall be waterproof, clearly legible, printed, and 1-inch capitalized text.

All granite mulch samples provided shall be clean and washed, leveled covering an approximate spread area of 5 feet X 5 feet, and signed identifying the product and source.

Remove all non-planted vegetation from all areas designated to receive granite mulch (by chemical or mechanical means) and maintain the designated areas "vegetation free" prior to placement of the granite mulch, or as specified by the Engineer.

Prior to placement of the granite mulch, designated areas to receive granite mulch shall be made completely free of all grass, weeds, or other miscellaneous vegetation growth and have an approved herbicide applied. The herbicide shall be followed by an application of water for activation.

When using herbicides, the contractor shall comply with all applicable portions of Subsection 803-3.02 of the Standard Specifications. All dead vegetation, including herbaceous plants, shall be removed, and properly disposed of. The contractor shall be responsible for all erosion repairs on the project site that may occur during granite mulch color review and approval process at no additional expense to the Department.

803-3.02 Decomposed Granite and Granite Mulch: of the Standard Specifications is modified to add:

Decomposed granite/granite mulch shall be placed to a minimum depth of two inches. After rough spreading and rough grading of the granite mulch within the designated areas, the granite mulch shall be raked evenly and thoroughly to blend the different gradation sizes.

The use of conveyor belt type equipment for placing granite mulch shall not relieve the contractor from the requirements of compacting the granite mulch.

After placement, the granite mulch shall be saturated with water to an optimum moisture level as recommended by the supplier. The Engineer will approve the amount of water necessary to aid in the compaction of the granite mulch prior to application.

The pre-emergent herbicide shall be utilized in the manner recommended by the manufacturer to prevent germination of weeds/undesirable plant species and shall be Gallery, Pendulum AquaCap, Surflan, Dimension or an approved equal, and shall be applied at a rate based on product information/data for best control effects. Pre-emergent herbicide shall also be employed in the designated decomposed granite and granite mulch area, prior to the final water settling operation. Selection of pre-emergent herbicide products shall be based on the type of weeds or undesirable plant species to be treated as evaluated/approved by a Construction PLA through the Engineer. The first application of pre-emergent herbicide and each subsequent application shall be from different products to optimize the lasting result of designated decomposed granite and granite mulch area.

After placing, spreading, and grading the granite mulch, the contractor shall water settle the total thickness of the granite mulch to remove the fine material from the surface. The water settling operation, noted above, shall be completed by applying water at minimum depth of ½-inch over the granite mulch placed or as approved by the Engineer.

803-4 Method of Measurement: the first paragraph of the Standard Specifications is revised to read:

Decomposed granite and granite mulch will be measured and by the square yard (Yd²) of material in place at the specified thickness. The quantity shown in the Bid Schedule will be used for payment of Item 8030092 — Granite Mulch (1-1/4 Inch Minus), unless both the contractor and the Engineer mutually agree that a variation in excess of 10 percent of this quantity exists. If a variation exists, the Engineer will determine the variation based on the project plans and evidence provided by the contractor. Acceptable form of evidence can be construction survey – such as making field measurements for verification as approved by the Engineer.

803-5 Basis of Payment: of the Standard Specifications is modified to add:

There shall be no separate measurement or direct payment for required or requested samples, grading, compaction, or pre-emergent herbicide. The cost of this work is included in the cost of the contract items.

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, Nonpoint Source (NPS) pollution control plan, Stormwater Quality Protection Plan (SQPP), Stormwater Runoff Pollution Control Plan, Decentralized Stormwater Management Plan, Stormwater Runoff Mitigation Plan, Stormwater Management Plan (SWMP), Biotechnical Erosion Control Plan, Post-Construction Stormwater Management Plan (PCSMP), Integrated Vegetation Management Plan (IVMP), Functional Landscape Ecological Restoration Plan, Assisted Migration Plan (AMP), or designated by the Engineer. All construction support activities disturbed unpaved temporary construction access, unpaved on-site staging, unpaved on-site material storage, and unpaved on-site stockpiling areas shall ultimately be seeded unless otherwise stabilized by equivalent permanent stabilization measures. If not seeded, the equivalent permanent stabilization measures shall be evaluated by a Construction Professional Landscape Architect (PLA) and approved by the Engineer. Unless otherwise prohibited by environmental permit, 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 channel(s). The seeding area below the OHWM shall also exclude area directly under bridge(s).

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 construction shall be completed before Substantial Completion. The 45-calendar-day seeding maintenance period, including any re-seeding work if required after Initial Seeding Construction Acceptance, shall be completed before project Final Acceptance.

Seeding used as part of a SWPPP shall be completed before Substantial Completion, or sooner as required in the SWPPP. The 45-calendar-day seeding maintenance period, including any re-seeding work if required after Initial Seeding Construction Acceptance, shall be completed before project Final Acceptance.

No time extension will be granted for seeding not completed as specified herein.

Seeding areas below the OHWM shall be exempted from the 45-calendar-day maintenance period requirement.

An on-site pre-activity seeding construction meeting shall be coordinated by a Construction PLA. The necessity of half-acre (0.5 acre) sample demonstrative area of Class II Seeding shall be verified for the seeded areas greater than five (> 5) acres excluding shoulder build-up areas (edge of pavement build-up areas). The contractor shall guarantee in writing to furnish all suitable equipment for soil tillage, seeding, and mulching during pre-activity seeding construction meeting as evaluated by a Construction PLA, as well as approved by the Engineer.

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 tests 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/or collectors, on their letterhead, that the source(s) for the contract-specified seed has been secured. A minimum of three (3) separate confirmation letters from seed suppliers, providers and/or collectors shall be presented through the Engineer for a Construction PLA's evaluation within context from reliable sources. 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, weed content, and testing information. Unless otherwise approved by Roadside Development Section through the Engineer, the date of analysis for Tetrazolium Test (TZ) shall not be more than 15 months prior to the delivery date from a seed provider/supplier. 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 Roadside Development through the Engineer, weed content of the contract-specified seed mix shall not exceed 0.5 percent ($\leq 0.5\%$).

In addition to Federal Seed Act Regulations, unless otherwise approved by Roadside Development through the Engineer, the contamination of seed lots from the following noxious / invasive plant species shall not be permitted.

NOXIOUS / INVASIVE WEEDS WATCH LIST FOR THE CONTAMINATED SEED LOTS	
SCIENTIFIC NAME	COMMON NAME
Amaranthus retroflexus	Redroot Amaranth / Redroot Pigweed / Red-Rooted Pigweed / Rough Pigweed
Bassia scoparia (syn. Kochia scoparia)	Kochia / Fireweed
Bothriochloa bladhii (syn. Andropogon bladhii / Andropogon caucasicus / Andropogon intermedius / Bothriochloa caucasica / Bothriochloa intermedia)	Caucasian Bluestem
Bothriochloa ischaemum	Yellow Bluestem
Brassica tournefortii	Sahara Mustard / Mediterranean Mustard / Mediterranean Turnip / Prickly Turnip
Bromus tectorum	Cheatgrass / Downy Brome / Broncograss / Downy Chess / Soft Chess / Drooping Brome
Cynodon dactylon (syn. Capriola dactylon)	Bermudagrass / Devilgrass
Centaurea melitensis	Malta Star-thistle / Napa Star Thistle / Tocalote
Cenchrus spinifex (syn. Cenchrus incertus / Cenchrus pauciflorus / Cenchrus parviceps)	Field Sandbur / Coastal Sandbur / Common Sandbur
Chorispora tenella	Crossflower / Purple Mustard / Blue Mustard / Musk Mustard / Beanpodded Mustard / Tenella Mustard
Cuscuta spp.	Dodder / Angel Hair / Devil's Hair / Devil's Ringlet / Goldthread / Hairweed / Lady's Laces / Strangleweed / Witch's Hair / Amarbel
Eragrostis lehmanniana	Lehmann Lovegrass
Euphorbia esula	Leafy Spurge / Green Spurge / Wolf's Milk
Euphorbia prostrata (syn. Chamaesyce prostrata / Euphorbia chamaesyce)	Prostrate Spurge / Prostrate Sandmat / Ground Spurge / Blue Weed
Onopordum acanthium	Scotch Thistle / Cotton Thistle
Pennisetum ciliare (syn. Cenchrus ciliaris)	Buffelgrass / African Foxtail Grass
Physalis spp.	Ground Cherry / Jerusalem Cherry / Strawberry Tomato
Salsola kali subsp. tragus (syn. Salsola iberica)	Russian Thistle / Tumbleweed
Setaria faberi	Japanese Bristlegrass / Giant Foxtail

NOXIOUS / INVASIVE WEEDS WATCH LIST FOR THE CONTAMINATED SEED LOTS	
SCIENTIFIC NAME	COMMON NAME
Setaria pumila (syn. Chaetochloa glauca / Chaetochloa lutescens / Panicum glaucum / Setaria glauca)	Yellow Foxtail / Pigeon Grass / Yellow Bristlegrass
Setaria viridis	Green Bristlegrass / Pigeon Grass / Wild Millet / Green Foxtail
Solanum physalifolium (syn. Solanum physalifolium / Solanum sarachoides / Solanum villosum)	Hoe Nightshade / Argentine Nightshade / Green Nightshade / Hairy Nightshade

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.

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

TABLE 1			
DIVERSIFIED SEED MIX—for All Unpaved Disturbed Areas, Unvegetated Areas, Receiving Pervious Areas (RPA), Decentralized Stormwater Management Areas, and/or Designated Areas			
Botanical Name	Common Name	PLS Rate (Pounds Per Acre)	Per Pound Value for Substitution (see text)
Astragalus canadensis	Canadian Milkvetch	0.25	\$80
Asclepias tuberosa	Butterfly Milkweed	1	\$300
Bothriochloa barbinodis	Cane Beardgrass	1	\$45
Bouteloua curtipendula cv. Vaughn *	Sideoats Grama	2	\$15
Bouteloua gracilis cv. Hachita	Blue Grama	1	\$15
Coreopsis tinctoria	Plains Coreopsis	1.5	\$20
Dalea purpurea	Violet Prairie Clover	3	\$50
Distichlis stricta (syn. Distichlis spicata)	Desert Saltgrass	0.5	\$70
Encelia farinosa	Inciense Brittlebush	2	\$35
Ericameria laricifolia	Turpentine Bush	0.2	\$50
Ephedra nevadensis	Nevada Mormon Tea	0.5	\$30
Gaillardia aristata	Blanket Flower	3	\$35
Gaillardia pulchella	Firewheel	1	\$35
Hilaria jamesii	Galleta Grass	2	\$40
Kallstroemia grandiflora	Arizona Poppy	3	\$90
Krascheninnikovia lanata	Winterfat	0.2	\$40
Koeleria macrantha	Prairie Junegrass	0.5	\$30
Lupinus bicolor	Miniature Lupine	5	\$65
Linum lewisii	Blue Flax	2	\$10
Lupinus succulentus	Arroyo Lupine	3	\$30
Oryzopsis hymenoides	Indian Ricegrass	2	\$10
Phacelia crenulata	Notch-leaf Phacelia	1	\$40
Penstemon eatonii	Firecracker Penstemon	0.5	\$120
Poa fendleriana	Muttongrass	0.5	\$70
Pascopyrum smithii	Western Wheatgrass	2	\$17
Penstemon palmeri	Palmer Penstemon	2	\$80

Sporobolus airoides	Alkali Sacaton	0.3	\$30
Senna covesii	Coues' Cassia	3	\$50
Sporobolus cryptandrus	Sand Dropseed	0.1	\$10
Sitanion hystrix (syn. Elymus elymoides)	Squirrel-tail Grass	2	\$45
Zinnia acerosa	Dwarf White Zinnia	1	\$150
Estimated Per Acre Subtotal Value for Seeds Only			\$ 2,417.00

* Niner may be furnished if Vaughn is determined by 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 a 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. No payment will be made for areas seeded until the entire approved seed mix (including all authorized seed substitutions/adjustments) is executed.

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 Weed Free Straw Mulch:

(A) General:

Straw mulch including barley straw 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. Additionally, a bill of sale for straw material shall be presented for a Construction PLA's evaluation within context from reliable sources through the Engineer.

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) Weed Free Straw Mulch for Hydraulic Application:

Hydraulically applied straw mulch shall be wheat, barley, 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 (70%) of the wheat, barley, or rice straw in the mix shall be not less than 1/2 inch $\pm$ 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 (20%) 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 (15%) nor more than 30 percent (30%) of the hydraulically applied straw mulch. The date of installation of hydraulically applied straw mulch cover shall be less than twelve (12) months from the date of production. The date of production of hydraulically applied straw mulch material shall be presented for a Construction PLA's verification through the Engineer. All hydraulically applied straw mulch material shall also meet the requirements of Subsection 805-2.05 (A) stated above.

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 (80%) of the nitrogen defined as slow release, and contain five percent (5%) Iron, ten percent (10%) 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 (80%) and 96 percent (96%) sulfur, shall be applied at the rate specified in Section 3.02. Chemical fertilizer and sulfur shall not be applied to 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. All non-potable water shall be tested for its suitability for seeding/planting with the water quality-related concerns of salinity, pathogens and contaminants. The water quality testing result shall be presented for a Construction PLA's evaluation through the Engineer. An Arizona Guide to Water Quality and Uses (web link: <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1610.pdf>) Figure 8, Water Quality and Uses Triangle shall be considered as reference for testing result evaluation and approval.

Water Quality Standards for seeding on construction projects that reach or exceed one-contiguous-acre (≥ 1 contiguous acre) permit threshold soil/ground disturbance defined under current Arizona Pollutant Discharge Elimination System (AZPDES) Construction General Permit (CGP) and/or National Pollutant Discharge Elimination System (NPDES) CGP:

- (A) On Arizona Non-Native Americans Land (Non-Tribal), water quality for seeding construction within 0.25-mile buffer zones of Impaired and/or Outstanding Arizona Waters (OAWs) shall meet the standards of current AZPDES CGP, as well as requirements of these Special Provisions.

The web link of ADEQ's eMaps within the State of Arizona:

<https://www.azdeq.gov/emaps>

- (B) Water quality for seeding construction within Arizona Native Americans Land (Tribal) shall meet the standards of EPA-established or approved Total Maximum Daily Loads (TMDLs) under current NPDES CGP, as well as requirements of these Special Provisions.

The web link of EPA-established or approved TMDLs within the State of Arizona:

<https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools>

The source of water shall be approved by a Construction PLA through 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)	5.0 – 8.5
Organic Matter Content	Greater than 30%
Total Nitrogen (not added)	Greater than 1%
Micronutrients (added)	S, Ca, Mg, Na, Fe, Al, Mn, Cu, Zn, B
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 <u>not</u> 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 evaluated by a Construction PLA, as well as approved by the Engineer.

The volume of bulk compost shall be measured and documented for a Construction PLA's verification and approval through 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 5 cubic yards (or 135 cubic feet) 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 5 cubic yards (or 135 cubic feet) per acre as per the approval of the Engineer. Hydraulically applied compost may also be combined with seed, soil amendments and fertilizer in the same slurry prior to the final mulch cover with the approval of the Engineer.

The volume of hydraulically applied compost shall be measured and documented for a Construction PLA's verification and approval through the Engineer.

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

TABLE 4	
Cation Exchange Capacity (CEC)	Greater than 40 meq/100 g *
Carbon : Nitrogen Ratio (C : N)	Less than 20 : 1
pH (of extract)	5.0 – 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 <u>not</u> acceptable.
Moisture Content by Weight	From 15% through 25%
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 to the seeding area below the OHWM. The choice between bulk compost and hydraulically applied compost shall be evaluated, as well as coordinated by a Construction 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:

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 stated above, the Engineer and contractor in coordination with Construction PLA shall determine a half-acre (0.5 acre) sample demonstrative 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 demonstrative

area, as determined during on-site pre-activity seeding construction meeting. Both straw mulches shall be representative of the materials proposed for use on the project. If the seeding and mulching procedures, as well as outcomes are acceptable by a Construction PLA, the contractor shall begin seeding operations as specified herein. Photographic Documentation of half-acre (0.5 acre) sample demonstrative seeded/mulched area shall be recorded and submitted to a Construction PLA, as comparative standard representation (mandatory visual reference) for Seeding Acceptance under Subsection 3.07 stated below.

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.

It is the contractor's responsibility to furnish all suitable equipment for soil tillage, seeding, and mulching at no additional cost to the Department.

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 (soil-water and soil-temperature regimes) for tillage and placement of materials. Seeding operations shall not be performed below 35 degrees Fahrenheit (°F). 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. If wind exceeds ten (10) miles per hour, the seeding operation shall be evaluated by a Construction PLA and approved by the Engineer. If approved, the contractor shall perform seeding operation close to the ground surface with a hydro-seeding hose and hand-held hose-end sprayer nozzle or other equivalently effective seeding methods to guarantee all seeding materials are applied on the target area without being blown away by wind. The contractor is responsible for protecting ambient air and water quality during seeding operation.

The contractor shall not expose an area greater than 750,000 square feet (≤ 17.22 acre) 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. It is the contractor's responsibility to furnish all suitable equipment for soil tillage at no additional cost to the Department.

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 in accordance with assessment/measurement from a Construction PLA, as well as acceptance by the Engineer.

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 to reduce stormwater runoff velocity and volume. All seeding areas suitable for tillage shall be pre-tilled to promote on-site stormwater infiltration and alleviate stormwater surface runoffs, as a part of stormwater peak flow and Volume Reduction Approaches (VRAs). All seeding areas suitable for tillage shall be adequately pre-tilled to minimize pollutant loads anticipated in nonpoint source stormwater runoffs. All project areas 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 so as to detain rainwater/moisture close to its source. On fill slopes, the operations shall be conducted in such a manner as to form minor ridges thereon to assist in retarding runoff associated erosion/pollution and favor germination of the seed through detaining rainwater/moisture close to its source.

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.

Track-walking or imprinting of rocky new fill slopes through mechanical methods in lieu of tillage may be allowable if accepted by a Construction PLA, through the Engineer. All final impression marks generated by track-walking or imprinting shall be horizontal and parallel to the contours of slope areas involved in order to create a roughened surface condition and reduce stormwater runoff velocity, enhance erosion/sediment control, as well as energy/velocity dissipation.

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. Invasive and non-native weed species shall be eradicated according to MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS) of these Special Provisions whenever applicable.

All disturbed soil areas covered with existing chipped wood materials and/or native plant residues, that will not interfere with the tillage operation, shall be tilled for incorporation into the soil along with chemical fertilizer, as well as soil amendments (sulfur and compost) prior to final tillage 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 (disked) 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 a 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 final mulch cover in the same slurry. However, seed, sulfur and fertilizer may be utilized together with hydraulically applied compost in the same slurry with the approval of the Engineer. Final mulch cover shall be installed on top of all seeded areas as a separate construction sub-phase.

Slopes 3:1 and flatter shall have fertilizer, sulfur, and compost tilled/disked 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.

Tillage shall not be applied for the seeding area below the OHWM.

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

Seeding shall not initiate until all tillage areas and/or mini-benched slopes are accomplished as approved by a Construction PLA through the Engineer.

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.

Regardless of the seeding method(s), the contractor is responsible to guarantee intimate seed-soil contact. Seed application on top of straw mulch cover or hydraulically applied straw mulch cover shall be rejected. To guarantee intimate seed-soil contact, seed application on top of existing exposed chipped wood materials and/or plant residues ground cover shall be rejected.

Final straw mulch cover or hydraulically applied straw mulch cover shall be applied on all seeded areas, as specified in Sections 3.04 and/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. Seeds shall be neither exposed nor visible after the installation of straw mulch cover or hydraulically applied straw mulch cover.

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 have 100 percent (100%) coverage from all directions as evaluated by a Construction PLA, as well as approved by the Engineer. 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 as Final Mulch Cover on Top of Seeded Areas:

(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 as Final Mulch Cover on Top of Seeded Areas:

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 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. To guarantee intimate seed-soil contact, seed shall not be mixed into any slurry with hydraulically applied straw mulch as final mulch cover.

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-calendar-day seeding maintenance period will begin upon Initial Seeding Construction Acceptance of an area by a Construction PLA through the Engineer.

The contractor shall maintain and stabilize each area or sub-area, including edge of pavement build-up area(s), for a minimum period of 45 calendar days, after Initial Seeding Construction Acceptance, as evaluated by a Construction PLA, as well as approved by the Engineer. Any areas damaged from erosion, or those that have less than 90 percent ($< 90\%$) of remaining final mulch cover, shall be re-seeded, re-mulched, and re-tacked at no additional cost to the Department. The Construction PLA shall assess the seeded area in comparison to the pre-established half-acre (0.5 acre) sample demonstrative area for Class II Seeding to determine the necessity of re-seeding, re-mulching, and re-tacking.

A new 45-calendar-day maintenance period for an area is not required after re-seeding work, however the initial or original period remains in effect.

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 a 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 through evaluation by a Construction PLA and acceptance by the Engineer in the presence of contractor, the contractor will be paid 70 percent (70%) 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, as well as all equipment and labor required to complete the work as specified herein.

Upon completion of the 45-calendar-day seeding maintenance stage, and acceptance by a Construction PLA through the Engineer, the contractor will be paid the remaining 30 percent (30%) 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 any of 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).

No measurement or payment will be made for traffic control for work during the 45-calendar-day seeding maintenance period.

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

SECTION 810 EROSION CONTROL AND POLLUTION PREVENTION

810-2.03 Riprap and Rock Mulch: the Gradation C Rock Mulch table of the Standard Specifications is revised to read:

Gradation C Rock Mulch (fractured/crushed rocks in angular shape)	
Sieve Size	Percent Passing
3.75 Inch	100
3 Inch	55 — 85
2 Inch	15 — 55
1 Inch	0 — 15

ITEM 8101018 EROSION CONTROL (STABILIZED CONSTRUCTION ENTRANCE/EXIT GRAVEL PAD):

Description:

The work under this item shall consist of installing the Erosion/Sediment Control Gravel Pad Best Management Practice (BMP) for Stabilized Construction Entrance/Exit as shown on the project plans, specified herein or determined in the field. The contractor, in conjunction with the Engineer, shall evaluate and determine the final location(s), as well as quantity of the construction entrance/exit gravel pad(s).

Materials:

The rock mulch shall be Gradation C, angular in shape and conform to the requirements of Subsections 803-2.03 and 810-2.03 of the Specifications. The Bulk Specific Gravity (Saturated Surface Dry) shall be determined in accordance with the requirements of AASHTO T 85 and shall be a minimum of 2.4. Unless otherwise directed by the Engineer, natural river-run materials, especially the rounded natural river rocks/cobblestones and pebbles are not acceptable.

The nonwoven very high survivability geotextile fabric shall conform to the requirements of Subsection 1014-4.04(A) of the Specifications.

Construction Requirements:

The bed for the rock mulch shall be shaped and leveled to provide even surfaces and at a depth to accommodate the rock size and depth of rock mulch as specified on the project plans.

The contractor shall install geotextile fabric when water is applied for construction vehicle/equipment cleaning on gravel pad.

If called out in the plans/details or as directed by the Engineer, the contractor shall add track-out control measure of plate(s) / grate(s) such as corrugated steel panels, shaker plate(s),

rumble plate(s), rattle grate(s), rumble grate(s), or rattle plate(s), on top of gravel pad, at no additional cost to the Department. When installed, the contractor shall maintain the track-out plate(s) / grate(s) control measure in a stable and safe working condition for the duration of the contract time.

The contractor shall remove and dispose of all rock mulch and geotextile fabric when project gravel pad is no longer in use. The gravel pad area shall be backfilled, graded and compacted in accordance with the requirements of Subsection 202-3 of the Specifications.

Method of Measurement:

Erosion Control (Stabilized Construction Entrance/Exit Gravel Pad) will be measured by the square yard installed.

Basis of Payment:

The accepted quantities of Erosion Control (Stabilized Construction Entrance/Exit Gravel Pad), measured as provided above, will be paid for at the contract price per square yard, which price shall be full compensation for the work including excavation, backfill, grading, and compaction, complete in place.

