

TECHNICAL PROVISIONS AND SPECIFICATIONS

FOR

Hunt Highway Widening Phase 4
Bella Vista Road to Magma Road–Project No. 62972174

Gantzel Road Phase D-II
Hunt Highway to Omega Drive–Project No. 62170003

Gantzel Road Channel
Indigo Sky Boulevard to Sonoqui Wash–Project No. 60684210

Hunt Highway & Magma Flood Mitigation
Phase II & III–Project No. 60684205



P I N A L ♦ C O U N T Y
wide open opportunity

Pinal County
Department of Public Works

TYLININTERNATIONAL

February 2016

60 % SUBMITTAL

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TECHNICAL PROVISIONS AND SPECIFICATIONS

Project Name: Hunt Highway Phase 4, Gantzel Road Phase D-II, Gantzel Road Channel and Hunt Highway and Magma Flood Mitigation

Project No's. 62952174, 62170003, 60684210 and 60684205

Location of the Work.

62952174: The proposed work is located on Hunt Highway from Bella Vista Road/Golf Club Drive to Magma Road. The entire project is located within unincorporated portions of Pinal County.

62170003: The proposed work is located on Gantzel Road alignment from Hunt Highway to Omega Drive. The entire project is located within unincorporated portions of Pinal County.

60684210: The proposed work is located along the east side of Johnson Ranch from Indigo Sky Blvd to Johnson Ranch Blvd, then along the south side of Johnson Ranch Blvd to Hunt Highway, and along the Gantzel Road alignment from Hunt Highway to the Sonoqui Wash. The entire project is located within unincorporated portions of Pinal County.