No measurement of direct payment will be made for removal of the gravel pad and re-grading of the area to pre-construction conditions, the cost considered as included in the cost of contract item.

ITEM 8101050 – EROSION CONTROL (CURB INLET PROTECTION):

Description:

The work under this item consists of furnishing, installing, maintaining, removing and disposing curb inlet protection for curb inlets without grates pads in accordance with the details shown on the project plans and at locations to be determined in the field by the Engineer and the contractor.

Curb inlet protection is required for controlling and minimizing the transportation of debris from the site into the roadway drainage systems and into subsequent area drainage systems.

Materials:

The contractor shall provide a low profile curb inlet protection device:

Size: The contractor shall furnish “L”-shaped low profile curb inlet protection device with a maximum vertical height of 8 inches and a maximum horizontal anchor/seal flap dimension of 8 inches. The vertical and horizontal components shall not protrude horizontally from the curb surface or vertically from the gutter pan surface by more than 0.5 in.

Structure: The contractor shall furnish low profile curb inlet protection device manufactured from non- biodegradable materials. It shall be UV stable, resist cracking or performance

deterioration from sunlight for 4 years. System shall be made from recyclable material. Filter material shall be laminated between and protected by semi-rigid layers of a polymeric matrix made from high density polyethylene (HDPE recyclable as #2) or polyethylene terephthalate (PET recyclable as #1). Service temperature shall be from -30 to 160 deg F.

Flow Rate: The contractor shall furnish low profile curb inlet protection device containing an integrated filter fabric with a minimum clean water flow-through rate between 130 and 180 gallons per square foot per minute and a percentage-open-area of 9% to 13%.

High-Flow-Bypass / Debris Screen: The contractor shall furnish low profile curb inlet protection device with a high-flow-bypass/debris-screen. The high-flow-bypass/debris-screen area should be greater than 2.5 square feet per unit and allow a minimum clean water flow-through rate greater than 1000 gallons per square foot. The high-flow-bypass/debris screen should be made from a semi-rigid layer of a polymeric matrix made from either high density polyethylene (HDPE recyclable as #2) or polyethylene terephthalate (PET recyclable as #1).

Single unit Construction: The contractor shall furnish low profile curb inlet protection device with the horizontal anchor flap/seal and vertical curb opening filter/cover constructed as a single unit.

Underflow Seal: The contractor shall furnish low profile curb inlet protection device with an underflow seal gasket to prevent sediment laden water from flowing under the filtering system.
Reinforcement brackets: The contractor shall furnish low profile curb inlet device with a bracketing system to prevent the device from getting pushed into the storm drain system during high flow events. Provide brackets that can be extended vertically to the top of the curb opening fascia if the curb opening height is higher than 7.0 inches.

Construction Requirements:

The contractor shall install low profile curb inlet protection device with the anchor flap facing upstream toward the street. The contractor shall place small gravel bags containing clean, pea-sized graded gravel on each end of the flap and butt the bags tightly against the curb to keep water in the gutter from flowing behind the filter. Additional bags can be placed on the flap as necessary; however, bags shall be kept in the gutter pan, and off the street (asphalt) for safety reasons. The bag shall be durable enough to last the period of intended use. If the storm inlet opening exceeds 5.0 feet in length, overlap first module by 6 inches over end of adjoining module for a continuous run until the desired length is achieved. When overlapping, note the gasket material under the flap is cut-out where the flap of top module sits on flap of bottom module. The contractor shall tie segments together with black UV resistant zip ties or 16 gauge galvanized wire as shown in the installation instructions. The contractor may reuse low profile curb inlet protection device when allowed by the engineer.

The contractor shall perform maintenance as required. The contractor shall inspect following rainfall events and at least daily during prolonged rainfall. The contractor shall maintain to provide an adequate sediment holding capacity. Trash shall be removed daily and sediment shall be removed when the sediment accumulation reaches 1 inch by contractor. Removed sediment shall be incorporated in the project at designated locations or disposed-of outside the project or in conformance with requirements by contractor. The contractor shall remove the device after final stabilization has been achieved.

The contractor shall locate the curb inlet protection as shown on the plans or as directed by the Engineer.

The contractor shall remove and legally dispose from the site curb inlet protection materials associated with this item of work at the time approved by the Engineer.

Method of Measurement:

Erosion Control (Curb Inlet Protection) will be measured by the linear foot of curb inlet protection installed.

Basis of Payment:

The accepted quantities of Erosion Control (Curb Inlet Protection) measured as provided above, will be paid for at the contract price per linear foot, which price shall be full compensation for the work, complete in place, including installation, maintaining, removing and disposing.

No additional payment will be made for the gravel bags, the cost being considered included in the contract item.

ITEM 9080084 – CONCRETE CURB AND GUTTER (DETAIL A):

Description:

The work under this item shall consist of furnishing all materials and constructing Portland cement concrete curb and gutter at the locations shown on the project plans in accordance with the details shown on the plans and specified herein and the requirements of these specifications.

Materials:

Concrete shall be Class B concrete conforming to the requirements of Section 1006 of the specifications.

Expansion joint filler shall be 1/2 inch bituminous or nonbituminous preformed strips conforming to the requirements of Subsection 1011- 6 of the specifications.

Curing compound shall be liquid membrane-forming compound conforming to the requirements of Subsection 1006-6.01(C) of the specifications.

Construction Requirements:

The subgrade shall be constructed in reasonably close conformity to the lines and grades established or shown on the project plans.

Prior to placing concrete curb and gutter, the material on which they are to be placed shall be compacted to a depth of at least 6 inches to a density of not less than 95 percent of the

maximum density determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual as directed and approved by the Engineer.

All soft or unsuitable material shall be removed to a depth of not less than 6 inches below subgrade and replaced with material approved by the Engineer.

Curb and gutter shall be constructed either by the use of conventional fixed forms or by slip-form curb and sidewalk placing machines.

Weather and temperature limitations for the placement of concrete shall be in accordance with the requirements of Subsection 1006-5 of the Specifications.

Forms shall be maintained at all times in good condition as to accuracy of shape, strength, rigidity and smoothness of surface. The depth of face forms for concrete curbs shall be equal to the full face height of the curb.

All other forms shall be set to form the full depth of all edges not formed by adjacent concrete. Unsatisfactory forms shall not be used.

Forms shall be set in reasonably close conformity to the dimensions, lines and grades shown on the project plans or established by the Engineer and be securely staked in position. Clamps, spreaders, and braces shall be used where required to ensure rigid forms.

When the roadway section slopes away from the gutter, the slope of the gutter shall be formed to match the roadway cross slope.

The subgrade and forms shall be watered immediately before placing concrete. Concrete shall be placed in the forms and thoroughly consolidated. The concrete shall be consolidated by means of approved mechanical vibrators or by tamping or spading by hand. The fresh concrete shall be struck off so the surface will be at the proper elevation when the concrete is consolidated. Concrete shall be thoroughly worked so that the coarse aggregate is below the surface. The surface shall then be finished to grade and cross-section with a float, troweled smooth and then given a final fine brush finish.

The exposed edges shall be tooled to a 1/4 inch radius unless a larger radius is indicated on the plans. When concrete placed in curb has set sufficiently so that it will not slump, the front face form shall be removed. The gutter, front face, and top of curb shall be troweled smooth and then given a final fine brush finish with brush strokes parallel to the lines of curb and gutter. The exposed edges shall be tooled to a 1/4 inch radius.

Expansion joints shall be constructed at tangent points and at a maximum of 60 foot intervals. Expansion joints shall match as nearly as possible to the joints in the adjacent pavement or existing concrete curb and sidewalk. Joint filler shall be placed vertically and extend full depth beginning 3/16 inch below the surface of the concrete being placed. During the placing and tamping of concrete, the filler shall be restrained in its proper position.

Edges of the concrete at expansion joints shall be tooled to a 1/4 inch radius.

Contraction joints (weakened-plane joints) shall be constructed at a maximum of 15 foot intervals in curb and gutter and shall coincide with contraction joints in adjacent pavement or existing concrete curb.

Scoring lines, where required, shall have a minimum depth of 1/4 inch and a radius of 1/8 inch. Where longitudinal scoring lines are required, they shall be parallel to, or concentric with, the lines of the work.

Forms shall be thoroughly cleaned each time they are used and shall be coated with a light oil as required to prevent the concrete from adhering to them.

If slip-form equipment is used to construct curb and gutter, such equipment shall be designed specifically for the work. The results shall be equal to or better than that produced by the use of fixed forms. If the results are not satisfactory to the Engineer, the use of the equipment shall be discontinued. All applicable requirements of construction by use of fixed forms shall apply to the use of slip-form equipment.

The slip-form equipment shall be controlled as to line and grade by means of automatic sensing and control devices such that the machine automatically senses and follows either a taut guide line or other reference, performing any necessary corrective maneuvers in order to establish the correct grade and alignment. The contractor shall set the guide line from survey marks.

Immediately following the required finishing operations, one or more applications of curing compound shall be applied to all exposed surfaces.

The curing compound shall be applied at the rate of not less than 1 gallon per 150 square feet of surface area, and in such manner as to entirely cover and seal all exposed surfaces of concrete with a uniform film.

The face, top, back, and flow line of the curb and gutter shall be tested with a 10-foot straightedge or curve template, longitudinally along the surface.

Any deviation in excess of 1/4 inch shall be corrected at no additional expense to the Department.

Before acceptance of the work, all curb and gutter shall be cleaned of all discolorations resulting from the contractor's operations, including, but not limited to, dirt, stains, bitumens, and equipment tire marks. Cleaning may be by abrasive blast methods or by other methods approved by the Engineer.

Method of Measurement:

Concrete Curb & Gutter (Detail A) will be measured by the linear foot along the flow line. Lengths of depressed curb and depressed curb and gutter at driveway and sidewalk ramp locations will be included in the measurement. Lengths of curb transition and terminal, and curb and gutter transition and terminal will be included in the measurement. Lengths occupied by catch basins will be excluded from the measurement.

Basis of Payment:

The accepted quantities of Concrete Curb & Gutter (Detail A), measured as provided above, will be paid for at the contract unit price per linear foot, which price shall be full compensation for the work, complete in place, including furnishing and placing embankment material, excavating, removing unstable material, backfilling and compacting.

ITEM 9080246 – CONCRETE (BIKE RAMP TRANSITION) (DETAIL C):

Description:

The work under this item shall consist of furnishing all materials and constructing Portland cement bike transitions per Detail C at the locations shown on the project plans in accordance with the details shown on the plans and the requirements of these specifications.

Materials:

Concrete shall be Class B concrete conforming to the requirements of Section 1006 of the specifications.

Expansion joint filler shall be 1/2 inch bituminous or non-bituminous preformed strips conforming to the requirements of Subsection 1011- 6 of the specifications.

Curing compound shall be liquid membrane-forming compound conforming to the requirements of Subsection 1006-6.01(C) of the specifications.

Detectable warning strips shall consist of a pre-fabricated mat with truncated domes aligned in a square grid matrix on a flat substrate, or other pre-fabricated materials meeting the requirements of the Standard Drawings. Detectable warning strips shall contrast visually with the sidewalk ramp, and shall conform to the current requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Detectable warning strips shall be pre-fabricated from durable material approved by the Department. All detectable warning strips installed within the project limits shall be the same type, unless shown otherwise on plans or approved by the Engineer.

Pre-fabricated detectable warning strips approved for use are shown on the Department's Approved Products List (APL). The most current version of the APL is available on the internet from the ADOT Research Center, through the Product Evaluation Program. Pre-fabricated detectable warning strips not listed on the APL may be considered for use in accordance with the requirements of Subsection 106.14 of the Specifications.

Construction Requirements:

The subgrade shall be constructed in reasonably close conformity to the lines and grades established or shown on the project plans.

Prior to placing concrete sidewalk ramp, the material on which they are to be placed shall be compacted to a depth of at least 6 inches to a density of not less than 95 percent of the

maximum density determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual as directed and approved by the Engineer.

All soft or unsuitable material shall be removed to a depth of not less than 6 inches below subgrade and replaced with material approved by the Engineer.

Weather and temperature limitations for the placement of concrete shall be in accordance with the requirements of Subsection 1006-5 of the Specifications.

Forms shall be maintained at all times in good condition as to accuracy of shape, strength, rigidity and smoothness of surface. The depth of face forms for concrete curbs shall be equal to the full face height of the curb.

All other forms shall be set to form the full depth of all edges not formed by adjacent concrete. Unsatisfactory forms shall not be used.

Forms shall be set in reasonably close conformity to the dimensions, lines and grades shown on the project plans or established by the Engineer and be securely staked in position. Clamps, spreaders, and braces shall be used where required to ensure rigid forms.

The subgrade and forms shall be watered immediately before placing concrete. Concrete shall be placed in the forms and thoroughly consolidated. The concrete shall be consolidated by means of approved mechanical vibrators or by tamping or spading by hand. The fresh concrete shall be struck off so the surface will be at the proper elevation when the concrete is consolidated. Concrete shall be thoroughly worked so that the coarse aggregate is below the surface. The surface shall then be finished to grade and cross-section with a float, troweled smooth and then given a final fine brush finish.

The exposed edges shall be tooled to a 1/4 inch radius unless a larger radius is indicated on the plans. When concrete placed in curb has set sufficiently so that it will not slump, the front face form shall be removed. The gutter, front face, and top of curb shall be troweled smooth and then given a final fine brush finish with brush strokes parallel to the lines of curb and gutter. The exposed edges shall be tooled to a 1/4 inch radius.

Expansion joints shall be constructed at tangent points of curb returns, at structures, and at a maximum of 60 foot intervals. Expansion joints shall be constructed between sidewalks and driveways, between sidewalks and abutting structures, around poles, posts, boxes, and other fixtures that protrude through the sidewalk. Expansion joints shall match as nearly as possible to the joints in the adjacent pavement or existing concrete curb and sidewalk. Joint filler shall be placed vertically and extend full depth beginning 3/16 inch below the surface of the concrete being placed. During the placing and tamping of concrete, the filler shall be restrained in its proper position.

Edges of the concrete at expansion joints shall be tooled to a 1/4 inch radius.

Scoring lines, where required, shall have a minimum depth of 1/4 inch and a radius of 1/8 inch. Where longitudinal scoring lines are required, they shall be parallel to, or concentric with, the lines of the work.

Forms shall be thoroughly cleaned each time they are used and shall be coated with a light oil as required to prevent the concrete from adhering to them.

Immediately following the required finishing operations, one or more applications of curing compound shall be applied to all exposed surfaces.

The curing compound shall be applied at the rate of not less than 1 gallon per 150 square feet of surface area, and in such manner as to entirely cover and seal all exposed surfaces of concrete with a uniform film.

Any deviation in excess of 1/4 inch shall be corrected at no additional cost to the Department.

The top surface of detectable warning strips, exclusive of the truncated domes, shall be within $\pm 1/16$ inch of the sidewalk ramp surface in accordance with the requirements of the ADAAG. Detectable warning strips shall be installed in accordance with manufacturer's instructions and current industry practice. In case of discrepancy the manufacturer's instructions shall govern.

Method of Measurement:

Concrete (Bike Ramp Transitions) (Detail C) will be measured as a unit per square foot, as listed in the bidding schedule, of sidewalk ramp constructed, including detectable warning strip.

Basis of Payment:

The accepted quantities of Concrete (Bike Ramp Transition) (Detail C), measured as provided above, will be paid for at the contract unit price per square foot, which price shall be full compensation for the work, complete in place, including furnishing and placing embankment material, excavating, removing unsuitable material, backfilling and compacting, surface finishing, and providing and installing the detectable warning surface

No separate measurement or payment will be made for the curb along the back edge or side of Bike Transitions, nor the detectable warning surface, the costs being considered as included in the price of contract items.

ITEM 9080286 – CONCRETE SIDEWALK RAMP (MODIFIED C-05.30, TYPE E) (DETAIL B):

Description:

The work under this item shall consist of furnishing all materials and constructing Portland cement concrete sidewalk ramps per Detail B at the locations shown on the project plans in accordance with the details shown on the plans and the requirements of these specifications.

Materials:

Concrete shall be Class B concrete conforming to the requirements of Section 1006 of the specifications.

Expansion joint filler shall be 1/2 inch bituminous or nonbituminous preformed strips conforming to the requirements of Subsection 1011- 6 of the specifications.

Curing compound shall be liquid membrane-forming compound conforming to the requirements of Subsection 1006-6.01 (C) of the specifications.

Detectable warning strips shall consist of a pre-fabricated mat with truncated domes aligned in a square grid matrix on a flat substrate, or other pre-fabricated materials meeting the requirements of the Standard Drawings. Detectable warning strips shall contrast visually with the sidewalk ramp, and shall conform to the current requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Detectable warning strips shall be pre-fabricated from durable material approved by the Department. All detectable warning strips installed within the project limits shall be the same type, unless shown otherwise on plans or approved by the Engineer.

Pre-fabricated detectable warning strips approved for use are shown on the Department's Approved Products List (APL). The most current version of the APL is available on the internet from the ADOT Research Center, through the Product Evaluation Program. Pre-fabricated detectable warning strips not listed on the APL may be considered for use in accordance with the requirements of Subsection 106.14 of the Specifications.

Construction Requirements:

The subgrade shall be constructed in reasonably close conformity to the lines and grades established or shown on the project plans.

Prior to placing concrete sidewalk ramp, the material on which they are to be placed shall be compacted to a depth of at least 6 inches to a density of not less than 95 percent of the maximum density determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual as directed and approved by the Engineer.

All soft or unsuitable material shall be removed to a depth of not less than 6 inches below subgrade and replaced with material approved by the Engineer.

Weather and temperature limitations for the placement of concrete shall be in accordance with the requirements of Subsection 1006-5.

Forms shall be maintained at all times in good condition as to accuracy of shape, strength, rigidity and smoothness of surface. The depth of face forms for concrete curbs shall be equal to the full face height of the curb.

All other forms shall be set to form the full depth of all edges not formed by adjacent concrete. Unsatisfactory forms shall not be used.

Forms shall be set in reasonably close conformity to the dimensions, lines and grades shown on the project plans or established by the Engineer and be securely staked in position. Clamps, spreaders, and braces shall be used where required to ensure rigid forms.

The subgrade and forms shall be watered immediately before placing concrete. Concrete shall be placed in the forms and thoroughly consolidated. The concrete shall be consolidated by means of approved mechanical vibrators or by tamping or spading by hand. The fresh concrete shall be struck off so the surface will be at the proper elevation when the concrete is consolidated. Concrete shall be thoroughly worked so that the coarse aggregate is below the surface. The surface shall then be finished to grade and cross-section with a float, troweled smooth and then given a final fine brush finish.

The exposed edges shall be tooled to a 1/4 inch radius unless a larger radius is indicated on the plans. When concrete placed in curb has set sufficiently so that it will not slump, the front face form shall be removed. The gutter, front face, and top of curb shall be troweled smooth and then given a final fine brush finish with brush strokes parallel to the lines of curb and gutter. The exposed edges shall be tooled to a 1/4 inch radius.

Expansion joints shall be constructed at tangent points of curb returns, at structures, and at a maximum of 60 foot intervals. Expansion joints shall be constructed between sidewalks and driveways, between sidewalks and abutting structures, around poles, posts, boxes, and other fixtures that protrude through the sidewalk. Expansion joints shall match as nearly as possible to the joints in the adjacent pavement or existing concrete curb and sidewalk. Joint filler shall be placed vertically and extend full depth beginning 3/16 inch below the surface of the concrete being placed. During the placing and tamping of concrete, the filler shall be restrained in its proper position.

Edges of the concrete at expansion joints shall be tooled to a 1/4 inch radius.

Scoring lines, where required, shall have a minimum depth of 1/4 inch and a radius of 1/8 inch. Where longitudinal scoring lines are required, they shall be parallel to, or concentric with, the lines of the work.

Forms shall be thoroughly cleaned each time they are used and shall be coated with a light oil as required to prevent the concrete from adhering to them.

Immediately following the required finishing operations, one or more applications of curing compound shall be applied to all exposed surfaces.

The curing compound shall be applied at the rate of not less than 1 gallon per 150 square feet of surface area, and in such manner as to entirely cover and seal all exposed surfaces of concrete with a uniform film.

Any deviation in excess of 1/4 inch shall be corrected at no additional expense to the Department.

The top surface of detectable warning strips, exclusive of the truncated domes, shall be within $\pm 1/16$ inch of the sidewalk ramp surface in accordance with the requirements of the ADAAG. Detectable warning strips shall be installed in accordance with manufacturer's instructions

and current industry practice. In case of discrepancy the manufacturer's instructions shall govern.

Method of Measurement:

Concrete Sidewalk Ramp (Modified C-05.30, Type E) (Detail B) will be measured as a unit per each sidewalk ramp constructed, including detectable warning strip.

Basis of Payment:

The accepted quantities of Concrete Sidewalk Ramp (Modified C-05.30, Type E) (Detail B), measured as provided above, will be paid for at the contract unit price per each, which price shall be full compensation for the work, complete in place, including furnishing and placing embankment material, excavating, removing unsuitable material, backfilling and compacting, surface finishing, and furnishing and installing the detectable warning strip.

No separate measurement or payment will be made for any ramp curb along the back edge or side of sidewalk ramps, nor for the detectable warning strip, the costs being considered as included in the price of contract items. No separate payment will be made for the curb along the back edge of sidewalk connecting sidewalk ramps at an intersection, the cost being considered as included in the price of contract items.

ITEM 9080512 – SCUPPER (DETAIL D3):

Description:

The work under this item shall consist of furnishing all materials and constructing concrete scuppers, including excavation, concrete removal, and backfill. Work shall be done at the locations designated on the project plans and in accordance with the details shown on the plans and the requirements of these specifications.

Materials:

Concrete:

Portland cement concrete shall conform to the requirements of Section 1006 of the specifications for Class B concrete.

Reinforcing Steel:

Reinforcing steel bars or mesh shall conform to the requirements of Section 1003 of the specifications.

Structural Steel:

Structural steel parts shall conform to the requirements of Section 1004 of the specifications.

Construction Requirements:

Concrete Scuppers:

Excavation and backfill for the scupper shall be performed in accordance with the requirements of Subsection 203-5 of the specifications. The "L" dimension for scuppers shall be determined in the field prior to casting. Scuppers shall be constructed in accordance with the requirements of Section 908 of the specifications and reinforced where called for on the plans in accordance with the requirements of Section 605 of the specifications in reasonably close conformity to the lines and grades shown on the plans and shall meet adjacent sidewalk, curb, or gutter surfaces with no appreciable offsets.

Backfilling of the completed structure shall be in accordance with the requirements of Subsection 203-5 of the specifications. Preformed bituminous joint filler shall be installed where the scupper concrete will meet new or existing concrete curb pavement.

Method of Measurement:

Scuppers (Detail D3) will be measured as a unit for each scupper.

Basis of Payment:

The accepted quantities of concrete scuppers, measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work, complete in place, including excavation and backfill.

(913BKPRT, 02/18/21)

SECTION 913 - BANK PROTECTION: of the Standard Specifications is revised to read:

913-1 Description:

The work under this section shall consist of furnishing all materials and constructing bank protection in accordance with the details shown on the plans and the requirements of the specifications.

Bank protection shall be dumped riprap, grouted riprap, wire tied riprap, riprap in wire baskets or gabions, soil-cement, and other types of bank protection and shall be constructed at the locations and as shown on the plans.

913-2 Materials:

913-2.01 Riprap Bank Protection:

(A) Rock:

Rock shall be sound and durable, free from clay or shale seams, cracks or other structural defects.

The bulk (SSD) specific gravity of the rock shall be a minimum of 2.4 as determined in accordance with the requirements of Arizona Test Method 210.

Rock used to construct dumped riprap shall be angular in shape. Rock used to construct other types of bank protection may be rounded stones or boulders. Rock shall have a least dimension not less than one-third of its greatest dimension and a gradation in reasonable conformity with that shown herein for the various types of bank protection. Control of the gradation will be by visual inspection.

When a source of rock is designated by the Department, it shall be the contractor's responsibility to negotiate for the material, obtain the right-of-way, and pay all royalties and damages.

The acceptability of the rock will be determined by the Engineer by visual inspection and/or testing. If testing is required, suitable samples of rock shall be taken in the presence of the Engineer at least 25 days in advance of its expected use. The approval of some rock fragments from a particular quarry site shall not be construed as constituting the approval of all rock fragments taken from that quarry.

During construction of the bank protection, the contractor shall provide two samples of rock for the intended use. The amount of each sample for dumped riprap and riprap (slope mattress) shall be at least five tons. The amount of each sample for grouted riprap, wire tied riprap, gabions, and rail bank protection shall be at least 500 pounds. One sample shall be provided at the construction site and may be a part of the finished bank protection. The other sample shall be provided at the quarry. These samples will be used as a frequent reference for judging the gradation of the rock supplied. Any difference of opinion between the Engineer and the contractor shall be resolved by checking the gradation of two random samples of the rock.

Material that is deemed unacceptable by the Engineer shall be replaced with acceptable material at no additional cost to the Department.

(1) Grouted Riprap:

Gradation of the rock for grouted riprap shall be as specified in the Special Provisions or as shown on the plans.

(2) Wire Tied Riprap:

Rock for wire tied riprap shall be well graded with at least 95 percent exceeding the least dimension of the wire mesh opening. The maximum size rock, measured normal to the mat, shall not exceed the mat thickness.

(3) Dumped Riprap:

Gradation of the rock for dumped riprap shall be as shown on the plans or as specified in the Special Provisions.

All equipment, sorting sites, and labor needed to check gradation shall be provided by the contractor at no additional cost to the Department.

(4) Gabions:

Rock for gabions shall be well graded, varying in size from 4 to 8 inches.

(5) Riprap (Slope Mattress):

Rock for slope mattress shall be well graded with 70 percent exceeding three inches. The maximum dimension of a single rock shall not exceed the least dimension of the gabion.

(6) Rail Bank Protection:

Rail bank protection rock shall be well graded, varying in size from 4 to 12 inches.

(B) Metal Items:

(1) Wire Fabric:

Welded wire fabric shall be galvanized and shall conform to the requirements of AASHTO M 336, except that the minimum weight of the zinc coating shall be 0.15 ounces per square foot of actual surface.

Woven wire fabric shall be galvanized and shall conform to the requirements of ASTM A116, except that the minimum weight of the zinc coating shall conform to the requirements of ASTM A641, Class 3.

Wire fabric shall be of the diameter, spacing, pattern, and dimensions shown on the plans. The selvage on each sheet of mesh shall be galvanized steel wire with a minimum diameter 25 percent larger than that used in the body of the mesh.

Certificates of Compliance conforming to the requirements of Subsection 106.05 of the specifications shall be submitted to the Engineer.

(2) Miscellaneous Fittings and Hardware:

Miscellaneous fittings and hardware shall be of the type and size provided by the manufacturer of the major item to which they apply and shall be galvanized in accordance with the requirements of AASHTO M 232.

Certificates of Compliance conforming to the requirements of Subsection 106.05 of the specifications shall be submitted to the Engineer.

(3) Tie Wires:

Tie wires shall be of good commercial quality and the size shall be as shown on the plans, except that the minimum weight of the zinc coating shall conform to the requirements of ASTM

A641, Class 3. The contractor may use approved wire fasteners on gabions, slope mattresses, or wire fabric in lieu of tie wires.

Certificates of Compliance conforming to the requirements of Subsection 106.05 of the specifications shall be submitted to the Engineer.

(4) Steel Cable:

Steel cable shall be zinc-coated steel structural wire rope conforming to the requirements of ASTM A475, seven-wire strand, Class A, for the diameter shown on the plans.

Certificates of Compliance conforming to the requirements of Subsection 106.05 of the specifications shall be submitted to the Engineer.

(5) Railroad Rail:

Railroad rails may be new or used. If used rails are furnished, they shall be free from rust and equal to at least 95 percent of the original section.

(6) Soil Anchor Stakes:

Soil anchor stakes shall be made of steel and of the length shown on the plans. When not specified to be railroad rails, the following items may be used: crane rails with a weight of at least 40 pounds per linear foot, 2-inch diameter steel pipe conforming to the requirements of ASTM A53, or 3-inch by 3-inch by 3/8-inch structural steel angles conforming to the requirements of ASTM A36. Used rails, pipes or angles may be used provided the material is not rusted or damaged to the extent that the strength of the item is reduced to less than 90 percent of a new item of the same type and size.

Certificates of Compliance conforming to the requirements of Subsection 106.05 of the specifications shall be submitted to the Engineer.

(C) Bedding Material:

Bedding material shall consist of granular material having a maximum dimension of 2 inches and shall be free of clay or organic material.

(D) Grout:

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 of the specifications. Chemical admixtures may be used and shall conform to the requirements of Subsection 1006-2.04 of the specifications, except no admixtures containing chlorides or nitrates shall be used. Air-entraining admixtures, conforming to the requirements of Subsections 1006-2.04 and 1006-3.01(E) of the specifications, shall be required for grout placed at elevations of 3000 feet or above.

The grout shall meet the requirements shown in table 1:

Table 1			
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
Notes: (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 C618. (2) The slump shall be in the appropriate range to permit gravity flow into the interstices with limited spading and brooming. The consistency of the grout shall be as approved by the Engineer. (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 mix shall consist of fine aggregate; however, the contractor may use No. 8 coarse aggregate 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 of the specifications.

For on-site mixing, grout that has been mixed more than one hour shall not be used.

Retempering of grout will not be permitted.

(E) Bank Protection Fabric:

Fabric shall be supplied in accordance with and conform to the material requirements of Subsections 1014-1 and 1014-5 of the specifications, respectively. Special attention shall be given to the required survivability of the fabric.

The identification, packaging, handling, and storage of the geotextile fabric shall be in accordance with ASTM D4873. Fabric rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Each roll shall be labeled or tagged to provide product identification sufficient to determine the product type, manufacturer, quantity, lot number, roll number, date of manufacture, shipping date, and the project number and name to which it is assigned. Rolls shall be stored on-site or at another storage location in a manner which protects them from the elements. If stored

outdoors, rolls shall be elevated and protected with a waterproof, light colored, opaque cover. At no time, shall the fabric be exposed to sunlight for a period exceeding 14 days.

(F) Sacked Concrete:

Sacked concrete shall be utility concrete conforming to the requirements of Section 922 of the specifications, except that the minimum cement content shall be 376 pounds per cubic yard; the slump shall be from 3 to 5 inches; and the aggregate shall conform to the gradation requirements shown in table 2 when tested in accordance with the requirements of Arizona Test Method 201:

Table 2	
Sieve Size	Percent Passing
2 inch	100
1/4 inch	45 - 89
No. 200	0 -12

Sacks for sacked concrete riprap shall be made of at least AASHTO M 182, Class 3, burlap and shall be approximately 19-1/2 by 36 inches measured inside the seams when the sack is laid flat, with an approximate capacity of 1-1/4 cubic feet. Sound, reclaimed sacks may be used.

913-2.02 Soil-Cement Bank Protection:

(A) Hydraulic Cement, Fly Ash, and Water:

Hydraulic cement, fly ash, and water shall conform to the requirements of Subsection 1006-2 of the specifications.

(B) Soil-Aggregate:

The source of soil-aggregate materials shall be the responsibility of the contractor. The contractor shall be solely responsible for the construction of the stockpile(s), including monitoring for quality and uniformity of the material placed therein. The soil-aggregate used in the soil-cement mixture shall consist of stones, gravel or other approved inert material of similar characteristics, and shall be clean and free from vegetable matter and other deleterious substances. Soil-cement aggregate shall conform to the gradation requirements shown in table 3 when tested in accordance with Arizona Test Method 201:

Table 3	
Soil-Cement Aggregate	
Sieve Size	Percent Passing
1-1/2 in	98 - 100
No. 4	60 - 90
No. 200	5 - 15

Class 2 ABC may be used in-lieu of aggregate meeting the requirements of the table 3. The contractor may submit a request to use alternate material to the Engineer for review and approval.

The Plasticity Index shall be a maximum of seven when tested in accordance with the requirements of AASHTO T 90.

Clay lumps larger than 1 inch shall be removed.

When soil-aggregates are stored on the ground, the sites for the stockpiles shall be clear of all vegetation and level. The bottom six inch layer of aggregate stored on the ground shall not be disturbed or used.

The debris or waste material resulting from the clearing and preparing of the site shall be disposed of in accordance with Subsection 201-3.02 of the specifications.

(C) Mix Design Requirements for Soil-Cement Bank Protection:

Utilizing soil-aggregate, cementitious material, and water, a mix design conforming to the requirements specified herein shall be formulated and submitted by the contractor to the Engineer for approval prior to incorporating any of the material into the work.

The amount of cement shall be determined by laboratory testing by the contractor in accordance with Arizona Test Method 220. For mix design purposes only, the cement content of the soil-cement mixture shall be determined as the cement content which yields a seven day compressive strength of 1250 psi for the soil-cement mixture.

The percent of cement to be used in the mix shall be calculated to be the weight of cement divided by the total weight of the dry compacted soil-cement.

Included in the mix design data shall be the grade of cement, brand of fly ash, and the source of aggregate. A new mix design shall be submitted for approval any time the contractor requests a change in soil-aggregate source from that given in the approved mix designs.

913-3 Construction Requirements:

913-3.01 Riprap Bank Protection:

Areas on which bank protection is to be constructed shall be cleared, grubbed, and excavated or backfilled in accordance with the requirements of the appropriate sections of Division II to produce a ground surface in reasonable conformance with the lines and grades shown on the plans or established by the Engineer.

Placement through water will not be permitted unless otherwise approved by the Engineer.

Areas which are excavated for installation of rail bank protection shall be backfilled to original ground or to the lines and grades shown on the plans.

(A) Bank Protection Fabric:

When fabric is required, it shall be placed in the manner and at the locations shown on the plans. The surface to receive the fabric shall be free of obstructions, depressions and debris. The fabric shall be loosely laid and not placed in a stretched condition.

The strips shall be placed to provide a minimum 24 inches of overlap for each joint. On horizontal joints, the uphill strip shall overlap the downhill strip. On vertical joints, the upstream strip shall overlap the downstream strip. The fabric shall be protected at all times during construction from extensive exposure to sunlight.

When the maximum size of the rock to be placed on fabric exceeds 18 inches, the fabric shall be protected during the placement of the rock by a layer of bedding material. The bedding material shall be spread uniformly on the fabric to a depth of 4 inches and shall be free of mounds, dips or windrows. Compaction of the bedding material will not be required.

Rock shall be carefully placed on the bedding material and fabric in such a manner as not to damage the fabric. If, in the opinion of the Engineer, the fabric is damaged or displaced to the extent that it cannot function as intended, the contractor shall remove the rock, regrade the area if necessary, and replace the fabric.

(B) Dumped Riprap:

The rock shall be placed to its specified thickness in one operation and in a manner which will produce a reasonably well graded mass with a minimum amount of voids and with the larger rock evenly distributed throughout the mass.

No method of placing the rock that will cause segregation will be allowed. Hand placing or rearranging of individual rock may be necessary to obtain the specified results.

(C) Wire Tied Riprap:

After installation of the lower portion of the wire mesh, rock shall be placed in accordance with the requirements of Subsection 913-3.01(B) of the specifications.

After placement of the rock, the upper portion of the wire mesh shall be placed, laced, and tied in accordance with the details shown on the plans.

(D) Grouted Riprap:

Rock for grouted riprap shall be placed in accordance with the requirements of Subsection 913-3.01(B). The stones shall be thoroughly moistened and any excess of fines shall be sluiced to the underside of the stone blanket before grouting.

The grout may be delivered to the place of final deposit by any means that will ensure uniformity and prevent segregation of the grout. If penetration of grout is not obtained by gravity flow into the interstices, the grout shall be spaded or rodded to completely fill the voids in the stone blanket. Pressure grouting shall not unseat the stones, and during placing by this method, the grout shall be spaded or rodded into the voids.

Penetration of the grout shall be to the depth specified on the plans. When a rough surface is specified, stones shall be brushed until 25 to 50 percent of the depth of the maximum size stone is exposed. For a smooth surface, grout shall fill the interstices to within 1/2 inch of the surface.

Grout shall not be placed when the descending air temperature falls below 40 degrees Fahrenheit nor until the ascending air temperature rises above 35 degrees Fahrenheit. Temperatures shall be taken in the shade away from artificial heat.

Curing of the grout shall be in accordance with the requirements of Subsection 912-3.09 of the specifications.

The contractor may use shotcrete conforming to the requirements of Section 912 of the specifications in lieu of grout.

(E) Slope Mattress Riprap:

The mattress bed shall be excavated to the width, line and grade as shown on the plans. The mattress shall be founded on this bed and laid to the lines and dimensions required.

Excavation for toe or cut-off walls shall be made to the neat lines of the wall.

Mattresses shall be fabricated in such a manner that the sides, ends, lid and diaphragms can be assembled at the construction site into rectangular units of the specified sizes. Mattresses are to be of single unit construction, the base, ends and sides either to be woven into a single unit or one edge of these members connected to the base section of the unit in such a manner that strength and flexibility at the point of connection is at least equal to that of the mesh.

All perimeter edges of the mattresses are to be securely selvaged or bound so that the joints formed by tying the selvages have at least the same strength as the body of the mesh.

Mattresses shall be placed to conform to the details shown on the plans. Stones shall be placed in close contact within the unit so that maximum fill is obtained. The units may be filled by machine with sufficient hand work to accomplish the requirements of this specification.

Broken concrete shall not be used in slope mattresses.

Before the mattress units are filled, the longitudinal and lateral edge surfaces of adjoining units shall be tightly connected by means of wire ties placed every four inches or by a spiral tie having a complete loop every four inches. The lid edges of each unit shall be connected in a similar manner to adjacent units. The slope mattress shall be anchored as shown on the plans. Each anchor stake shall be fastened to the cover mesh with a tie wire.

(F) Gabions:

The gabion bed shall be excavated to the width, line and grade as shown on the plans. The gabions shall be founded on this bed and laid to the lines and dimensions required.

Excavation for toe or cut-off walls shall be made to the neat lines of the wall.

Gabions shall be fabricated in such a manner that the sides, ends, lid and diaphragms can be assembled at the construction site into rectangular units of the specified sizes. Gabions are to be of single unit construction, the base, ends and sides either to be woven into a single unit or one edge of these members connected to the base section of the unit in such a manner that strength and flexibility at the point of connection is at least equal to that of the mesh.

Where the length of the gabion exceeds its horizontal width, the gabion is to be equally divided by diaphragms, of the same mesh type as the body of the gabions, into cells whose length does not exceed the horizontal width. The gabion shall be furnished with the necessary diaphragms secured in proper position on the base section in such a manner that no additional tying at this juncture will be necessary.

All perimeter edges of gabions are to be securely selvaged or bound so that the joints formed by tying the selvages have at least the same strength as the body of the mesh.

Gabions shall be placed to conform to the details shown on the plans. Stones shall be placed in close contact in the unit so that maximum fill is obtained. The units may be filled by machine with sufficient hand work to accomplish requirements of this specification.

The exposed face or faces shall be hand-placed using selected stones to prevent bulging of the gabion cell and to improve appearance. Each cell shall be filled in three lifts.

Two connecting tie wires shall be placed as shown on the plans between each lift in each cell.

Care shall be taken to protect the vertical panels and diaphragms from being bent during filling operations.

The last lift of stones in each cell shall be level with the top of the gabion in order to properly close the lid and provide an even surface for the next course.

All gabion units shall be tied together each to its neighbor along all contacting edges in order to form a continuous connecting structure.

Empty gabions stacked on filled gabions shall be laced to the filled gabion at the front, side and back.

(G) Sacked Concrete Riprap:

The sacks shall be filled with concrete, loosely packed so as to leave room for folding or tying at the top. Approximately one cubic foot of concrete shall be placed in each sack. Immediately after filling, the sacks shall be placed according to the details shown on the plans and lightly trampled to cause them to conform with the earth face and to adjacent sacks in place.

The first two courses shall provide a foundation of double thickness. The first foundation course shall consist of a double row of stretchers laid level and adjacent to each other in a neatly trimmed trench. The trench shall be cut back into the slope a sufficient distance to enable proper subsequent placement of the riprap. The second foundation course shall consist of a row of headers placed directly above the double row of stretchers. The third and

remaining courses shall consist of a double row of stretchers and shall be placed in such a manner that joints in succeeding courses are staggered.

All dirt and debris shall be removed from the top of the sacks before the next course is laid thereon. Stretchers shall be placed so that the folded ends will not be adjacent. Headers shall be placed with the folds toward the earth face. Not more than four vertical courses of sacks shall be placed in any tier until initial set has taken place in the first course of any such tier.

When there will not be proper bearing or bond for the concrete because of delays in placing succeeding layers of sacks, a small trench shall be excavated back of the row of sacks already in place, and the trench shall be filled with fresh concrete before the next layer of sacks is laid. The size of the trench and the concrete used for this purpose shall be approved by the Engineer. The Engineer may require header courses at any level to provide additional stability to the riprap.

Sacked concrete riprap shall be cured by being covered with a blanket of wet earth or by being sprinkled with a fine spray of water every two hours during the daytime for a period of four days.

(H) Rail Bank Protection:

Excavation, where required for rock fill, shall be performed in reasonably close conformity to the lines and grades established or shown on the plans.

Rails shall be driven at the locations and to the minimum penetrations shown on the plans. Driving equipment shall be capable of developing sufficient energy to drive the rails to the specified minimum penetration and be approved by the Engineer.

If hard material is encountered during driving before minimum penetration is reached and it has been demonstrated to the satisfaction of the Engineer that additional attempts at driving would result in damage to the rails, the Engineer may order additional work to be performed, such as jetting or drilling, in order that minimum penetration may be obtained or the Engineer may order the minimum penetration to be reduced as required by the conditions encountered.

Wire fabric shall be securely fastened to the rails, placed in the trenches and laid on the slopes. The rock backfill shall then be carefully placed so as not to displace the wire fabric or rails. The wire fabric shall entirely enclose the rock backfill.

The completed rock fill shall be backfilled as necessary and the waste material disposed of as directed by the Engineer.

913-3.02 Soil-Cement Bank Protection:

Soil-cement bank protection construction shall include excavating, backfilling, and grading the wash bed and banks to the lines, grades and cross sections shown on the plans or established by the Engineer; furnishing and mixing aggregate, cement, fly ash and water; and spreading, compacting, and curing the mixture.

The contractor shall investigate for ground water as soon as possible. If there is a need for dewatering, the contractor shall provide to the Engineer for review a comprehensive dewatering plan a minimum of two weeks before construction starts. The dewatering plan shall address any water quality requirements of the Corps of Engineers permit and ADEQ certification. Dewatering activities shall not begin until the Engineer has approved the plan.

The dewatering shall comply with all laws and permit requirements.

If changes to the approved dewatering plan are required, the contractor shall submit a revised plan to the Engineer for approval.

For soil-cement bank protection, the contractor shall be responsible for quality control as necessary to meet the requirements established herein. The contractor shall monitor the complete mix during construction of soil-cement, including the amounts of cement and fly ash used.

(A) Required Contractor Submittals:

Two weeks prior to the start of the soil-cement bank protection construction, the contractor shall submit in writing to the Engineer for approval, the following items:

- (1) The type of spreading and compaction equipment to be used.
- (2) The number and type of watering equipment to be used.
- (3) The method used to keep surfaces continuously moist until subsequent layers of soil-cement are placed.
- (4) The method used to cure permanently exposed surfaces.
- (5) The proposed source of soil-aggregate.
- (6) The proposed source(s) of Portland cement and fly ash (if used).
- (7) The approximate length of soil-cement bank protection or area of soil-cement to be placed each day prior to starting placement and compaction operations, on a daily basis.
- (8) The soil-cement mix design.

Such submittals shall not relieve the contractor of the responsibility for achieving the desired result of constructing sound soil-cement, free from defects, according to the specifications and plans, or as directed by the Engineer. Changes in the source(s) of cement or fly ash will not be permitted without the prior approval of the Engineer.

(B) Preparation of Subgrade:

Before placement of the soil-cement, the area to be treated shall be graded and shaped to the lines and grades as shown on the plans. The subgrade shall be compacted to a minimum

of 95 percent of the maximum dry density determined in accordance with Arizona Test Method 225. The subgrade shall be compacted at a moisture content within two percentage points of the optimum moisture content determined in accordance with Arizona Test Method 225.

When the embankment material is composed predominantly of rock such that these compaction control procedures will not indicate the density achieved, the Engineer will determine the amount of compaction required and the adequacy of equipment used in obtaining the required compaction. Immediately prior to placement of the soil-cement mixture, the subgrade within the lines and grades of the plans shall be moistened and any soft or yielding subgrade shall be corrected and made stable before construction proceeds in accordance with requirements of Subsection 203-5.03(A) of the specifications. Any additional subgrade reparations required outside of the lines and grades shown on the plans, as determined by the Engineer, shall be repaired by the contractor and paid for by Force Account.

(C) Mixing Plant:

Aggregate and cementitious materials for the soil-cement shall be proportioned and mixed in a central mixing plant. The mixing plant shall be either of the batch-mixing type using revolving blade, rotary drum mixers, or of the continuous mixing type using a stationary twin shaft pug mill mixer. The aggregate, fly ash, and cement shall be proportioned by weight. The mixing plant shall be designed, coordinated, and operated to produce a soil-cement mixture of the proportions specified within required tolerances.

If the soil-cement temperatures measured at the mixer are 85 degrees Fahrenheit or less, the placing and compaction shall be completed within 1-1/2 hours of the batch time. If soil-cement temperatures measured at the mixer are greater than 85 degrees Fahrenheit but less than 96 degrees Fahrenheit, placing and compaction shall be completed within 1 hour of the batch time. If soil-cement temperatures are 96 degrees Fahrenheit or greater when measured at the mixer, the contractor shall take immediate steps to lower the batch plant mix temperature to 95 degrees Fahrenheit or below, and follow the above time limits as mix temperature dictates, prior to further placement and compaction of soil-cement materials.

The water shall be proportioned by weight or volume and there shall be means by which the Engineer may readily verify the amount of water utilized per batch or the rate of water flow utilized for continuous mixing.

(1) Measuring Devices:

The mixing plant shall record the quantity of the material, shall have a digital readout, and shall provide daily printed record such that the total discharged quantity per hour and the cumulative total quantity are displayed.

Measuring devices shall be calibrated and approved by the Engineer.

Each weight measuring device shall be calibrated to an accuracy of 0.2 percent and shall be inspected and calibrated as often as the Engineer deems necessary to assure their accuracy.

Each volume measuring device shall be calibrated to an accuracy of ± 1.5 percent and shall be inspected and calibrated as often as the Engineer deems necessary to assure their accuracy.

(2) Batch Mixing:

The mixer shall be equipped with a sufficient number of paddles of a type and arrangement to produce a uniformly mixed batch. The mixer shall be equipped with a timing device which will indicate, by a definite audible or visual signal, the expiration of the mixing period. The device shall be accurate to within two seconds. The allowable tolerance for weight batching of aggregates and cementitious material shall be two percent and 0.5 percent, respectively, for each batch.

The batch mixing plants shall provide sampling facilities which are satisfactory to the Engineer and which allow representative samples of the soil-aggregate mixture prior to the addition of water and cementitious material to be obtained easily and safely. Samples of the soil-aggregate will be taken at this point to determine conformance to the gradation and plasticity requirements listed in Subsection 913-2.02(B) of the specifications.

(3) Continuous Mixing:

Aggregates shall be drawn from the storage facility by a feeder or feeders which will continuously supply the correct amount of soil-aggregate in proportion to the cementitious material.

A control system shall be provided that will automatically close down the plant when material in any storage facility approaches the strike off capacity of the feed gate. The plant will not be permitted to operate unless this automatic control system is in good working condition. The feeder for the soil-aggregate shall be mechanically or electrically driven.

Continuous mix plants shall provide sampling facilities which are satisfactory to the Engineer and which allow representative samples of the soil-aggregate mixture prior to the addition of water and cementitious material to be obtained easily and safely. Samples of the soil-aggregate will be taken at this point to determine conformance to the gradation and plasticity requirements listed in Subsection 913-2.02(B) of the specifications.

(4) Blending of Cement and Fly Ash:

The blending procedure shall be sufficient to provide a uniform, thorough, and consistent blend of cement and fly ash. The blending method and operation shall be approved by the Engineer prior to the commencement of soil-cement production. During blending of the cementitious materials, the percent of fly ash content shall not vary by more than ± 0.5 percent of the content approved by the Engineer.

Weight measuring devices are required at both the cement and fly ash feeds. At the direction of the Engineer, an additional measuring device may also be required when the cement and fly ash are pre-blended at the site. In the production of the soil-cement mixture, the percent of cementitious material shall not vary by more than ± 0.5 percent of the contents approved by the Engineer.

Silos and feeders shall be equipped and operated so as to provide uniform rates of feed and prevent caking. The charge in the batch mixer or rate of feed to the continuous mixer shall not exceed that which will permit complete mixing of all the mix material. Provisions shall be made to allow for ready sampling of the cementitious materials.

(D) Transporting, Spreading, and Compaction:

The soil-cement mixture shall be transported from the mixing plant to the construction site in clean hauling equipment vehicles outfitted with suitable covers to protect the mixture in unfavorable weather.

Spreading of the soil-cement mixture shall be accomplished using equipment that will produce uniform layers of the width and thickness necessary to provide for adequate compaction in conformance with the required dimensions shown on the plans for completed soil-cement layers. Where the soil-cement is to be placed in confined areas, the lifts may be spread by other methods as approved by the Engineer.

The layers of soil-cement shall not exceed 12 inches after compaction, or be less than four inches thick after compaction, unless the contractor can demonstrate the ability to place thicker layers with the equipment being utilized in the control strip. If potholing is performed to allow testing of each lift, the recompacted material used to repair the pothole shall also be tested and meet the requirements of this specification. Each successive layer shall be placed as soon as practicable after the preceding layer is completed, and approved by the Engineer. The maximum depth of compacted soil-cement that shall be placed per day in each location is four feet, unless approved by the Engineer.

Prior to spreading new material on a previously compacted lift which has cured for more than 1-1/2 hours, or if the surface has dried due to temperature and/or wind effects, scarification of the lift shall be performed parallel with the direction of placement using equipment approved by the Engineer. The scarification shall be performed to a depth of at least two inches, spaced between 18 and 24 inches. The Engineer may waive requirements for scarification if compaction is performed by means which provide an appropriate surface for bonding with the subsequent layer.

All construction equipment, including water spray trucks, shall be restricted from entering scarified surface areas during the interim between spreading and compaction operations.

If the surface cannot be scarified, the surface shall have cement grout slurry applied to ensure a proper bonding between lifts. The cement slurry shall have a water/cement ratio between 0.70 and 0.80 and be approved for use by the Engineer prior to placement of any additional soil-cement mixture.

All soil-cement surfaces that will be in contact with succeeding layers of soil-cement shall be kept continuously moist by fog spraying until placement of the subsequent layer, provided that the contractor will not be required to keep such surfaces continuously moist for a period longer than seven days. Mixing and placing shall not proceed when the soil-aggregate or the area on which the soil-cement is to be placed is frozen. Soil-cement shall be mixed and placed when the air is at least 40 degrees Fahrenheit and rising.

(E) Monitoring Moisture Content in the Field:

Control of water content by the contractor in the field shall be accomplished in two ways:

- (1) The moisture-density relationship for the soil-cement mixture shall be determined in accordance with Arizona Test Method 221 on a routine basis, or when any significant gradation shift or rock content change occurs.
- (2) The actual moisture content of the mixture at the time of compaction, or shortly thereafter, shall be determined in accordance with Arizona Test Method 235 to determine if the optimum moisture content as determined by Arizona Test Method 221 is being maintained. The water content in the soil-cement mixture is to be continuously monitored, and the mixing water shall be adjusted at the plant as necessary to achieve the compressive strength and compaction requirements specified herein.

(F) Quality Control Compaction Testing:

Soil-cement shall be uniformly compacted to a minimum of 98 percent of the maximum dry density determined in accordance with Arizona Test Method 221. A running average of five consecutive in place density tests shall not be less than 100 percent of maximum density as monitored by nuclear density tests in accordance with Arizona Test Method 235. Compaction shall be performed within 2 percentage points of the optimum moisture content as determined in accordance with Arizona Test Method 221. Quality control density and moisture tests shall be performed in accordance with Arizona Test Method 235 at a minimum frequency as specified in table 4:

Table 4	
Quality Control Minimum Requirements for Compaction	
Moisture/Density	1 test / 500 sy/lift

(G) Control Strips:

A control strip shall be constructed at the beginning of work on the soil-cement to be compacted. The control strip construction shall be required to establish equipment and procedures required to attain densities for the specified course.

Each control strip, constructed to acceptable density and surface tolerances shall remain in place and become a section of the completed embankment. Once control strip is complete and accepted, production may begin on the same shift for the remainder of project.

Unacceptable control strips shall be corrected or removed and replaced at the contractor's expense. A control strip shall have an area of approximately 100 square yards and shall be of the same depth specified for the construction of the course which it represents.

The materials used in the construction of the control strip shall conform to the specification requirements. They shall be furnished from the same source and shall be of the same type used in the remainder of the course represented by the control strip. The underlying surface upon which a control strip is to be constructed shall have prior approval of the Engineer.

The equipment used in the construction of the control strip shall be approved by the Engineer and shall be of the same type and weight to be used on the remainder of the course represented by the control strip.

Compaction of control strips shall commence immediately after the course has been placed to the specified thickness, and shall be continuous and uniform over the entire surface. Compaction of the control strip shall be continued until no discernable increase in density can be obtained by additional compaction effort.

Upon completion of the compaction, the mean density of the control strip will be determined by averaging the results of ten nuclear density tests taken at randomly selected sites within the control strip.

If the mean density of the control strip is less than 100 percent of the density of laboratory compacted specimens as determined by testing procedures appropriate for the material being placed, the Engineer may order the construction of another control strip.

A new control strip may also be ordered by the Engineer or requested by the contractor when:

- (1) A change in the material or mix design is made.
- (2) A control strip density is not representative of the material being placed.

(H) Power Tampers and Small Vibratory Rollers:

Small vibratory rollers which are capable of operating within 6 inches of a vertical face shall be used for compaction adjacent to the guide banks, next to the utilities and drainage conduit; at transitions to constructed levee protection, and at other areas where larger vibratory rollers cannot maneuver. The amount of rolling and tamping required shall be whatever is necessary for the particular equipment to provide the same degree of compaction as would be attained with larger self-propelled vibratory rollers. Standby replacement equipment shall be available within 1 hour if needed.

(I) Finishing/Trimming:

After compaction, the soil-cement shall be further shaped, if necessary, to the required lines, grades, and cross-sections and rolled to a reasonably smooth surface. Shaping of the face of the soil-cement bank protection shall be conducted daily at the completion of each day's production.

The exposed face of the soil-cement bank protection shall be trimmed to a neat line as shown on the plans. The resulting soil-cement bank protection width shall not be less than 8 feet after trimming unless specified on the plans.

(J) Curing:

Whenever the atmospheric temperatures are expected to drop below 30 degree Fahrenheit, the soil-cement shall be protected from freezing for seven days, after its construction by a covering of straw, earth, or other suitable material approved by the Engineer.

Temporarily exposed surfaces shall be kept moist as previously set forth. Care must be exercised to ensure that no curing material other than water is applied to the soil-cement surface that will be in contact with succeeding layers.

Permanently exposed surfaces shall be kept in a moist condition for seven days, or they may be covered with bituminous curing material, subject to the Engineer's approval. Any damage to the protective covering within seven days shall be repaired to the satisfaction of the Engineer at no additional cost to the Department.

Regardless of the curing material used, the permanently exposed surfaces shall be kept moist until the protective cover is applied. Such protective cover is to be applied as soon as practicable, with a maximum time limit of 24 hours between the finishing of the surface and the application of the protective cover or membrane.

(K) Backfill:

Backfill shall not be placed against the soil-cement until the contractor has achieved the compaction requirement.

(L) Maintenance:

The contractor shall maintain and protect the soil-cement in good condition until all work is completed and accepted. Maintenance shall include immediate repairs of any defects that may occur. This work shall be done at no cost to the Department and repeated as often as necessary. Faulty work shall be replaced for the full depth of the layer. The contractor shall take all necessary precautions to avoid damage to the completed soil-cement by equipment, and to avoid the deposition of raw earth or foreign materials between layers of soil-cement. Where ramps are constructed over soil-cement layers which are not to grade, all foreign materials and the uppermost one inch of the previously placed soil-cement mixture must be removed prior to continuation of the soil-cement construction.

(M) Construction Joints:

Construction joints are to be provided at the end of each day's work or when work is to be halted for 90 minutes or more. The joints shall be trimmed to a 15 degree minimum skew, transverse construction joint shall be formed by cutting back into the completed work to form a vertical face to the full depth of the previous lift. Before resuming placement of new material, the joints shall be roughened and loose material shall be removed by power broom.

(N) Acceptance of Soil-Cement:

The Engineer will cast, transport, cure, and test specimens in accordance with Arizona Test Method 241 for each 1,500 cubic yards of soil cement placed. Three cylinders will be tested

at seven days. The average compressive strength of the three cylinders shall achieve a minimum compressive strength of 750 psi.

Any early strength testing for the purpose of correlating seven day strength results to provide an early indicator of potentially low strength material shall be the responsibility of the contractor.

913-4 Method of Measurement:

Riprap, except gabions and sacked concrete, will be measured by the cubic yard of protection constructed by computing the surface area measured parallel to the protection surface and the total thickness of the riprap measured normal to the protection surface.

Riprap (gabions) will be measured by the cubic yard by computing the volume of the rock-filled wire baskets used.

Riprap (sacked concrete) will be measured by the cubic yard of concrete placed in the completed work. The measurement will be based on mixer volumes.

Rail bank protection will be measured by the linear foot. Measurement will be made from top of rail to top of rail (longest rail where rails of two or more lengths are used) and the distance measured will be from end rail to end rail.

Where two parallel rows of vertical rails are used, the measurement for payment will be the average of the distance along the two rows. Rail bank protection will be measured along the bank protection control line from end rail to end rail.

Soil-cement will be measured per cubic yard of soil-cement furnished and placed per the specified lines, grades, and cross-sections shown on the plans.

913-5 Basis of Payment:

The accepted quantities of riprap and rail bank protection, measured as provided above, will be paid for at the contract unit price per cubic yard or linear foot, which price shall be full compensation for the work, complete in place, including excavation; preparing the ground area; furnishing and installing the rock, filter fabric, bedding material, metal items, concrete, sacks and grout; and backfilling as required.

Materials, labor and equipment necessary to perform additional work such as jetting or drilling, as specified under Subsection 913-3.01(H) of the specifications, will be paid for in accordance with the provisions of Subsection 109.04 of the specifications.

The accepted quantities of soil-cement, measured as provided above, will be paid for at the contract unit price per cubic yard of soil-cement bank protection. Such payment shall constitute full reimbursement for all work necessary to complete the soil-cement bank protection including:

- (1) Surface Preparation;
- (2) Providing and Stockpiling Soil-Aggregate;

- (3) Cementitious Material, Watering, Mixing;
- (4) Placing;
- (5) Compacting;
- (6) Shaping and Finishing;
- (7) Curing;
- (8) Quality Control Testing; and
- (9) Other Incidental Operations.

Any waste and non-compacted soil-cement material not used on the final soil-cement bank protection will not be measured for payment.

Excavation and backfill associated with the soil-cement construction will be measured and paid under the Structural Excavation and Structure Backfill items respectively.

Construction of Gabion Mattress associated with the soil-cement work will be measured and paid under the Riprap (Gabion Mattress) item.

Payment for additional excavation, where determined by the Engineer to remove unsuitable material, per the requirements of Subsection 203-5.03(A) of the specifications, will be made in accordance with the provisions of Subsection 109.04 of the specifications.

Payment for Dewatering will be made on a Force Account basis in accordance with the requirements of Subsection 109.04 of the specifications.

ITEM 9240010 – FORCE ACCOUNT WORK (POWER SERVICE CONNECTION):

Description:

This item is established to compensate the contractor for acquiring electrical service from Arizona Public Service (APS) at the locations shown on the project plans. The contractor shall contact APS and submit the request letter with initial payment to provide required service and be billed for all APS construction charges (extension fees, inspection, etc.) and any required applications and/or agreements necessary to obtain the electrical service. The work shall include all fees, entering into agreements, labor, permits, coordination, materials and equipment incurred by the contractor in arranging for electrical service as required in the plans and specifications. The contractor shall be responsible for contacting APS, signing and paying for agreements and fees and then making arrangements necessary to establish electrical services, as indicated on the plans, and in section 107.15 of these specifications. The contractor shall pay monthly electrical charges until project acceptance, at which time the Prescott Northwest District will assume responsibility for monthly charges.

The contractor shall coordinate with APS representative:

Brenda Carter
Arizona Public Service
2200 E. Huntington Drive
Flagstaff, AZ 86001
Email: Brenda.carter@aps.com

The contractor shall make all arrangements for permanent lighting meter pedestal installation. The permanent service shall be used for temporary lighting and signal systems as shown on the plans.

Field revisions to specific arrangements shown on the plans may occur in the field only if approved by the Engineer after being appraised of the impact on cost, accessibility, voltage drop accommodation and other factors deemed pertinent.

The Department will reimburse the contractor for all direct expenses billed to the contractor by APS in support of initiating electrical services, and monthly billings (minimum and consumption), upon receipt of billings and payments. No additional costs, such as labor and time for coordination with APS, handling charges or administrative costs charged by the contractor will be paid to the contractor.

Upon final project acceptance by the Department, the contractor shall make arrangements to transfer the monthly billings for electrical services to the APS. Until project completion, the contractor is solely responsible for all monthly billings for electric services.

Materials:

Meter pedestals for electrical services shall be submitted to and approved by APS prior to procurement to ensure proposed devices meet specific APS requirements. This requirement is in addition to the equipment submittal process imposed by the Department, and approval by both APS and Department is required.

Construction Requirements:

The contractor shall provide conduit, weatherheads, attachment hardware, conductors, transformer pad and foundation, pull ropes and other elements according to the project plans and in accordance with APS requirements. Installation procedures, backfill procedures, conduit depths and other elements of construction related to the power services installation shall conform to APS requirements, even if they exceed ADOT standard requirements and the project plans and specifications.

The contractor shall determine the inspection requirements and process during initial contact with APS and schedule activities accordingly.

Measurement and Payment:

The work under this item will be measured and paid for in accordance with the requirements of Subsection 109.04 of the specifications.

Payment for Force Account Work (Provide Electrical Service) will be the actual cost as shown on the invoice(s) submitted by the contractor plus a five percent mark-up, as follows:

Sub-total = Invoice x 1.05

Also, an amount equal to 65 percent of the Sub-total, as determined above, multiplied by the applicable sales tax rate will be added to the Sub-total. Finally, an amount equal to 0.50 percent of the Sub-total will be added for the Performance and Payment Bond. The total contractor payment (TCP) will be as follows:

$TCP = (\text{Sub-total}) + (0.65 \times \text{Sub-total} \times \text{sales tax rate}) + (0.005 \times \text{Sub-total})$.

Such payment shall be full compensation for this work, complete in place as specified herein.

All permits and inspections required for service establishment are the responsibility of the contractor, at no additional cost to the Department.

Measurement of meter pedestal, conduit and conductors will be made under their respective bid items.

ITEM 9240052 – MISCELLANEOUS WORK (HEADWALL EXTENSION):

Description:

The work under this item shall consist of constructing headwall extension at the locations designated on the project plans and in accordance with the details shown on the plans and as specified herein.

Materials:

Concrete and steel reinforcement shall conform to the requirements of ADOT Standard Specifications Section 601-2.

Construction Requirements:

Headwall Extension shall be constructed in accordance with SD-06.30 and the requirements of the ADOT Standard Specification Section 601.

Method of Measurement:

Miscellaneous Work (Headwall Extension) will be measured as a unit of lump sum.

Basis of Payment:

The accepted quantities of Miscellaneous Work (Headwall Extension), measured as provided above, will be paid for at the contract unit price lump sum, which price shall be full compensation for the work, complete in place, including all concrete, reinforcing steel,

forming, structural excavation, structural backfill, labors, equipment, materials and incidentals necessary to complete the work.

ITEM 9240086 - MISCELLANEOUS WORK (TEMPORARY SIGNAL SYSTEM):

Description:

The work under this item consists of furnishing all materials, equipment, and labor to install, power, operate and remove all components needed to provide temporary signal system at the locations shown on the plans and per the requirements of these specifications.

The work shall also include furnishing, installing, relocating, operating, servicing, maintaining and removing various components of Temporary and Portable Traffic Control (TPTC) signals meeting the requirements specified herein.

A TPTC signal should be designed, installed, and implemented using methods that minimize the costs of installation, relocation, or removal without impacting the safety of the traveling public. TPTC signals used to control road user movements through TPTC zones and in other TPTC situations shall comply with the applicable provisions of the most current edition of the Manual of Uniform Traffic Devices (MUTCD).

The TPTC signals shall be furnished, installed, and operated in accordance with the latest addition of the MUTCD.

Materials:

The materials shall meet the requirements of Sections 730, 732, 733, 734 and 737 of the specifications, plans and the special provisions. The temporary traffic signal system materials shall comprise of installation of trenched and directionally bored conduits, pull boxes, electric conductors, relocation of traffic signal cabinet to a temporary wooden pole, setup traffic signal timing and monitor and adjustment of signal timing during construction, and TPTC signals.

TPTC Signals:

TPTC signals shall be portable, mounted on trailers, lightweight portable supports, or temporarily mounted on fixed supports. TPTC signal systems shall use two or more signal heads per approach and conform to the requirements as set forth in the latest edition of the NEMA TS 5 Standard.

TPTC signals shall:

- (A) Meet the physical display and operational requirements of conventional traffic signals as specified in Part IV of the Manual on Uniform Traffic Control Devices (MUTCD). Signal Heads shall be cast aluminum or polycarbonate and have three 12-inch LED indications, conforming to ITE Specification "Vehicle Traffic Control Signal Heads." Signal heads shall be equipped with visors which extend beyond the signal indications a minimum of 10 inches. The signal heads shall have the

ability to accommodate back plates and rotate horizontally 180° on a vertical axis.

- (B) Be removed when no longer needed.
- (C) Be placed in the flashing mode when not in-use if the TPTC signal is going to be in steady mode within 3 working days; otherwise, it shall be removed.
- (D) Be placed in flashing mode, or the signal heads shall be covered, turned, or taken down to indicate that the signal is not in operation during periods when it is not desirable to operate the signal.
- (E) Be equipped with conflict monitors / malfunction management systems conforming to the requirements as set forth in the latest edition of the NEMA TS 5 Standard.
- (F) Have an operating temperature range of 0 degree F to 130 degrees F.
- (G) Be equipped with batteries sufficient to operate the signal for a minimum of 30 days at temperatures between 50 degrees F and 130 degrees F without supplemental charging. Each TPTS trailer shall include a charging system with solar collection capability and an onboard battery charger capable of being used with a 120V AC power source. The system shall also include an onboard power management system capable of regulating power and providing a visual display of the battery voltage and solar input.
- (H) Not be located within 200 feet of a grade crossing.

Each system trailer shall be equipped with a vehicle video detector system capable of operating on minimum and maximum green display and green extension and shall be approved by the Engineer.

The TPTC signal system shall also be equipped with a remote monitoring system to alert the contractor and the Engineer of operational problems.

The TPTC signal system shall have a backup power source and a remote monitoring system (RMS) as described in section 2.02 to ensure the system remains in full operation for a minimum of 72 consecutive hours after the primary power source goes out.

Remote Monitoring System:

TPTC signals shall be equipped with a remote monitoring system.

The remote monitoring system shall be capable of reporting signal location, battery voltage including a low battery voltage alert, timing information, signal heads are functioning, and system faults. The RMS shall include a password-protected web site, viewable via an internet

connection. In the event of a system fault, the RMS shall provide specific information concerning the cause of the system fault (example: "red lamp on signal number 1 out"). The RMS shall immediately contact a minimum of three previously designated individuals via SMS text messaging or email, upon a fault event.

As a component of the remote monitoring system, each TPTC signal shall be equipped with a pan tilt zoom (PTZ) camera. The PTZ camera shall have pan, tilt and zoom capabilities with a minimum resolution of 1280 x 720 HD and be designed for outdoor use. The PTZ camera shall be capable of complete 360-degree rotation, 23x zoom and feature a memory function for saving pre-defined areas of the project site and specific camera positions.

Remote Programming:

The TPTC signal system shall have the ability to receive a new or revised signal timing program from a remote location. It is the responsibility of the contractor of record to ensure an individual trained in the operation of the TPTC signal equipment is available in the event of a signal malfunction or timing change. Response times shall be a maximum of one-hour from notification.

Construction Requirements:

The contractor shall relocate the existing signal cabinet on a temporary wooden pole adjacent to the proposed lighting meter pedestal. The new meter pedestal shall be used to maintain the temporary traffic signals and lighting. The contractor shall coordinate with APS on providing the temporary electrical service for the traffic signals.

The contractor shall install the conduits using directional bore method when crossing existing, temporary and new pavements. The contractor shall install the signal conductors from the wood pole mounted signal cabinet to the portable traffic signal heads to the locations shown on the plans.

TPTC signals shall be traffic actuated. Indicator lights for monitoring the signal operation of each approach shall be supplied and visible from within the work zone area.

Work on the project shall not begin until the operational plan is approved by the Engineer. The operational plan shall include, but is not limited to, the TPTC signals and their locations, signal malfunction protocol, and the contractor or law enforcement response to a malfunction.

Flaggers shall be used to control traffic during the startup of the signal system and at any time in which mode changes occur, such as from automatic to manual or vice versa. Flaggers shall also be used for traffic control at any time during construction for public safety, as required by the Engineer. Flaggers shall meet the requirements of Subsection 701-3.13 of the specifications.

The signal cabinet shall be wired, and controller programmed to maintain the proposed signal phasing and overlaps as shown in the plans. The contractor shall provide IMSA certified signal technician available onsite to monitor and adjust signal timing parameters to maintain traffic flow through the work zone for the duration of the work.

The contractor shall obtain the approval of the traffic signal timing prior to implementation. The contractor shall coordinate with Chris Summers with ADOT TSMO one week prior to implementation of the signal timing at (928) 642-2195.

Upon completion of the work identified in the plans, the contractor shall remove the controller cabinet and salvage to ADOT as identified in Item 2020055 Remove and Salvage Traffic Signals. The contractor shall unhook the power connection to the permanent lighting meter pedestal. The signal conductors and pull boxes shall be removed and disposed. The conduits shall be capped off at both ends and abandoned in place after removing the conductors and wires. Any areas impacted by the temporary signal system components will be restored to the original condition as part of the removal, the cost of which will be part of the temporary signal system cost.

TPTC Installation and Removal:

The contractor shall install the TPTC signals in accordance with the manufacturer's instructions and recommendations and as approved by the Engineer. Signal heads positioned over a roadway shall be mounted a minimum of 15 feet, from the bottom of the signal head, above the road surface. All other side mount signal heads shall be mounted so that the bottom of the signal head is at least 8 feet above the ground surface. TPTC signals shall be programmed for red flash upon startup, conflict, or power failure.

The contractor shall notify the Engineer at least 48 hours prior to use of the TPTC signals for timing approval and verification.

The TPTC signals shall be in use for the duration of construction until the Engineer determines the TPTC signals are no longer required.

TPTC Signal Interruptions:

If a TPTC signal malfunctions, the contractor shall implement the operational plan malfunction protocol and notify the Engineer immediately. The TPTC signal shall be repaired or replaced within 24 hours. The contractor shall use certified flaggers for one-lane, two-way operations, in accordance with ADOT Standard Specification 701-3.13, while the TPTC signals are not in service at no additional cost. All flaggers shall be approved by the Engineer.

If the TPTC signals are not repaired or replaced within 24 hours, the contractor shall submit a plan and schedule for how and when the TPTC signals will be operational to the Engineer. The plan shall include the reasons why the repair or replacement took longer than 24 hours.

Method of Measurement:

Miscellaneous Work (Temporary Signal System) will be measured as a lump sum for all work described in these specifications, where temporary signal systems are installed, controlled, operated and removed at the locations shown on the project plans.

Basis of Payment:

Miscellaneous Work (Temporary Signal System), measured as provided above, will be paid at the contract lump sum price, which price shall be full compensation for the work described and specified herein and on the project plans, including all equipment, labor, materials, power, tools, traffic control, temporary portable traffic signal system installation, removals, in use, preparation of any reports, calibrating and removing and incidentals required to provide a complete functional temporary roadway signal system.

The cost of materials, equipment, and labor for relocating the traffic signal cabinet, wooden pole, cabinet mounts, conduits (trench/ directional boring) installation, conductors' installation, pull boxes, signal cabinet wiring, programming the controller cabinet, monitoring, protection for TPTC, TPTC signal installation and in use shall be included in the contract price.

No payment will be made for furnishing materials, equipment, labor, or repair of the TPTC signal components that are damaged by the traveling public or any other conditions caused by nature related events.

No payment will be made for the TPTC signals not in service or if the Engineer determines the TPTC signal is not working correctly.

No additional payment will be made for flagger controls required while the TPTC signal is not in service or if the Engineer has determined the TPTC signal is not working properly.

No payment will be made for any adjustment or realignment of the TPTC signals, the cost being considered as included in the contract unit price of the temporary traffic signal system.

No additional payment will be made for remote monitoring and onsite technician availability, the cost being considered as included in the contract unit price of the temporary traffic signal system.

A TPTC signal may require relocation during construction to effectively manage traffic. There will be no additional payment for relocation of the TPTC signal, as required during construction of the project.

ITEM 9240088 – MISCELLANEOUS WORK (TEMPORARY LIGHTING SYSTEM):

Description:

The work under this item consists of furnishing all materials, equipment, and labor to install, power, operate and remove all components needed to provide temporary roadway lighting at the locations shown on the plans and per the requirements of these specifications.

Materials:

All materials shall conform to Section 737 of the Specifications, unless otherwise approved by the Engineer. The materials shall include the wooden poles, luminaire arms with fixtures, conduits, pull boxes, and conductors. The temporary lighting shall be adjusted for the

construction phases identified in the plans.

Construction Requirements:

The contractor shall coordinate with ADOT and APS for necessary power of temporary lighting components using the proposed permanent lighting meter pedestal. Once the temporary roadway lighting is no longer needed the contractor will remove all equipment associated with the temporary roadway lighting. Any areas impacted by the temporary roadway lighting components will be restored to the original condition as part of the lighting removal, the cost of which will be part of the temporary roadway lighting cost.

Method of Measurement:

Miscellaneous Work (Temporary Lighting System) will be measured as a lump sum for all work described in these specifications, where temporary roadway lighting is installed and removed at the locations shown on the project plans.

Basis of Payment:

Miscellaneous Work (Temporary Lighting System), measured as provided above, will be paid at the contract lump sum price for each location, which price shall be full compensation for the work described and specified herein and on the project plans, including all equipment, labor, materials, power, tools and incidentals required to provide a complete functional temporary roadway lighting system.

(924CQC, 09/17/20)

ITEM 9240170 - CONTRACTOR QUALITY CONTROL:

Description:

The work under this item 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.

Method of Measurement:

Contractor quality control will be measured for payment on a lump sum basis as a single unit of work.

Basis of Payment:

(A) 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:

- (1) The first partial payment price will be the lesser of 25 percent of the contract lump sum price for contractor quality control, or 1 percent of the original total contract bid amount.
- (2) 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.

(B) 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 days, excluding weekends and holidays, 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 days, excluding weekends and holidays, beyond the original Wednesday due date.

All deducted monies which are retained by the Department, as specified above, are liquidated damages.

- ITEM 9240181 MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS)
(MANUAL / MECHANICAL METHODS):**
- ITEM 9240182 MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS)
(HERBICIDE):**

Description:

The work under these items shall consist of surveying, as well as controlling noxious and invasive plant species manually / mechanically and/or with the application of herbicides, in the areas designated by the Engineer, and throughout the duration of the contract, as required in a Noxious Species Control Plan (NSCP) prepared by the contractor as specified herein. When noxious or invasive plant species are determined to be present within the project limits or all anticipated construction zones, the control procedures in the NSCP shall be implemented with the approved weed management measures achieved prior to earth moving activities of infested areas.

The weed control procedures in the NSCP shall also be implemented during all stages of construction and in advance of seeding. Control of Noxious Plants through herbicide methods shall be accomplished between fourteen (14) and twenty-one (21) calendar days prior to Clearing and Grubbing, as well as construction excavations. Control of Noxious Plants through manual / mechanical methods shall be accomplished within seven (7) calendar days prior to Clearing and Grubbing, as well as construction excavations. Repeated treatments shall resume after Clearing and Grubbing when noxious/invasive plants occur during construction. In addition, all construction-related equipment, materials, and personnel moving in and/or out of the project site shall be inspected and cleaned of noxious and invasive plant species (seeds, seed heads / pods) at no additional cost to the Department.

For projects that include Landscape Establishment, as specified in Section 807 of the Standard Specifications and these Special Provisions, control of noxious and invasive plant species will also be required throughout the Landscape Establishment phase, and shall be included in the contractor's NSCP.

The contractor shall conduct repeated applications for Control of Noxious Plants throughout the entire contract time including the Landscape Establishment phase when noxious/invasive plants occur. Successive treatments along with multiple mobilizations for Control of Noxious Plants shall be conducted in accordance with invasive weeds' growing seasons at no additional cost to the Department.

The control of plant species not on the State or Federal Noxious or Invasive lists – especially Forest Service Regional/BLM lists noted below will be paid only when control is directed by the Engineer based on the original or amended NSCP approved by an ADOT construction Professional Landscape Architect (PLA) licensed in the State of Arizona.

The areas to be designated by the Engineer for Control of Noxious Plants shall be coordinated with an ADOT construction PLA. Unless the project site presents sizable monocultures or pure stands of high-density noxious and invasive plant species, the contractor shall not perform broadcast applications of glyphosate and/or other broad spectrum non-selective herbicides within the project limits. Spot-treating of identified noxious and invasive plant species patches with appropriate selective herbicides shall be conducted.

For unpaved project areas that will ultimately be seeded with desirable native plant species, the contractor shall avoid persistent herbicide residues contamination in soil. The application of plant growth regulator (PGR) herbicides including Pyridine Carboxylic Acid (PCA) herbicides, that do not break down easily, shall be approved by the Engineer in accordance with an ADOT construction PLA's evaluation. Soil sterilant herbicides, especially bare-ground herbicides with long-lasting Soil Persistence, shall be prohibited to use for all unpaved project areas that will be seeded. Soil sterilant herbicides including bare-ground herbicides shall be prohibited to use for all unpaved and/or unstabilized project areas that are prone to soil erosion and/or dust emission. Pre-emergence herbicides shall be prohibited to use for unpaved project areas that will eventually be seeded.

All glyphosate, as well as formulations of glyphosate-based herbicides and/or such products under the brand name / trade name of Roundup shall be cautiously evaluated for use by an ADOT construction PLA and approved by the Engineer in accordance with environmental commitments, along with site specific concerns of sensitive biological resources for native species and habitats.

The selection of appropriate treatment method(s) between herbicide versus manual/mechanical or in combination shall be proposed by the contractor within NSCP and approved by an ADOT construction PLA through the Engineer consistent with type(s), life stage(s), growing season(s), and existing condition(s) of plant species, as well as environmental commitments. The contractor may apply the herbicide method to exterminate noxious plants first and remove the dead noxious plants by using the manual / mechanical method after herbicide treatment is successful. Clearing and Grubbing shall not be applied to remove the dead noxious/invasive plants, as well as contaminated soil seed bank if the method will spread the reproducible components of noxious/ invasive plants. Manual / mechanical method shall be applied instead. The reproducible components of noxious/ invasive plants shall include, but are not limited to roots, stems, seeds, seed heads, or seed pods according to various types and life stages of plant species.

Materials:

General

The contractor shall accurately follow all applicable herbicide label requirements and prevent adverse environmental effects. The herbicides to be used and the methods of application shall conform to U. S. Environmental Protection Agency (EPA), Arizona Department of Agriculture, and/or Arizona Department of Environmental Quality (ADEQ) requirements, and the product's label instructions, as approved by the Engineer. If herbicides are to be applied to potential or delineated Waters of the US as defined under Section 404 of the Clean Water Act, the contractor shall file a Notice of Intent (NOI) and Notice of Termination (NOT) to EPA and/or ADEQ for compliance with the National Pollutant Discharge Elimination System (NPDES) Pesticide General Permit and/or Arizona Pollutant Discharge Elimination System (AZPDES) Pesticide General Permit (PGP).

All herbicides used on the project, including stump treatment herbicide(s), shall be in compliance with NPDES and/or AZPDES PGP(s). The PGP NOI(s) shall be filed for

herbicide(s) utilized within the Ordinary High-Water Mark (OHWM) of Jurisdictional Waters of the U.S.

All materials to be used shall be listed and protocol information provided in the Noxious Species Control Plan, as specified below. The contractor shall provide the herbicides container with the original chemical label for inspection and confirmation of the chemicals used. All containers shall be disposed of as recommended by the manufacturer.

Herbicides proposed in the plan for use on projects within transportation easements on BLM and/or USFS Lands shall be in conformance with the following current environmental documents including: "Environmental Assessment for ADOT Herbicide Treatment Program on Bureau of Land Management Lands in Arizona", which is available at <https://eplanning.blm.gov/eplanning-ui/project/34810/510> or the "Environmental Assessment for Management of Noxious Weeds and Hazardous Vegetation on Public Roads on National Forest System Lands in Arizona" which is available at: <http://www.fs.usda.gov/main/r3/landmanagement/projects>. The Environmental Documents include a list of approved Herbicides, Mitigations and Best Management Practices (BMPs), which shall be included, as appropriate, by the contractor in the submitted NSCP.

Web links to environmental documents for noxious weeds and invasive plant species treatment for the six (6) National Forests within Arizona:

(1) Final EIS (Environmental Impact Statement) and Record of Decision for Noxious Weed Treatment on the Coconino, Kaibab, and Prescott National Forests:
<http://www.fs.usda.gov/project/?project=30>

(2) Coronado National Forest EA (Environmental Assessment) for Noxious Weed Treatments:
<http://www.fs.usda.gov/detail/coronado/landmanagement/resourcemanagement/?cid=stelprdb5123160>

(3) Apache-Sitgreaves National Forest Integrated Forest-Wide Noxious Terrestrial and Aquatic Weed Management Plan:
<https://www.fs.usda.gov/project/?project=4967>

(4) Tonto National Forest Integrated Treatment of Noxious and Invasive Weeds:
<https://www.fs.usda.gov/project/?project=4454>;

Additional information on invasive species requirements for the Tonto National Forest is available at:
http://www.fs.usda.gov/detail/tonto/landmanagement/resourcemanagement/?cid=fsbdev3_018789.

Arizona Department of Agriculture NOXIOUS WEEDS (under the authority of Arizona Revised Statutes, Administrative Code R3-4-244 Regulated and Restricted Noxious Weeds, as well as R3-4-245 Prohibited Noxious Weeds) web link:

<https://agriculture.az.gov/pestspest-control/agriculture-pests/noxious-weeds>

Furthermore, the USDA Southwestern Region Weed Field Guides web link is accessible below:

<https://www.fs.usda.gov/detail/r3/forest-grasslandhealth/invasivespecies/?cid=stelprd3813522>

The USDA New Invaders of the Southwest is attainable within the web link below:

<https://docslib.org/doc/7815112/new-invaders-of-the-southwest>

The USDA Field Guide for Managing Buffelgrass in the Southwest is obtainable through the web link below:

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd563017.pdf

All materials used shall be in accordance with the approved NSCP and Pesticide Use Proposal (PUP).

Construction Requirements:

The contractor shall develop a NSCP for state and federal listed noxious and invasive plant species, and other undesirable plant species shown on the list posted on the Roadside Development web site (<https://azdot.gov/node/5372>) for approval by an ADOT construction PLA. Four (4) copies of the proposed NSCP in standard three (3) ring binders shall be submitted to the Engineer within seven (7) calendar days after the Execution of Contract. The ADOT construction PLA shall review and respond to the proposed NSCP within 10 calendar days upon receiving the submittal. If requested, additional copies may be submitted for review and comments by Native American Community governing body designated representative as approved by the Engineer. Native American Community governing body designated representative shall also review and comment the proposed NSCP within 30 calendar days upon receiving the submittal. The contractor proposed NSCP shall include as minimum the following information applicable to the project area, location and conditions listed below:

- (1) A list of Noxious and Invasive Species and other Roadside Development approved plant species that would be anticipated for control based on existing vegetation and the project biotic communities. The weed species shall include but not be limited to the TABLE – I listed below:

TABLE – I	
Scientific Name	Common Name
Heterotheca subaxillaris (syn. Chrysopsis scabra)	Camphorweed
Salsola kali subsp. tragus (syn. Salsola iberica)	Russian Thistle / Tumbleweed

- (2) The methods of control of noxious and invasive plant species including herbicide stump treatment shall be determined based on the species present within the project limits prior to earth moving activities as well as subsequent project construction phases before seeding. Pre-emergent herbicide shall NOT be applied to all project seeding areas. The

contractor shall provide information / methods on how the application of herbicides will NOT harm the expected desirable seed species germination and establishment as specified in Section 805 of these Special Provisions.

- (3) The proposed method(s) of control and extermination treatment between herbicide versus manual/mechanical or in combination to be utilized for each anticipated plant species suitable for the specific stage of plant development.
- (4) The herbicides, method and frequency of application, and rates to be used for each listed plant species.
- (5) Copies of herbicide and surfactant labels and Safety Data Sheet (SDS) for all chemicals proposed for use.
- (6) Procedure for collection, removal, containment, and disposal of noxious and invasive plants. All components of noxious and invasive plants such as roots, stems, leaves, flowers, seeds, seed heads, or seed pods shall be subject to collection, removal, containment, and disposal at no additional cost to the Department.
- (7) Methods and procedures to be followed to protect existing, transplanted, and new emerging vegetation in seeded areas.
- (8) Responsible Applicator and required Arizona Department of Agriculture Pest Management Division Licensing information, as specified in Section 806.
- (9) Record procedures to be followed to document control work completed.
- (10) Record procedures to be followed for reporting all chemicals used annually within transportation easements on BLM or USFS Lands within two (2) months or September 30th of each calendar year (whichever is sooner) to an ADOT construction PLA.
- (11) Projects on transportation easements on BLM or USFS Lands shall include a completed Pesticide Use Proposal (PUP) form for all proposed herbicide uses prepared for submittal to the appropriate BLM Field Office or National Forest for approval. An example of a completed PUP for the project area will be provided to the contractor for use in preparing their PUP upon request to the ADOT construction PLA.
- (12) Projects on transportation easements within Native Americans (Tribal) Land shall include a completed PUP form for all proposed herbicide uses prepared for submittal to the appropriate representative of tribal government (governing body) for approval. An example of a completed PUP for the project area will be provided to the contractor for use in preparing their PUP upon request to the ADOT construction PLA.
- (13) When applicable, other information and explanations are required in the PUP or to implement the NSCP.
- (14) Process to be used for amending the NSCP to add additional plants or treatments that may be required as the project progresses.

- (15) A copy of the original Special Provisions for Control of Noxious Plants that the contractor bid on shall be attached to the NSCP.
- (16) Plans and methods to protect Threatened and Endangered Species in accordance with the Environmental Mitigations section of the contract documents.
- (17) Plans and methods for controlling of noxious/invasive plants in riparian and aquatic areas:
 - I – Prevention of herbicide drifted by wind onto non-target native plants or nearby wetlands/watercourses by using low pressure systems and coarse-spray nozzles.
 - II – Safe and effective use of herbicide chemicals labeled for the vicinity of wetlands/watercourses in prevention of water quality contamination.

The NSCP submitted to the Engineer shall not be implemented until it is approved by an ADOT construction PLA and the contractor is so directed by the Engineer.

The contractor shall keep a copy of the approved NSCP and furnish to the Engineer a copy of the approved NSCP for record keeping. The NSCP copy of the contractor and Engineer shall be maintained up to date with the contractor providing submittals of completed work activities within five (5) working days following completion of the work for each area directed by the Engineer for control. The NSCP shall be maintained up to date with submittals of the above completed NSCP information for the duration of the project.

The Engineer in consultation with an ADOT construction PLA shall designate/approve the location of the areas to be treated, and when required the frequency of treatment as per the NSCP. Payment will be made for the initial treatment of each area, whether with manual / mechanical methods or using herbicides, and for each subsequent treatment ordered and approved by the Engineer.

The contractor shall document the location and size of the project treatment areas, as well as noxious and invasive plant species that have been treated by the end of each working day. Furthermore, the contractor shall mark up the project layout plans (engineering drawings) with location and size of the project treatment areas, as well as noxious and invasive plant species that have been treated. Such documentation shall be submitted to an ADOT construction PLA for inspection/evaluation through the Engineer.

The contractor shall begin control of the designated areas within ten (10) working days of the Engineer's notice and complete the treatment within fifteen (15) working days of the notice approved by the Engineer.

If other plant species listed in the Arizona Noxious Weed List, the Forest Service Regional/BLM lists, or the ADOT Invasive and Noxious Plant Species Lists (available electronically at the following Roadside Development web address:

<https://apps.azdot.gov/files/roadway-engineering/roadside-dev/adot-invasive-noxious-plant-species-list-for-construction-projects.pdf>) occur within the project area

that are not included in the NSCP, the contractor shall modify the Noxious Species Control Plan to add such species, including acceptable control measures and where applicable a PUP, and submit this information as an amendment of the NSCP to the Engineer and ADOT

construction PLA for acceptance. No herbicide Control of Noxious Plants work shall be commenced on Federal lands until the PUP has been entirely completed and approved.

The project areas will be surveyed by an ADOT construction PLA, with the approval of the Engineer, prior to earthmoving activities and following rainfall events and during plant germination and growth periods for listed noxious and invasive plant species. To update NSCP, the contractor shall also furnish field inspection/observation reports for new growth of noxious/invasive plant species between four (4) weeks to six (6) weeks after each rainfall event of 0.5 inches (≥ 12.7 mm) or more. When surveys determine that noxious, invasive, or other designated plants species listed in the NSCP for control are found to be present within the project right-of-way, the contractor shall treat the areas designated by the Engineer in accordance with the approved NSCP. Such treatments shall be completed and approved by the Engineer before ground disturbing or earthmoving activities occur from those areas.

The contractor shall mark those areas receiving manual / mechanical control with an application of a photosensitive dye. Herbicides shall be mixed with a photosensitive dye which will produce a contrasting color when sprayed upon the ground. The color shall disappear between three (3) and five (5) days after being applied. The dye shall not stain any surfaces nor injure non-target plant or animal species when applied at the manufacturer's recommended application rate.

Application of herbicide shall be in accordance with the manufacturer's instructions and the approved NSCP. Responsible herbicide applicators shall be licensed under the appropriate category as required by State Law.

Mowing shall be allowed if it is proven to be a successful permanent control method of annual noxious / invasive plant species as approved by the Engineer. If approved, mowing shall be performed before the annual noxious / invasive plant species are able to set seed. Mowing shall NOT be operated in areas where there are perennial noxious / invasive plant species. Mowing shall NOT be utilized for noxious / invasive plant species that carry existing seeds (seed heads / pods). All project areas and plant species to be mowed shall be carefully evaluated / identified by an ADOT construction PLA with approval from the Engineer.

Unless otherwise called out in the plans/details, specified in these Special Provisions, or as directed by the Engineer, the contractor shall remove the identified noxious / invasive woody vegetation to the finished grade level without uprooting it (flush cutting). In order to stop stump regrowth, the applicable remaining stumps shall be promptly treated with suitable herbicide so the identified noxious / invasive woody vegetation will not sprout new growth from the stumps. Herbicide stump treatment shall NOT be conducted to plant species such as common evergreen coniferous shrubs and trees, which will unlikely generate stump regrowth. Manual / mechanical removal of remaining woody vegetation stumps and rootballs in erosive areas shall be avoided to maximum extent practicable (MEP). The removal method and process shall be evaluated by an ADOT construction PLA with approval from the Engineer.

Removal of soil seed bank that has been contaminated by the natural storage of seeds from noxious / invasive plant species shall be required for projects involving soil / ground disturbance from construction excavations or as designated by the Engineer. The contractor shall remove the top three (3) inches of the existing undisturbed surface soil from the project areas infested with noxious / invasive plant species as evaluated / identified by an ADOT

construction PLA with approval from the Engineer. All removed contaminated soil seed bank shall be properly disposed of or placed (buried) below the top two feet (2'-0") of the final finished grade as directed by the Engineer. The removal, stockpile, burial, or disposal of contaminated soil seed banks shall be well contained / concealed during construction. The contractor shall then return all soil-seed-bank removal disturbed area, to an acceptable surface condition (finished grade), as approved by the Engineer.

No earthmoving activities to the treated areas shall be approved until the employed weed management measures have been inspected to be successfully achieved as per the approval of the Engineer.

For projects within transportation easements on BLM, USFS, or Tribal Lands, PUPs shall be prepared and submitted to the Engineer and ADOT construction PLA as required in the NSCP. The PUPs will be submitted by the Department to the appropriate BLM Field Office, National Forest, or appropriate representative of tribal government (governing body) and must be approved by the BLM, National Forest, or tribal government (governing body) before being approved by the Engineer.

The contractor shall keep records of all herbicide applications. A copy of this record shall be added to the NSCP and also submitted to the Engineer after each application. The contractor shall be responsible for the proper transport, storage, and application of all materials necessary for herbicide control treatments.

As a part of the integrated management approach, all areas to be treated for noxious and invasive plant species shall ultimately be seeded, landscaped, or permanently stabilized to minimize and prevent from weed re-invasion / re-infestation, as specified in these Special Provisions.

Method of Measurement:

Control of noxious and invasive plant species, either manually (mechanically) or with herbicides, will be measured by the square yard of each treated area, as directed and approved by the Engineer.

Basis of Payment:

Listed bid quantities for Control of Noxious Plants are for estimating and bidding purposes. They shall not be guaranteed to the contractor. The intensity for scope of work, project-specific present conditions, particular stages of noxious and invasive plant development, as well as annual rainfall patterns shall be considered / evaluated by the construction PLA and approved by the Engineer in determining final quantities and unit costs to be paid for.

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

The accepted quantities of control of noxious and invasive plant species, either manually (mechanically) or with herbicides, measured as provided above, will be paid for at the contract

unit price for each soil treatment directed and approved by the Engineer. Such price will be considered to include all labor, materials, equipment, and multiple mobilization costs required to complete the work as specified herein. Such price shall also cover collection, removal, containment, and disposal of noxious and invasive plant species. Up to four (4) mobilizations may be required to accomplish control of noxious and invasive plant species as specified herein. The Department will consider the cost of such multiple mobilizations to be included in the price bid for control of noxious and invasive plant species. Adjustments may be made to the contract through negotiation for more than four (> 4) mobilization activities as per the approval of the Engineer.

No measurement or payment will be made for treatment of those areas, manually / mechanically or with herbicides, not authorized and approved by the Engineer. No payment will be made for treatment areas not in compliance with the approved PUP/NSCP. No payment will be made for areas treated by herbicide products not in compliance with the approved PUP/NSCP. No measurement or payment will be made for the removal and proper disposal of waste materials; the cost being considered is included in contract items.

No measurement or payment will be made for preparation of the NSCP and, when applicable, the PUP, including the initial submittal and modifications, or for monitoring, the costs being considered are included in contract items.

No separate measurement or direct payment will be made for Control of Noxious Plants under Landscape Establishment as specified in Section 807 of the Standard Specifications and these Special Provisions; the cost being considered is included in the respective contract item of Landscape Establishment.

For projects engaging extensive excavations, no separate measurement or direct payment will be made for the removal, stockpile, burial, or disposal of contaminated soil seed banks, as well as returning all soil-seed-bank removal areas to an acceptable surface condition (finished grade); the cost being considered is included in the respective contract item of excavations.

(925SRVY, 08/16/19)

SECTION 925 CONSTRUCTION SURVEYING AND LAYOUT:

925-5 **Basis of Payment:** the fourth paragraph of the Standard Specifications is revised to read:

If additional staking and layout are required as a result of additional work ordered by the Engineer, such work will be paid under items listed in the table below.

ITEM	PREDETERMINED RATE
9250101-ONE-PERSON SURVEY PARTY	\$110 per hour
9250102-TWO-PERSON SURVEY PARTY	\$150 per hour
9250103-THREE-PERSON SURVEY PARTY	\$190 per hour
9250106-SURVEY MANAGER	\$175 per hour
9250105-OFFICE SURVEY TECHNICIAN	\$85 per hour

(1001MATL, 06/17/21)

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 requirements of 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 of the specifications, for any source proposed for use regardless of whether a previously approved environmental analysis exists for the site.

In accordance with Subsection 104.12 of the specifications, the contractor may utilize 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 contractor shall not produce material for the project, mobilize crushing equipment or clear a worksite prior to approval of the environmental analysis.

The contractor shall comply with the requirements of the landowner or agency having jurisdiction over the land.

The Department makes no representation regarding quality or quantity of materials in any source.

1001-2.01 Information Available:

The Department 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. Further information on material sources is available at <https://azdot.gov/business/environmental-planning/material-source-guidance>.

1001-2.02 Material Sources in Floodplains:

Any development of a material source that is determined to be in a flood plain must meet the requirements of the appropriate local, state, and federal agencies, including as applicable, the U.S. Army Corps of Engineers, Section 404 of the Clean Water Act, ADEQ or Tribal 401 Water Quality Certification, and the National or Arizona Pollutant Discharge Elimination System (NPDES/AZPDES).

If the contractor wishes to procure a material source within a floodplain, the contractor or material supplier shall submit a Floodplain Use Permit application to the appropriate floodplain management agency. The contractor shall submit to the Department documentation that the Floodplain Use Permit for the material source was approved and signed by the appropriate agency's Floodplain Administrator. The contractor or material supplier shall comply with all the requirements of the Floodplain Use Permit, including renewal of the Permit as needed or required.

The Department will require an engineering report if the material source is situated in the 100 year floodplain of any stream or watercourse, and located within one mile upstream and two miles downstream of any highway structure or surfaced roadway crossing. The engineering report shall be prepared by a professional engineer with expertise in hydrology, hydraulics, river mechanics, and fluvial geomorphology. The engineering report shall address the effects of the potential for structural damages following a 100 year flood event.

All other permits required to obtain a material source shall be furnished to the Department upon request.

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.

Material sources in floodplains located on Native American Tribal Lands will be considered for use on an individual analysis. The analysis shall include a review of applicable land use plans, floodplain management plans, environmental plans, applicable laws and regulations

pertaining to Native American Tribal Lands, and an engineering analysis of the effects on any highway facility or structure. The contractor shall obtain from the Bureau of Indian Affairs (BIA) and the Native American Tribal Council all permits, licenses, and approvals for the Department to review.

1001-2.03 Protection and Restoration:

The contractor shall comply with the requirements of Subsections 107.11 and 107.12 of the specifications for protecting and restoring the material source. The contractor shall assume full responsibility to protect and rehabilitate the material source to the satisfaction of the Department and in compliance with the requirements of the Federal Land Management Agency (FLMA) having jurisdiction or by the owner of the material source.-

1001-3 Proposed Source:

1001-3.01 Approval Requirements:

(A) General:

The contractor shall notify the Engineer prior to or at the preconstruction conference 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.

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.

(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 specifications, 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 of the specifications shall be completed prior to initiation of any activities that disturb the existing conditions at the proposed source.
- (2) The contractor has furnished the Engineer with evidence that he has secured the rights to the source, including ingress and egress.

(C) Historical and Cultural Resources:

The archaeological survey report of the proposed material source shall be prepared by the contractor's archaeological consultant and shall conform to the requirements of Subsection 104.12 of the specifications.

In the event that prehistoric or historic structures and prehistoric or historic artifacts are encountered during any activity related to the construction of the material source, the contractor shall immediately cease operations within a 50 foot radius of the discovery location and notify the Engineer. In the event that an unmarked human burial and/or funerary remains are encountered during any activity related to the construction of the material source, the contractor shall immediately cease operations within a 100 foot radius of the discovery location and notify the Engineer. The Engineer will contact the Environmental Planning – Historic Preservation Team so that appropriate notification of the discovery is made per state and federal regulations.

After notifying the Engineer, the contractor shall, within good faith, secure the area and take all reasonable measures to protect the historical and cultural resources. No activity shall resume unless authorized by the Engineer. The Engineer will not authorize resumption of any activity until receiving confirmation from the Environmental Planning – Historic Preservation Team that the contractor may commence work.

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.

(E) Bureau of Land Management Material Sources:

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

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

1001-4 Special Access within Right Of Way:

The contractor may submit a request to the District 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 District 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 District Engineer to deny a request by the contractor will be considered to be final.

1001-5 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.

(1003REBAR,12/17/20)

SECTION 1003 REINFORCING STEEL: of the Standard Specifications is revised to read:

1003-1 General Requirements:

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 of the specifications 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 submitted from the coating manufacturer and Certificates of Analysis shall be submitted from the coating applicator.

When reinforcing steel is delivered to the project site, the contractor shall furnish the Engineer with a copy of all shipping documents. Each shipping document shall show the sizes, lengths, and weights of the reinforcing steel separately for each structure.

Reinforcing steel shall be free of dirt, oil, paint and grease and shall conform to the requirements of Section 605 of the specifications. Reinforcing steel shall be protected at all times from damage. All reinforcing steel shall be free of dirt, oil, paint and grease. Rust, surface irregularities, or mill scale will not be the cause for rejection, provided the weight, dimensions, cross-sectional area, and tensile properties of a manually wire brushed test specimen are not less than the requirements of the specifications.

1003-2 Reinforcing Bars:

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 A615 for Grade 60 steel. Unless otherwise specified, steel bars meeting the requirements of ASTM A706 may be substituted for ASTM A615 steel bars. When ASTM A706 bars are used, tack welding of the reinforcement will not be permitted unless approved by the Engineer.

Samples of reinforcing bars taken at the supplier's or fabricator's place of business shall be defined as pre-shipment samples, while those samples obtained from stockpile or shipment at the project shall be defined as project samples. A shipment shall be considered any amount of reinforcing bars delivered to a project on any given day, of one transported load.

Reinforcing bars sizes No. 4, No. 5, and No. 6 will be accepted with the submission of a Certificate of Compliance. All other reinforcing bar sizes shall be subject to pre-shipment and project sampling as outlined below.

1003-2.01 Pre-Shipment Sampling:

Prior to shipment of reinforcing bars to the project, the supplier or contractor shall contact Materials Group, Structural Materials Testing Section to obtain a laboratory number referenced to the project number. A random sample shall be taken at the supplier's place of business and delivered to the Structural Materials Testing Section. For bar size No. 14, the sample shall be one piece not less than 42 inches in length, selected at random for each shipment up to 30 tons. For bar size No. 18, the sample shall be one piece not be less than 42 inches in length, selected at random for each shipment up to 50 tons. For all other bar sizes, the sample shall be one piece not less than seven feet in length, selected at random for each shipment up to 20 tons. Samples shall be submitted for each bar size, grade, heat number, and manufacturer in the shipment. The pre-shipment bars that are obtained from the supplier or fabricator must be accompanied by a Certificate of Compliance. The information shown on the certificate must match the bar identification marks. If no Certificate of Compliance is available or the information shown on the certificate is incomplete or inaccurate, the bars will not be accepted for testing.

When the supplier or fabricator makes a shipment to a project, a Certificate of Compliance shall be furnished stating that the material in the shipment is from the same stock as the pre-shipment sample covered by the laboratory number assigned by the Structural Materials Testing Section. Reinforcing bars represented by the pre-shipment sample failing to comply with the specification requirements shall not be used on any project.

1003-2.02 Project Sampling:

The Engineer reserves the right to sample reinforcing bars at any time. Project samples shall consist of one sample bar not less than seven feet in length for all bar sizes. Placement of the reinforcing bars shall not be delayed while the contractor is awaiting test results.

Concrete placement operations shall not begin until satisfactory test results of the project sample bars are obtained.

When the supplier or fabricator makes a shipment to a project from outside the Phoenix or Tucson areas, or not otherwise subjected to pre-shipment sampling, the shipment shall be accompanied by a Certification of Compliance. Before any reinforcing bars from a shipment is to be incorporated into the project work, a project sample shall be taken, tested, and approved by the Structural Materials Testing Section. A project sample shall be taken as soon as practical upon arrival at the job site. A different project sample that is representative of each bar size, grade, heat number, and manufacturer from that shipment will be required. The sampling requirements described for pre-shipment sampling for the Phoenix or Tucson areas shall be used.

1003-3 Wire:

Steel wire used as spirals or ties for reinforcement in concrete shall conform to the requirements of AASHTO M 336. Wire shall be deformed or cold drawn (smooth).

1003-4 Welded Wire Fabric:

Welded wire fabric for concrete reinforcement shall conform to the requirements of AASHTO M 336.

1003-5 Epoxy Coated Reinforcing Bars:

1003-5.01 Steel:

Reinforcing bars shall conform to the requirements of Subsection 1003-2 of the specifications.

Epoxy coated reinforcing bars will be sampled and tested in the same manner as uncoated reinforcing bars. The coating and flexibility of the epoxy coated reinforcing bars will also be tested by the Department for acceptance.

1003-5.02 Epoxy for Coating:

A list of powdered epoxy resins which have passed prequalification tests, as described in ASTM A775, "Epoxy Coated Steel Reinforcing Bars", is maintained on the Department's Approved Products List (APL). The powdered epoxy resins selected by the contractor and furnished by the manufacturer shall be of the same material and quality as the resins listed on the APL, and shall be applied and cured in the same manner used to coat the test bars in the original powder prequalification test. Copies of the most current version of the APL are available on the internet from the ADOT Research Center through its Product Evaluation Program.

Prequalification testing may be performed by the National Bureau of Standards, State laboratories, or qualified private laboratories.

The Certificate of Compliance from the coating manufacturer 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.

Patching or repair material, compatible with the coating and inert in concrete shall be made available by the epoxy coating manufacturer. This material shall be suitable to repair areas of the coating which were damaged during fabrication or handling in the field.

1003-5.03 Application of Coating:

The coating applicator's facility shall be subject to approval by the Department. Applications for approval of facilities shall be made to the Department by the coating applicator.

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.

The powdered epoxy resin coating shall be applied to the cleaned surface as soon as possible after cleaning and before visible oxidation occurs. In no case shall more than eight hours elapse between cleaning and coating.

The protective epoxy coatings shall be applied by the electrostatic spray method or the electrostatic fluidized bed method in accordance with the recommendations of the coating manufacturer. The epoxy coating may be applied before or after fabrication of the reinforcing bars.

The epoxy coating shall be applied as a smooth uniform coat. After curing, the coating thickness shall be in accordance with the requirements of ASTM A775. 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.

The coating shall be checked visually after cure for continuity. It shall be free from holes, voids, contamination, cracks and damaged areas.

The coating shall not have more than two holidays (pinholes not visible to the naked eye) in any linear foot of the coated item. A holiday detector shall be used, in accordance with the manufacturer's instructions, to check the coating for holidays.

The flexibility of the coating shall be evaluated on a representative number of bars selected from each production lot. The coated bar shall be bent 120 degrees (after rebound) around a six-inch diameter mandrel. The bend shall be done at a uniform rate and may take up to one minute to complete. The test specimens shall be at thermal equilibrium between 68 and 85 degrees F at the time of testing. No cracking of the coating shall be visible to the naked eye on the outside radius of the bent bar.

The contractor shall furnish a Certificate of Analysis from the coating applicator with each shipment of coated steel. In addition to the requirements of Subsection 106.05 of the specifications, 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.

The Department reserves the right to have its authorized representative observe the preparation, coating, and testing of the reinforcing bars. The representative shall have free access to the plant, and any work done when access has been denied will be automatically rejected.

If the representative elects, lengths of coated bars may be taken from the production run on a random basis for test, evaluation, and check purposes by the Department.

1003-5.04 Shop Repair:

Epoxy coated reinforcing bars which do not meet the requirements for coating thickness, continuity of coating, coating cure, or flexibility of coating shall not be repaired.

Reinforcing bars with these defects shall be replaced, or alternately stripped of epoxy coating, recleaned and recoated in accordance with the requirements of this specification.

Coating breaks due to fabrication and handling shall be repaired with patching material if the defective area exceeds 2 percent of the surface area of the bar in a one-foot length and the damaged spot is larger than 1/4 inch by 1/4 inch.

The repair of coating breaks shall be limited to bars on which the total of the defective coating areas does not exceed 5 percent of the surface area of the reinforcing bar. Bars with greater

than 5 percent damage shall be replaced, or alternately stripped of epoxy coating, recleaned and recoated in accordance with the requirements of this specification.

1003-6 Prestressing Reinforcing Steel:

Prestressing reinforcing steel shall conform to the requirements of Section 602-2.01 of the specifications.

Prestressing steel shall be high-tensile steel wire, high-tensile seven-wire strand or high-tensile alloy bars, as shown in the plans.

High-tensile steel wire shall conform to the requirements of AASHTO M 204.

High-tensile seven-wire strand shall conform to the requirements of AASHTO M 203 for Grade 270. In addition to the 0.5-inch diameter prestressing steel typically shown on the plans, 0.6-inch diameter seven-wire strand may be used for cast-in-place prestressed structures.

High-tensile alloy bars shall conform to the requirements of AASHTO M 275.

All prestressing steel shall be satisfactorily protected from damage by abrasion, moisture, rust, or corrosion and shall be free of dirt, rust, oil, grease, or other deleterious substances.

For every five reels of prestressing steel furnished, one sample not less than six feet long, will be tested by the Engineer. Samples of the furnished reels with the manufacturer's Certificate of Compliance, a mill certificate, and a test report may be shipped directly by the manufacturer to the Engineer.

1003-7 Dowel Bars for Portland Cement Concrete Pavement:

Dowel bars shall be round, plain steel bars of the dimensions shown on the plans conforming to the requirements of AASHTO M 254 with Type B coating. The core material shall conform to the requirements of ASTM A615, Grade 60.

Epoxy coated dowel bars shall also conform to the requirements of Subsection 1003-5 of the specifications.

The Contractor shall furnish a Certificate of Compliance that properly identifies the coating material, the number of each batch of coating material used, quantity represented, date of manufacture, name and address of manufacturer, and a statement that the supplied coating material meets the requirements of AASHTO M 254 with Type B coating.

(1005PG, 06/19/25)

SECTION 1005 BITUMINOUS MATERIALS:

1005-3 Bituminous Material Requirements:

1005-3.01 Asphalt Cement: of the Standard Specifications is revised to read:

Asphalt cement shall be a performance grade (PG) asphalt binder conforming to the requirements of AASHTO M 320. Air blown/oxidized asphalt, Polyphosphoric acid (PPA) modification and re-refined/recycled engine oil bottom (REOB) will not be accepted. The pressure aging temperature for all binders, including Terminal Blend rubberized binder and Polymer modified asphalt binder shall be as specified below:

PG Asphalt Binder	Pressure Aging Temperature
PG 70-XX and above	110 °C
PG 64-XX and below	100 °C

If Terminal Blend rubberized binder (XX-XXTR+) is used, it shall conform to the requirements of Table 1005-1 and 1005-1a.

If Polymer modified asphalt binder (XX-XXPM) is used, it shall conform to the requirements of Table 1005-1 and 1005-1b.

If, during asphaltic concrete production, it is determined by testing that asphalt cement fails to meet the requirements for the specified grade, the asphaltic concrete represented by the corresponding test results shall be evaluated for acceptance. Should the asphaltic concrete be allowed to remain in place, the contract unit price for asphaltic concrete will be adjusted by the percentage shown in Table 1005-1. Should the asphalt cement be in reject status, the contractor may, within 25 days of receiving notice of the reject status, supply an engineering analysis of the expected performance of the asphaltic concrete in which the asphalt cement is incorporated. The engineering analysis shall detail any proposed corrective action and the anticipated effect of such corrective action on the performance. Within three working days, the Engineer will determine whether or not to accept the contractor's proposal. If the proposal is rejected, the asphaltic concrete shall be removed and replaced with asphaltic concrete meeting the requirements of the specifications at no additional expense to the Department. If the contractor's proposal is accepted, the asphaltic concrete shall remain in place at the applicable percent of contract unit price allowed, and any necessary corrective action shall be performed at no additional cost to the Department.

1005-3.03 Emulsified Asphalt: the fourth paragraph of the Standard Specifications is revised to read:

Emulsified asphalts shall be homogeneous. If emulsified asphalt has separated, it shall be thoroughly mixed to insure homogeneity. If emulsified asphalt has separated due to freezing, it shall not be used. Emulsified asphalt shall not be used after 30 days from production.

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 shall be potable. Potable water obtained from public utility distribution lines will be acceptable. The water used shall be free of injurious amounts of oil, acid, alkali, clay, vegetable matter, silt, or other harmful matter. The material shall not be diluted in the field.

1005-3.07 Other Requirements: the tables 1005-1, 1005-1a, and 1005-1b of the Standard Specifications are revised to read:

TABLE 1005-1 ASPHALT BINDER ADJUSTMENT TABLE			
Test Property	AASHTO Test Method	Test Result	Percent of Contract Unit Price Allowed
Dynamic Shear of Original Binder: G*/Sin δ , kPa	T 315	≥ 1.00 0.90-0.99 0.70-0.89 < 0.70	100 98 95 88 (1)
Dynamic Shear of RTFO Binder: G*/Sin δ , kPa	T 315	≥ 2.20 2.00-2.19 1.60-1.99 < 1.60	100 98 95 88 (1)
Dynamic Shear of PAV Binder: G*Sin δ , kPa	T 315	≤ 5000 5001-5500 5501-7000 7001-8000 > 8000	100 98 95 89 87 (1)
Creep Stiffness of PAV Binder: S, Mpa	T 313	≤ 300 301-330 331-450 451-600 > 600	100 98 95 89 87 (1)
m-value at 60 sec.	T 313	≥ 0.300 0.270-0.299 0.230-0.269 < 0.230	100 98 90 87 (1)
Notes: (2) Reject Status: The pay adjustment applies if allowed to remain in place. (3) Specified properties in AASHTO M 320 for flash point, viscosity at 135 °C, and mass loss are not considered performance related. Specification deficiencies for these properties shall be cause for a work stoppage until specification properties are met, but will not be cause for a pay adjustment.			

- (4) Should the bituminous material be deficient on more than one property, the pay adjustment will be the greatest reduction to the contract unit price specified considering individual test results.
- (5) The information presented in this table does not apply to asphalt cement used for tack coats.

TABLE 1005-1a
Terminal Blend rubberized binder (XX-XXTR+)

Test Property	Test Method	Requirement	Test Result	Percent of Contract Unit Price Allowed
Solubility, %, minimum	ASTM D7553 or ASTM 2042	98	-----	-----
Elastic Recovery, @ 10 °C, %, minimum	AASHTO T 301	75	75 70 - 74 < 70	100 89 87 (1)

(1) Reject Status: The pay adjustment applies if allowed to remain in place.

Notes:

In case of dispute, ASTM D2042 shall be used to determine the Solubility.

The asphalt binder shall contain a minimum of 8 percent crumb rubber and a minimum of 3 percent SBS (styrene-butadiene-styrene) polymer.

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 retain moisture when stored or disposed of above ground.

Modified binders shall be blended at the source of supply and delivered as a homogenous mixture to the job site.

Modified Binders stored at the asphalt concrete mixing plant for more than two weeks or beyond the supplier recommended shelf life, whichever is less, shall be sampled and tested.

TABLE 1005-1b
Polymer Modified Asphalt Binder (XX-XXPM)

Test Property	Test Method	Requirement	Test Result	Percent of Contract Unit Price Allowed
Solubility, %, minimum	ASTM D7553 or ASTM D2042	98	-----	-----

TABLE 1005-1b Polymer Modified Asphalt Binder (XX-XXPM)				
Test Property	Test Method	Requirement	Test Result	Percent of Contract Unit Price Allowed
Elastic Recovery @ 10°C, %, minimum	AASHTO T 301	75	≥ 75 70 - 74 < 70	100 89 87 (1)
(1) Reject Status: The pay adjustment applies if allowed to remain in place.				
Notes: In case of dispute, ASTM D2042 shall be used to determine the Solubility. Asphalt binder shall contain a minimum of 3 percent SBS (styrene-butadiene-styrene) polymer. Modified binders shall be blended at the source of supply and delivered as a homogenous mixture to the job site. Modified Binders stored at the asphalt concrete mixing plant for more than two weeks or beyond the supplier recommended shelf life, whichever is less, shall be sampled and tested.				

1005-3.07 Other Requirements: the table 1005-1c of the Standard Specifications is hereby deleted.

1005-3.07 Other Requirements: the table 1005-3 of the Standard Specifications is revised to read:

TABLE 1005-3 EMULSIFIED ASPHALTS							
Tests On Emulsion	Test Method	Requirement					
		RS-1	CRS-1	RS-2	CRS-2	SS-1	CSS-1
Viscosity: Saybolt Furol, seconds, range 77 °F 122 °F	AASHTO T 59	20-100	20-100	50-400	50-400	20-100	20-100
Settlement: 5 days, %, maximum	AASHTO T 59	5	5	5	5	5	5
Sieve: Retained on No. 20, %, maximum	AASHTO T 59 (1)	0.10	0.10	0.10		0.10	0.10
Particle Charge	AASHTOT 59		Pos.		Pos.		Pos. (2)
Demulsibility: 35 mL, 0.02 N calcium chloride	AASHTO T 59	60		60			

%, minimum							
Classification: Uncoated particles, %, minimum	Arizona Test Method 502				55		
Residue: (3)		55	60	63	65	57	57
Residue, %, minimum (4)							
Notes: (1) Distilled water shall be used. Two percent sodium oleate solution will not be accepted. (2) If the Particle Charge Test result is inconclusive, material having a maximum PH value of 6.7 will be acceptable. (3) Residue will be obtained in accordance with the requirements of Arizona Test Method 504 and shall conform to all the requirements of AASHTO M 320 for PG 64-16, except that for CRS-2 the dynamic shear ($G^*/\sin \delta$) on the original residue shall be a minimum of 1.00 kPa and a maximum of 1.50 kPa. (4) Residue by evaporation may be determined in accordance with the requirements of Arizona Test Method 512; however, in case of dispute, AASHTO T 59 will be used.							

1005-3.07 Other Requirements: the note (2) of Table 1005-3a of the Standard Specifications is revised to read:

(2) Testing shall be performed on residue by distillation. Testing on residue by oven evaporation will not be accepted.

1005-3.07 Other Requirements: the table 1005-5 of the Standard Specifications is revised to read:

TABLE 1005-5					
EMULSIFIED RECYCLING AGENTS					
Tests on Emulsified Recycling Agent	Test Method	Requirement			
		ERA-1	ERA-5	ERA-25	ERA-75
Viscosity: Saybolt Furol, 77 °F, seconds range	AASHTO T 59	15 - 40	15 - 100	15 - 100	15 - 100
Miscibility	AASHTO T 59	Passes	Passes	Passes	Passes
Sieve Test: %, maximum	AASHTO T 59 (1)	0.10	0.10	0.10	0.10
Particle Charge	AASHTO T 59	Positive	Positive	Positive	Positive

Residue: (2) Residue, %, minimum	(3)	60	60	60	60
Notes: (1) Distilled water shall be used. Two percent sodium oleate solution will not be accepted. (2) Residue will be obtained in accordance with the requirements of Arizona Test Method 504 and shall conform to the requirements specified in Table 1005-4. (3) Residue by evaporation may be determined in accordance with the requirements of Arizona Test Method 512; however, in case of dispute, AASHTO T 59 will be used.					

1005-3.07 Other Requirements: the Paving Asphalt row of the table 1005-6 of the Standard Specifications is modified to add:

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 76-22 PM			231
229			232
PG 70-22 PM			233
230			
PG 64-28 PM			

(1006PCC, 09/21/23)

SECTION 1006 PORTLAND CEMENT CONCRETE:

1006-2.01(A) General: of the Standard Specifications is revised to read:

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, Portland-pozzolan cement or Portland-limestone cement) and supplementary cementitious materials (fly ash, natural pozzolan, or silica fume).

1006-2.01(B) Hydraulic Cement: the first paragraph of the Standard Specifications is revised to read:

Hydraulic cement shall consist of Portland cement, Portland-pozzolan cement or Portland-limestone cement.

1006-2.01(B) Hydraulic Cement: of the Standard Specifications is modified to add:

Portland-limestone cement shall conform to the requirements of ASTM C595 for blended hydraulic cement with moderate sulfate resistance, Type IL (MS).

1006-2.01(C)(2) Flyash and Natural Pozzolan: of the Standard Specifications is revised to read:

Fly ash and natural pozzolan shall conform to the requirements of ASTM C618 for Class C, F, or N.

TABLE 1006-5 Design Criteria: the column heading of the third column of the Standard Specifications is revised to read:

		Cementitious Material Content: Lbs. per Cu Yd. Minimum - Maximum		

1006-3.02(C) Mix Design Submittal Requirements: the items (16) and (18) of the Standard Specifications are revised to read:

(16) Volume of each material measured to the nearest hundredth of a cubic foot;

(18) Total volume measured to the nearest hundredth of a cubic foot;

1006-7.02(A) General: the fifth paragraph of the Standard Specifications is revised to read:

Concrete shall be sampled in accordance with ASTM C172 for acceptance testing of temperature, slump, unit weight and yield (when required) and air content (when required) as well as for fabrication of test cylinders for compressive strength determination at 28 days except that the concrete shall be sampled once during discharge at the middle portion of the batch. ASTM C172 includes sampling from stationary, paving and truck mixers, and from agitating and non-agitating equipment used to transport central-mixed concrete and from continuous mixing equipment as described in Specification ASTM C685/C685M. Sampling shall be at the point of discharge from truck mixers. Sufficient care shall be taken to obtain a representative sample by diverting the entire stream of the concrete to prevent segregation. Samples shall be of sufficient size to perform all the required tests and fabricate the necessary test cylinders but in no case less than 1 cubic foot.

1006-7.02(B) 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, or Class B concrete, a strength test will consist of the average strength of two test cylinders. However, if the compressive strengths of the two test cylinders differ by more than 10 percent from the average of the two, the strength test result shall be the cylinder with the highest compressive strength.

For Class S concrete with a compressive strength requirement equal to or greater than 4000 psi, or Class P concrete, the compressive strength of each sample shall be determined by averaging the results of the three test cylinders. However, if the compressive strength of any one of the three test cylinders differs by more than 10 percent from the average of the three, its result shall be discarded and the compressive strength shall be the average of the remaining two cylinders. Should the individual compressive strength of any two of the three remaining cylinders differ by more than 10 percent from the average of the three, the results will be discarded and the compressive strength shall be the strength of the remaining cylinder.

1006-7.03(A)(3) Consistency: the third paragraph of the Standard Specifications is revised to read:

When the concrete is pumped, samples for consistency will be taken as the concrete leaves the mixer.

TABLE 1006-10 Air Entrainment Requirements: the table of the Standard Specifications is revised to read:

TABLE 1006-10 Air Entrainment Requirements		
Elevation	Air Entrainment Required	Required Air Content by Volume (%)
3000 feet or above	Yes	4 to 7
Below 3000 feet	Contractor's Option	≤ 7

(1010PIPE, 03/16/23)

SECTION 1010 DRAINAGE PIPE:

1010-6 Reinforced Concrete Pipe: the sixth paragraph of the Standard Specifications is revised to read:

Precast, reinforced concrete flared end sections shall conform to the requirements of the previously cited specifications to the extent to which they apply. The area of steel reinforcement per linear foot of the flared end section shall be at least equal to the minimum steel requirement for the reinforcement in that portion of the flared end section which abuts the pipe. Flared end sections may utilize in lieu of steel reinforcement a minimum of 5.0 pounds of macro fibers, conforming to ASTM C1116, per cubic yard of concrete mix.

(1011APEAS, 07/18/24)

SECTION 1011 JOINT MATERIALS:

1011-8.03 Field Performance: of the Standard Specifications is revised to read:

The manufacturer of the joint sealant shall demonstrate satisfactory field performance in Arizona, or by AASHTO Product Evaluation & Audit Solutions (formerly NTPEP) field evaluation, of less than 1 percent total failure (either within the material or the adhesive bond to the joint face) after one year of service, before the material shall be used.

(1014GEOSYN, 07/18/24)

SECTION 1014 GEOSYNTHETICS:

1014-1 General Requirements: of the Standard Specifications is revised to read:

Certificates of Analysis, conforming to the requirements of Subsection 106.05 of the specifications, shall be submitted.

Geosynthetic materials, excluding biaxial geogrid, must be on the DataMine list for geotextiles and geosynthetics on the AASHTO Product Evaluation & Audit Solutions (formerly NTPEP) website. The product line evaluation report from AASHTO Product Evaluation & Audit Solutions (formerly NTPEP) shall be provided to the Engineer prior to use on the project.

Fibers, yarns, and filaments used in the manufacture of geotextile fabric, and the threads used in joining by sewing, shall consist of long-chain synthetic polymers, composed at least 95 percent, by weight, of polyolefins or polyesters. They shall be formed into a stable network such that the filaments or yarns retain their dimensional stability relative to each other, including selvages.

Geosynthetic materials shall be furnished in protective covers capable of protecting the materials from harmful environmental conditions such as ultraviolet rays, abrasion, extreme heat, and water. Storage of the materials shall be in a manner that prevents damage, contamination, or deterioration.

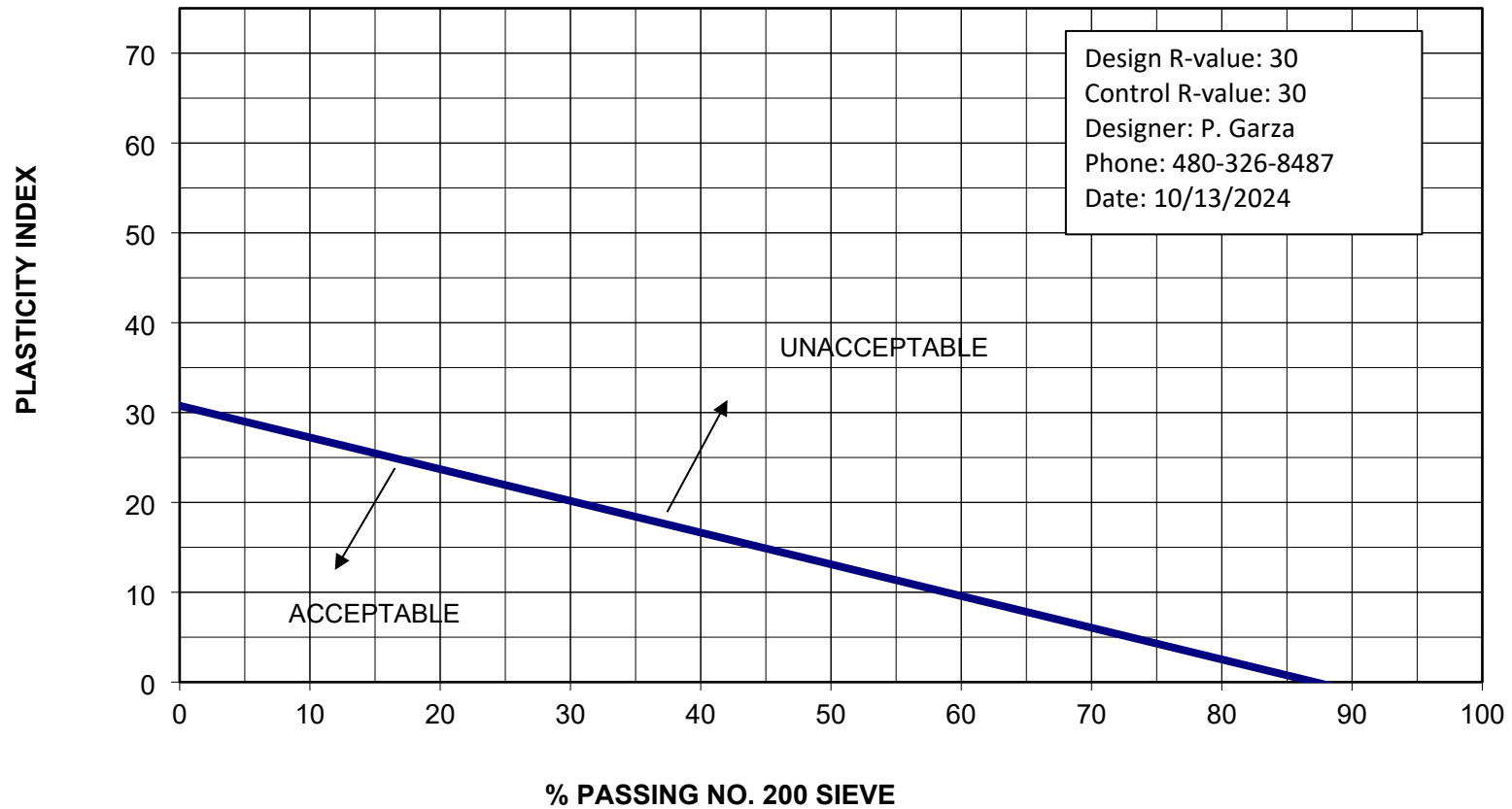
Geotextile fabric shall be resistant to chemical attack, rot, and mildew, and shall have no tears or defects which will adversely alter its physical properties.

All numeric values in the following tables, except for apparent opening size (AOS), represent minimum average roll values (MARV) in the weaker principal direction. Numeric values for (AOS) represent maximum average roll values.

Woven slit film geosynthetics will not be allowed for use in Subsections 1014-5, 1014-6, 1014-7, and 1014-9 of the specifications.

APPENDIX A - SUBGRADE ACCEPTANCE CHART

SR 69 - SR 169 Roundabout



**STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS
EXECUTIVE ORDER 11246, July 1, 1978**

(Revised November 3, 1980)

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted:

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority:

c. "Employer Identification Number" means the Federal Social Security Number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin):

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race):

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership or participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown plan. Each Contractor or Subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each

construction trade in which it has employees in the covered area

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications. Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such site or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or women sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on the job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations: by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and

female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative actions obligations (7a through p). The efforts of a contractor association, joint contractor- union, contractor community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is under utilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm

debarred from Government Contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as an limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

TITLE VI / NON-DISCRIMINATION ASSURANCES

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the *Federal Highway Administration*, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performance by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the *Federal Highway Administration* to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the *Federal Highway Administration*, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the *Federal Highway Administration*, may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with request to any subcontract or procurement as the Recipient or the *Federal Highway Administration* may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

TITLE VI / NON-DISCRIMINATION ASSURANCES

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1687 *et. seq.*).

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(EXECUTIVE ORDER 11246)

JULY 1, 1978 (Revised November 3, 1980)

(Revised April 15, 1981)

1. The bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

	Minority	Female
Tucson and balance of Pima County	24.1	6.9
Cochise, Graham, Greenlee and Santa Cruz Counties	27.0	6.9
Phoenix and balance of Maricopa County	15.8	6.9
Apache, Coconino, Gila, Mohave, Navajo, Pinal, Yavapai and Yuma Counties	19.6	6.9

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in all areas where he has Federal or federally assisted work.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3 (a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

*** EXECUTIVE ORDER 2009-09 ***
PROHIBITION OF DISCRIMINATION IN STATE CONTRACTS
NONDISCRIMINATION IN EMPLOYMENT BY
GOVERNMENT CONTRACTORS AND SUBCONTRACTORS
(Superseding Executive Order 99-4 and Amending Executive Order 75-5)

[M09-395]

WHEREAS, Executive Order 99-4 was effectuated to assure that persons or entities contracting with the State of Arizona or its political subdivisions comply with the provisions of Title VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000e, et. seq.) and with Arizona's Civil Rights Act (Title 41, Chapter 9, Article 4);

WHEREAS, Executive Order 99-4 correctly states that various religious organizations are exempted from Arizona's Civil Rights Act;

WHEREAS, Executive Order 99-4 does not expressly state the federal and state exemptions for Indian tribes under both the federal and State Civil Rights Acts;

WHEREAS, 42 U.S.C. § 200e(b)(1) exempts tribes from the definition of employer;

WHEREAS, A.R.S. § 41-1461 4 (b)(i) also exempts Indian tribes from the definition of employers to whom the Arizona Civil Rights Act applies;

WHEREAS, Indian tribes across the State have recently begun to experience difficulty contracting with the State, often for money or services to which they are lawfully entitled, as a result of their exclusion from specified exemptions within Executive Order 99-4;

WHEREAS, the Attorney General's Office has in some cases interpreted the existing provisions as requiring tribes to waive rights guaranteed by both federal and State law;

WHEREAS, a modification is necessary to expressly provide that the exemptions found in federal and State law continue in full force and effect;

NOW, THEREFORE, I, Janice K. Brewer, Governor of the State of Arizona, by virtue of the authority vested in me by the Constitution and laws of this State, hereby order and direct as follows:

1. Executive Order 75-5 is hereby amended as follows:

PART I - Non-discrimination in employment by government contractors and subcontractors.

Unless otherwise exempted by federal or state civil rights laws, all government contracting agencies shall include in every government contract hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- A. The Contractor will not discriminate against any employee or applicant for employment because of race, age, color, religion, sex, or national origin. The contractor will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to their race, age, color, religion, sex or national origin. Such action shall include, but is not limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The contractor agrees to post in conspicuous

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places available to employees and applicants for employment notices to be provided by the contracting officer setting forth the provisions of this non-discrimination clause.

A continued Executive Order No. 75-5 is hereby amended to permit government contractors and subcontractors that are exempted from compliance under Title 41, chapter 9, article 4, Arizona Revised Statutes or 42 U.S.C. § 200e(b)(1), to provide employment preferences consistently with federal and state statutes;

Therefore, Executive Order 75-5 does not apply to Indian tribes. It likewise does not apply to religious organizations with respect to the employment of individuals of a particular religion to perform work connected with the activities of the employer. It also provides that religious organizations may provide employment preferences based upon religion when dealing with a bona fide occupational qualification reasonably necessary to the operation of the religious organization. This is consistent with the provisions of the Civil Rights Act of 1964 (42 U.S.C. 2000e, et seq.). In addition, in the Personal Responsibility and Work Opportunity Reconciliation Act, P.L. 104-193, Congress provided that religious organizations are eligible for the receipt of federal funds on the same basis as other private organizations.

Executive Order No. 75-5 prohibits all other government contractors and subcontractors from discriminating against any employee or applicant for employment because of race, age, color, religion, sex or national origin. Executive Order No. 75-5 further requires all government contractors and subcontractors to take action to insure that applicants are employed and employees are treated during employment without regard to their race, age, color, religion, sex or national origin.

- B. The contractor will in all solicitations or advertisement for employees placed by or on behalf of the contractor state that all qualified applicants will receive consideration for employment without regard of race, age, color, religion, sex or national origin.
- C. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice to be provided by the agency contracting officer advising the labor union or workers' representative of the contractor's commitments under the Executive Order and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- D. The contractor will furnish all information and reports required by the contracting agency and will permit access to his books, records, and accounts by the contracting agency and the Civil Rights Division for purposes of investigation to ascertain compliance with such rules, regulations and orders.
- E. In the event of the contractor's noncompliance with the nondiscrimination clauses of the contract or with any such rules, regulations or orders of the Arizona Civil Rights Division said noncompliance will be considered a material breach of the contract and this contract may be cancelled, terminated or suspended, in whole or in part, and the contractor may be declared ineligible for future government contracts until said contractor has been found to be in compliance with the provisions of this order and the rules and regulations of the Arizona Civil Rights Division, and such sanctions may be imposed and remedies invoked as provided in Part II of this order, and the rules and regulations of the Arizona Civil Rights Division.
- F. The contractor will include the provisions of paragraphs A through E in every subcontractor purchase order so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to the subcontract or purchase orders the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance, provided, however, that in the event the contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the State of Arizona to enter into such litigation to protect the interest of the State of Arizona.
- G. Each contractor having a contract containing the provisions prescribed in this section shall file and shall cause each of his subcontractors to file compliance reports with the contracting agency or the Civil Rights Division, as may be directed. Compliance reports shall be filed within such times and shall contain such information as the practices, policies, programs and employment policies, programs and employment statistics of the contractor and each subcontract and shall be in form as the Arizona Civil Rights Division may prescribe.
- H. Bidders or prospective contractors of subcontractors shall be required to state whether they have participated in any previous contract subject to the provisions of this order or any preceding similar Executive Order and in such event to submit on behalf of themselves and the proposed subcontractors compliance reports prior to, or as an initial part of negotiation of a contract.
- I. Whenever the contractor or subcontractor has a collective bargaining agreement or other contract or understanding with a labor union or an agency referring workers of providing or supervising apprenticeship or training for

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such workers, the compliance report shall include such information from such labor unions or agency practices an policies affecting compliance as the contracting agency or Civil Rights Division may prescribe: provided that, to the extent such information is within the exclusive possession of a labor union or an agency referring workers or providing or supervising apprenticeship or training and such labor union or agency shall refuse to furnish such information to the contractor, the contractor shall so certify the contracting agency as part of its compliance report and shall set forth what efforts he has made to obtain such information.

- J. The contracting agency or the Civil Rights Division shall require that the bidder or prospector contractor or sub-contractor shall submit as part of his compliance report a statement in writing signed by an authorized officer or agent on behalf of any labor union or any agency referring workers or providing or supervising apprenticeship or other training with which the bidder or prospective contractor deals with supporting information to the effect that the signer's practices and policies do not discriminate on the grounds of race, color, religion, sex or national origin, and that the signer either will affirmatively cooperate in the implementation of the policy and provisions of this order or that it consents and agrees that recruitment, employment, and the terms and conditions of employment under the proposed contract shall be in accordance with the purpose and provisions of this order. In the event that the union or the agency shall refuse to execute such a statement, the compliance shall so certify and set forth what efforts have been made to secure such a statement and such additional factual material as the contracting agency or the Civil Rights Division may require.

PART II - Enforcement

- A. Each contracting agency shall be primarily responsible for obtaining compliance with this Executive Order with respect to contracts entered into by such agency or its contractors. All contracting agencies shall comply with the rules of the Civil Rights Division in discharging their primary responsibility for securing compliance with the provisions of contracts and otherwise with the terms of this order and the rules and regulations and orders of the Civil Rights Division issued pursuant to this order. They are directed to cooperate with the Civil Rights Division and to furnish the Division such information and assistance as it may require in the performance of the Division's functions under this order. They are further directed to appoint or designate from among the agency personnel compliance officers. It shall be the duty of such officers to first seek compliance with the objective of this order by conference, conciliation, mediation or persuasion.
- B. The Civil Rights Division may investigate the employment practices of any government contractor if subcontractor of initiate such investigation by the appropriate contracting agency or determine whether or not the contractual provisions specified in this order have been violated. Such investigations shall be conducted in accordance with the procedures established by the Civil Rights Division and the investigating agencies shall report to the Civil Rights Division any action taken or recommended. The Civil Rights Division may receive and investigate or cause to be investigated complaints by employees or prospective employees of a government contractor or subcontractor which alleges discrimination contrary to the contractual provisions specified in Part I of this order. If the investigation is conducted for the Civil Rights Division by a contracting agency, that agency shall report to the Civil Rights Division what action has been taken or it's recommendation with regard to such complaint.
- C. The Civil Rights Division shall use its best efforts directly and through contracting agencies, other interested state and local agencies, contractors and all other available instrumentalities to cause any labor union engaged in work under government contracts or any agency referring workers or providing or supervising apprenticeship or training for it in the course of such work or cooperate in the implementation of the purposes of this order.
- D. The Civil Rights Division or any agency, officer or employee in the executive branch of the government designated by rule, regulation or order of the Civil Rights Division may hold such hearings, public or private, as the Division may deem advisable for compliance, enforcement of educational purposes. The Civil Rights Division may hold or cause to be held hearings in accordance with rules and regulations issued by the Civil Rights Division prior to imposing, ordering or recommending the imposition of penalties and sanctions under this order.
- E. No order for debarment of any contractor from further government contracts under this order shall be made without affording the contractor an opportunity for a hearing.
- F. Sanctions and Penalties. In accordance with such rules, regulations or orders as the Civil Rights Division may issue or adopt, the Civil Rights Division or the appropriate contracting agency may publish or cause to be published the names of contractors or unions which it has concluded have complied or have failed to comply with the provisions of this order and with the rules, regulations and orders of the Civil Rights Division.
1. Contracts may be cancelled, in whole or in part, terminated, or suspended absolutely, or continuation of contracts may be conditioned upon a program for future compliance approved by the contracting agency or the Civil Rights Division: provided that any contracting agency shall refrain from entering into further contracts, extensions or

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other modifications of existing contracts with any noncomplying contractor until such contractor has established and will carry out personnel and employment policies in compliance with the provisions of this order.

2. Under rules and regulations prescribed by the Civil Rights Division, each contracting agency shall make reasonable efforts within a reasonable time limitation to secure compliance with the contract provisions of this order by methods of conference, conciliation, mediation and persuasion before proceedings shall be instituted under this order of before a contract shall be cancelled or terminated in whole or in part under this order for failure of a contractor or subcontractor to comply with the contract provisions of this order.

G. This Executive Order shall become effective immediately of its issuance.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona

Janice K. Brewer
G O V E R N O R

DONE at the Capitol in Phoenix, Arizona this 20th day of October in the year Two Thousand and Nine and of the Independence of the United States of America the Two Hundred and Thirty-fourth.

ATTEST:
Ken Bennett
Secretary of State



ARIZONA DEPARTMENT OF TRANSPORTATION
PROJECT DELIVERY AND OPERATIONS DIVISION
CONTRACTS AND SPECIFICATIONS GROUP

BID SCHEDULE

CONTRACT # 2023106

TRACS No.	Project No.	Item	County	District	Gross Length	Net Length	Prepared By:
069 YV 280 F028801C	069-A-NFA	103036	YAVAPAI	NORTHWEST	0.4		Vian Rashid

Highway Termini	Location	Work Description
• CORDES JCT-PRESCOTT HIGHWAY (SR 69)	• SR 69 @ SR 169	• ROUNDABOUT

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
2020020	REMOVAL OF CONCRETE CURB	L.FT.	138		
2020021	REMOVAL OF CONCRETE CURB AND GUTTER	L.FT.	1,454		
2020025	REMOVAL OF CONCRETE SIDEWALKS, DRIVEWAYS AND SLABS	SQ.FT.	1,188		
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	13,759		
2020041	REMOVAL OF PIPE	L.FT.	258		
2020047	REMOVAL OF SIGNS	EACH	30		
2020048	REMOVAL OF STRUCTURE (FLARED END SECTION)	EACH	5		
2020054	REMOVE (HEADWALL)	EACH	1		
2020055	REMOVE AND SALVAGE (TRAFFIC SIGNALS)	L.SUM	1		
2020077	REMOVE BITUMINOUS PAVEMENT FROM AC (MILLING FRICTION COURSE)	SQ.YD.	6,784		
2020079	REMOVE BITUMINOUS PAVEMENT (MILLING) (VARIABLE DEPTH)	SQ.YD.	424		
2020101	REMOVE FENCE	L.FT.	649		
2020152	REMOVE DETOUR	SQ.YD.	7,941		
2030301	ROADWAY EXCAVATION	CU.YD.	4,187		

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
2030401	DRAINAGE EXCAVATION	CU.YD.	245		
2030506	STRUCTURE BACKFILL	CU.YD.	19		
2030900	BORROW (IN PLACE)	CU.YD.	3,372		
3030021	AGGREGATE BASE, CLASS 1	CU.YD.	6,799		
4010013	PORTLAND CEMENT CONCRETE PAVEMENT (13")	SQ.YD.	406		
4090006	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL) (SPECIAL MIX)	TON	6,535		
4110001	ASPHALTIC CONCRETE FRICTION COURSE (MISC.)	TON	467		
5010011	PIPE, CORRUGATED METAL, 24"	L.FT.	18		
5011022	PIPE, REINFORCED CONCRETE, CLASS II, 24"	L.FT.	828		
5011023	PIPE, REINFORCED CONCRETE, CLASS III, 24"	L.FT.	265		
5011032	PIPE, REINFORCED CONCRETE, CLASS II, 30"	L.FT.	455		
5011033	PIPE, REINFORCED CONCRETE, CLASS III, 30"	L.FT.	45		
5014524	FLARED END SECTION, 24" (C-13.20 OR C-13.25)	EACH	3		
5014530	FLARED END SECTION, 30" (C-13.20 OR C-13.25)	EACH	1		

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
5030031	CONCRETE CATCH BASIN (C-15.20) SUMP ONLY, H=8' OR LESS	EACH	6		
5030072	CONCRETE CATCH BASIN (C-15.30) DOUBLE, H = 8' OR LESS	EACH	1		
5030142	CONCRETE CATCH BASIN (MEDIAN) (C-15.80)	EACH	1		
5050001	MANHOLE (C-18.10) (NO. 1) (FOR PIPES 6" TO 36")	EACH	2		
6016088	HEADWALL (SD-06.30)	EACH	1		
6016089	HEADWALL (SD-06.30, 3-24" PIPES)	EACH	1		
6070004	BREAKAWAY SIGN POST W6X12	L.FT.	183		
6070024	FOUNDATION FOR BREAKAWAY SIGN POST W6X12	EACH	12		
6070038	SLIP BASE	EACH	67		
6070055	SIGN POST (PERFORATED) (2 1/2 S)	L.FT.	292		
6070057	SIGN POST (PERFORATED) (2 1/2 T)	L.FT.	672		
6070060	FOUNDATION FOR SIGN POST (CONCRETE)	EACH	75		
6080005	REGULATORY, WARNING, OR MARKER SIGN PANEL	SQ.FT.	626		
6080018	EXTRUDED ALUMINUM SIGN PANEL	SQ.FT.	279		

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
6080025	FLAT SHEET ALUMINUM SIGN PANEL	SQ.FT.	26		
6080120	SIGN (RELOCATE)	EACH	2		
6110200	METAL HANDRAIL (DETAIL D5)	L.FT.	127		
7010025	TEMPORARY IMPACT ATTENUATION DEVICE (IN-LINE ENERGY ABSORBING TERM.)	EACH	21		
7010026	TEMPORARY IMPACT ATTENUATION DEVICE (IN-LINE ENERGY ABSORBING TERM.) (IN USE)	EACH-DAY	1,171		
7015010	TEMPORARY CONCRETE BARRIER (INSTALLATION AND REMOVAL)	L.FT.	14,353		
7015052	OBLITERATE PAVEMENT MARKING (STRIPE)	L.FT.	39,100		
7015091	SPECIALTY SIGNS	SQ.FT.	10		
7016020	TEMPORARY CONCRETE BARRIER (IN USE)	L.FT.-DAY	861,647		
7016030	BARRICADE (TYPE 1, TYPE 2, VERT.PANEL, TUBULAR MARKER)	EACH-DAY	30,333		
7016031	BARRICADE (TYPE 3, HIGH LEVEL FLAG TREE)	EACH-DAY	480		
7016032	PORTABLE SIGN STAND (RIGID)	EACH-DAY	1,342		
7016033	PORTABLE SIGN STAND (SPRING TYPE)	EACH-DAY	4,195		
7016035	WARNING LIGHT (TYPE A)	EACH-DAY	13,495		

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
7016037	WARNING LIGHT (TYPE C)	EACH-DAY	30,333		
7016039	EMBEDDED SIGN POST	EACH-DAY	18,684		
7016050	TRUCK-MOUNTED ATTENUATOR	EACH-DAY	105		
7016051	TEMPORARY SIGN (LESS THAN 10 S.F.)	EACH-DAY	6,175		
7016052	TEMPORARY SIGN (10 S.F. OR MORE)	EACH-DAY	8,944		
7016061	FLASHING ARROW PANEL	EACH-DAY	36		
7016067	CHANGEABLE MESSAGE BOARD (CONTRACTOR FURNISHED)	EACH-DAY	1,068		
7016081	FLAGGING SERVICES (DPS)	HOUR	348		
7016082	FLAGGING SERVICES (LOCAL ENFORCEMENT OFFICER)(WITH AGENCY VEHICLE)	HOUR	348		
7030075	DELINEATOR (SINGLE WHITE OR SINGLE YELLOW)	EACH	11		
7030095	MILEPOST MARKER (S-10)	EACH	1		
7050031	PAVEMENT MARKING, PREFORMED, TYPE II YELLOW STRIPE	L.F.T.	8,671		
7050032	PAVEMENT MARKING, PREFORMED, TYPE II WHITE STRIPE	L.F.T.	7,441		

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
7050033	PAVEMENT MARKING, PREFORMED, TYPE II SINGLE ARROW	EACH	2		
7050060	PAVEMENT MARKING, PREFORMED, LEGEND, TYPE IV	EACH	16		
7050067	PAVEMENT MARKING, PREFORMED, SYMBOL, TYPE IV	EACH	32		
7050069	PAVEMENT MARKING, PREFORMED, TRANSVERSE, TYPE IV	L.FT.	2,672		
7080201	WATERBORNE-TYPE I PAVEMENT MARKING (PAINTED) (WHITE)	L.FT.	31,555		
7080202	WATERBORNE-TYPE I PAVEMENT MARKING (PAINTED) (YELLOW)	L.FT.	38,180		
7080206	WATERBORNE-TYPE I PAVEMENT MARKING (PAINTED SYMBOL) (ARROW)	EACH	32		
7080208	WATERBORNE-TYPE I PAVEMENT MARKING (PAINTED LEGEND) (ONLY)	EACH	16		
7080301	PAINT BULL NOSE	EACH	10		
7090001	DUAL COMPONENT PAVEMENT MARKING (WHITE EPOXY)	L.FT.	21,261		
7090002	DUAL COMPONENT PAVEMENT MARKING (YELLOW EPOXY)	L.FT.	8,175		
7310190	POLE (TYPE G) (BREAKAWAY BASE)	EACH	20		

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
7310197	BREAKAWAY BASE FOR LIGHTING POLE OR SIGNAL FLASHER	EACH	20		
7310371	POLE FOUNDATION (TYPE G) (BREAKAWAY BASE)	EACH	20		
7310650	MAST ARM (10 FT.) (TRUSS)	EACH	12		
7310652	MAST ARM (15 FT.) (TRUSS)	EACH	8		
7320030	ELECTRICAL CONDUIT (1") (PVC)	L.FT.	300		
7320050	ELECTRICAL CONDUIT (2") (PVC)	L.FT.	2,352		
7320055	ELECTRICAL CONDUIT (2") (PVC) (HORIZONTAL DIRECTIONALLY DRILLED)	L.FT.	578		
7320410	PULL BOX (NO. 5)	EACH	25		
7320420	PULL BOX (NO. 7)	EACH	1		
7320500	CONDUCTOR (NO. 12)	L.FT.	2,100		
7320520	CONDUCTOR (NO. 8)	L.FT.	6,048		
7320586	CONDUCTOR (INSULATED BOND)	L.FT.	4,074		
7340120	METER PEDESTAL CABINET	EACH	1		
7360110	LUMINAIRE (LED) (HORIZONTAL MOUNT) (TYPE II) (15L)	EACH	20		

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
8030092	GRANITE MULCH (1-1/4 INCH MINUS)	SQ.YD.	4,801		
8050003	SEEDING (CLASS II)	ACRE	4		
8101014	EROSION CONTROL (WATTLE) (20")	L.FT.	4,620		
8101018	EROSION CONTROL (STABILIZED CONSTRUCTION ENTRANCE/EXIT GRAVEL PAD)	SQ.YD.	750		
8101029	EROSION CONTROL (ROCK MULCH) (GRADATION C)	CU.YD.	90		
8101050	EROSION CONTROL (CURB INLET PROTECTION)	L.FT.	160		
9010001	MOBILIZATION	L.SUM	1		
9030011	BARBED WIRE FENCE, TYPE 1	L.FT.	488		
9050005	GUARD RAIL, W-BEAM, SINGLE FACE (MASH)	L.FT.	419		
9050025	GUARD RAIL TERMINAL (MASH)	EACH	1		
9050036	GUARD RAIL, ANCHOR ASSEMBLY	EACH	1		
9080081	CONCRETE CURB AND GUTTER (C-05.10) (TYPE G)	L.FT.	3,200		
9080084	CONCRETE CURB AND GUTTER (DETAIL A)	L.FT.	313		
9080109	CONCRETE SINGLE CURB ((C-05.10) (TYPE G)	L.FT.	233		
9080111	CONCRETE SINGLE CURB (C-05.10) (TYPE A-1)	L.FT.	5,406		

BID SCHEDULE**069 YV 280 F028801C**

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
9080201	CONCRETE SIDEWALK (C-05.20)	SQ.FT.	7,092		
9080246	CONCRETE (BIKE RAMP TRANSITION) (DETAIL C)	SQ.FT.	647		
9080286	CONCRETE SIDEWALK RAMP (MODIFIED C-05.30, TYPE E) (DETAIL B)	EACH	6		
9080287	CONCRETE SIDEWALK RAMP (C-05.30, TYPE C)	EACH	2		
9080297	CONCRETE SIDEWALK RAMP ((C-05.30, TYPE F) (DETAIL D)	SQ.FT.	1,107		
9080512	SCUPPER (DETAIL D3)	EACH	4		
9130051	RIPRAP (DUMPED) (D50=12", 24" THICK)	CU.YD.	19		
9130052	RIPRAP (DUMPED) (D50=6", 12" THICK)	CU.YD.	201		
9170001	EMBANKMENT SPILLWAY (C-4.10)	L.FT.	30		
9240010	FORCE ACCOUNT WORK (POWER SERVICE CONNECTION)	L.SUM	1	\$20,000.00	\$20,000.00
9240052	MISCELLANEOUS WORK (HEADWALL EXTENSION)	L.SUM	1		
9240086	MISCELLANEOUS WORK (TEMPORARY SIGNAL SYSTEM)	L.SUM	1		
9240088	MISCELLANEOUS WORK (TEMPORARY LIGHTING SYSTEM)	L.SUM	1		

BID SCHEDULE

069 YV 280 F028801C

Item No.	Item Description	Unit	Quantity	Unit Price	Extended Amount
9240170	CONTRACTOR QUALITY CONTROL	L.SUM	1		
9240181	MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS) (MANUAL / MECHANICAL METHODS)	SQ.YD.	600		
9240182	MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS) (HERBICIDE)	SQ.YD.	1,200		
9250001	CONSTRUCTION SURVEYING AND LAYOUT	L.SUM	1		

BID TOTAL :

PROPOSAL

TO THE ARIZONA DEPARTMENT OF TRANSPORTATION:

Gentlemen:

The following Proposal is made for constructing project

069 YV 280 F028801C 069-A-NFA
CORDES JCT-PRESCOTT HIGHWAY (SR 69)
(SR 69 @ SR 169)

in the State of Arizona.

The following Proposal is made on behalf of _____

_____ and no others.

(NAME OF COMPANY, FIRM, OR CORPORATION)

The undersigned hereby certifies that (s)he has been duly authorized to submit a proposal on behalf of the company, firm, or corporation mentioned above; and further certifies, pursuant to Subsection 112(c) of Title 23, United States Code and Title 44, Chapter 10, Article 1 of the Arizona Revised Statutes, that neither (s)he nor anyone associated with the company, firm, or corporation mentioned above has, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such project and furthermore that no member or employee of the Arizona Department of Transportation is personally or financially interested, directly or indirectly, in the Proposal, or in any purchase or sale of any materials or supplies for the work to which it relates, or in any portion of the profits thereof.

The undersigned certifies that the approved Plans, Standard Specifications, Special Provisions and forms of Contract and Bond authorized by the Arizona Department of Transportation and constituting essential parts of this proposal, have been carefully examined, and also that the site of the work has been personally inspected. The undersigned declares that the amount and nature of the work to be done is understood and that at no time will misunderstanding of the Plans, Specifications, Special Provisions, or conditions to be overcome, be plead. On the basis of Plans, Specifications, Special Provisions, and the forms of Contract and Bond proposed for use, the undersigned proposes to furnish all the necessary equipment, materials, machinery, tools, apparatus, and other means of construction, and labor to do all the work in the manner specified, and to accept, as full compensation therefor, the sum of the various products obtained by multiplying each unit price, herein bid for the work or materials, by the quantity thereof actually incorporated in the complete project, as determined by the State Engineer. The undersigned understands that the quantities mentioned herein are approximate only and are subject to increase or decrease and hereby proposes to perform all quantities of work as either increased or decreased, in accordance with the provisions of the Specifications, at the unit price bid in the Bidding Schedule.

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

The undersigned further proposes to execute the Contract Agreement and furnish satisfactory Bond within ten calendar days from the date of Notice of Award, time being of the essence. The undersigned further proposes to begin work as specified in the contract attached hereto, and to complete the work on or before expiration of the contract time as defined in the Specifications, and maintain at all times a Payment Bond and a Performance Bond, approved by the State Engineer, in an amount equal to one hundred (100) percent of the total bid. These bonds shall serve not only to guarantee the completion of the work on the part of the undersigned, but also to guarantee the excellence of both workmanship and material and the payment of all obligations incurred, until the work is finally accepted and the provisions of the Plans, Standard Specifications and Special Provisions fulfilled.

12-5901 R03/11

Proposal
Sheet 1 of 2

The undersigned hereby agrees to provide an electronic Proposal Guaranty in the amount and character named in the Advertisement for Bids. The Proposal Guaranty is submitted as a guaranty of the good faith of the bidder, and that the bidder will enter into written contract, as provided, to do the work, if successful in securing the award thereof, and it is hereby agreed that if at any time other than as provided in the Proposal there should be failure on the part of the undersigned to execute the Contract and furnish satisfactory Bond as herein provided, the State of Arizona, in either of such events, shall be entitled and is hereby given the right to retain the said Proposal Guaranty as liquidated damages.

If by a Corporation:

(Seal)

Corporate Name: _____

Corporate Mailing Address: _____ Zip Code: _____

Incorporated under the laws of the State of: _____

By (Signature): _____ Date: _____

President: _____

Secretary: _____

Treasurer: _____

If by a Firm or Partnership:

Firm or Partnership Mailing Name: _____

Firm or Partnership Address: _____

By (Signature): _____ Date: _____

Name and Address of Each Member: _____

If by an Individual:

Signature: _____ Date: _____

Mailing Address: _____



ARIZONA DEPARTMENT OF TRANSPORTATION

SURETY (BID) BOND

(Penalty of this bond must not be less than 10% of the bid amount)

KNOW ALL MEN BY THESE PRESENTS, THAT _____

as Principal, hereinafter called the Principal, and _____

a corporation duly organized under the laws of the state of _____
hereinafter called the Surety, holding a certificate of authority to transact surety business in this State issued by the Director of the Department of Insurance, are held and firmly bound unto the Arizona Department of Transportation, as Obligee, hereinafter called the Obligee, in the sum of Ten Percent (10%) of the amount of the bid of Principal, submitted by Principal to the Arizona Department of Transportation for the work described below, for the payment of which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is herewith submitting its proposal for TRACS/Project No.

069 YV 280 F028801C 069-A-NFA
CORDES JCT-PRESCOTT HIGHWAY (SR 69)
(SR 69 @ SR 169)

NOW THEREFORE, if the Obligee, acting by and through its Transportation board, shall accept the proposal of the Principal and the Principal shall enter into contract with the Obligee in accordance with the terms of such proposal, and give such bonds and certificates of insurance as may be specified in the contract documents with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter into such contract and give such bonds and certificates of insurance, if the Principal shall pay to the Obligee the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the obligee may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise it remains in full force and effect.

IN WITNESS WHEREOF, we hereunto set our hands and seals:

Principal

Surety

By

By Attorney-in-Fact

Title

Address Attorney-in-Fact

Subscribed and sworn before me
this _____ day of _____, 20 _____.

My Commission expires: _____

CERTIFICATION WITH REGARD TO THE
PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL
OPPORTUNITY CLAUSE
OF EXECUTIVE ORDER NO. 99-4 AND THE FILING OF REPORTS

AUGUST 1, 2000

The undersigned contractor or subcontractor, as appropriate, hereby certifies that he either has or has not, as indicated, participated in a previous contract or subcontract subject to the equal opportunity clause in Executive Order No. 99-4 of March 26, 1999, and furthermore that he either has or has not, as indicated, filed with the Highways Division, Arizona Department of Transportation, or the Arizona Civil Rights Division, all reports due under the filing requirements of the regulations of the Arizona Civil Rights Division.

Participated in previous contracts: Yes ☐ No. ☐

Filed Required reports: Yes ☐ No. ☐

Print Contractor Name

Signature

Title

Date

069 YV 280 F028801C 069-A-NFA
CORDES JCT-PRESCOTT HIGHWAY (SR 69)
(SR 69 @ SR 169)

**CERTIFICATION WITH RESPECT TO THE
RECEIPT OF ADDENDA**

In the submission of a bid and by the signing of the Proposal, this will certify that the following numbered addenda issued on this project have been brought to my personal attention and furthermore that I understand and agree that those will be made a part of the Contract.

Addendum No. _____, _____, _____, _____, _____

PRINT NAME OF CONTRACTOR

SIGNATURE

TITLE

DATE

069 YV 280 F028801C 069-A-NFA
CORDES JCT-PRESCOTT HIGHWAY (SR 69)
(SR 69 @ SR 169)

**ARIZONA DEPARTMENT OF TRANSPORTATION
PARTICIPATION IN BOYCOTT OF ISRAEL CERTIFICATION FORM**

Unless and until the District Court's injunction in Jordahl is stayed or lifted, the Anti-Israel Boycott Provision (A.R.S. § 35-393.01(A)) is unenforceable and the State will take no action to enforce it. This attachment (Participation in Boycott of Israel) is no longer a mandatory part of the offer. Offers will not be evaluated based on whether this certification has been completed.

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CORDES JCT-PRESCOTT HIGHWAY (SR 69)
(SR 69 @ SR 169)

This Certification is required in response to legislation enacted to prohibit the State from contracting with companies currently engaged in a boycott of Israel. To ensure compliance with A.R.S. §35-393.01, this form must be completed and returned with the bid. The bidder understands that this response will become public record and may be subject to public inspection.

As defined by A.R.S. §35-393.01:

1. "Boycott" means engaging in a refusal to deal, terminating business activities or performing other actions that are intended to limit commercial relations with Israel or with persons or entities doing business in Israel or in territories controlled by Israel, if those actions are taken either:
 - (a) In compliance with or adherence to calls for a boycott of Israel other than those boycotts to which 50 United States Code section 4607(c) applies.
 - (b) In a manner that discriminates on the basis of nationality, national origin or religion and that is not based on a valid business reason.
2. "Company" means a sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, Limited Liability Company or other entity or business association, and includes a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate.
3. "Direct holdings" means all publicly traded securities of a company that are held directly by the state treasurer or a retirement system in an actively managed account or fund in which the retirement system owns all shares or interests.
4. "Indirect holdings" means all securities of a company that are held in an account or fund, including a mutual fund, that is managed by one or more persons who are not employed by the state treasurer or a retirement system, if the state treasurer or retirement system owns shares or interests either:
 - (a) Together with other investors that are not subject to this section.
 - (b) That are held in an index fund.
5. "Public entity" means this State, a political subdivision of this STATE or an agency, board, commission or department of this state or a political subdivision of this state.
6. "Public fund" means the state treasurer or a retirement system.
7. "Restricted companies" means companies that boycott Israel.
8. "Retirement system" means a retirement plan or system that is established by or pursuant to title 38.

All Bidders must select one of the following:

_____ **The bidder does not participate in, and agrees not to participate in during the term of the contract a boycott of Israel in accordance with A.R.S. §35-393.01.**

_____ **The bidder *does* participate in a boycott of Israel as defined by A.R.S. §35-393.01.**

By submitting this response, the bidder agrees to indemnify and hold the State, its agents and employees, harmless from any claims or causes of action relating to the State's action based upon reliance on the above representations, including the payment of all costs and attorney fees incurred by the State in defending such an action.

_____ Company Name	_____ Signature of Person Authorized to Sign
_____ Address	_____ Printed Name
_____ City State Zip	_____ Title

ARIZONA DEPARTMENT OF TRANSPORTATION
Forced Labor of Ethnic Uyghurs Ban Certification Form

Forced Labor of Ethnic Uyghurs Ban

Please note that if any of the following apply to the Contractor, then the bidder shall select the "Exempt Contractor" option below:

- Contractor is a sole proprietorship;
- Contractor has fewer than ten (10) employees; OR
- Contractor is a non-profit organization.

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CORDES JCT-PRESCOTT HIGHWAY (SR 69)
(SR 69 @ SR 169)

Pursuant to A.R.S. § 35-394, written certification is required to show that the company entering into a contract with a public entity does not use the forced labor, or use any contractors, subcontractors or suppliers that use the forced labor or any goods or services produced by the forced labor, of ethnic Uyghurs in the People's Republic of China.

Under A.R.S. §35-394:

1. "Company" means an organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, limited liability company or other entity or business association, including a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate, that engages in for-profit activity and that has ten or more full-time employees.
2. "Public entity" means this State, a political subdivision of this State or an agency, board, commission or department of this State or a political subdivision of this State.

In compliance with A.R.S. §§ 35-394 et seq., all bidders must select one of the following:

☐	The bidder <u>does not</u> use, and agrees not to use during the term of the contract, any of the following: • Forced labor of ethnic Uyghurs in the People's Republic of China; • Any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; or • Any Contractors, Subcontractors, or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China.
☐	The bidder <u>does</u> participate in use of Forced Uyghurs Labor as described in A.R.S. § 35-394.
☐	Exempt Contractor. Select all statements that applies to this Contractor: ☐ Contractor is a sole proprietorship; ☐ Contractor has fewer than ten (10) employees; and/or ☐ Contractor is a non-profit organization.

Company Name

Signature of Person Authorized to Sign

Address

Printed Name

City

State

Zip

Title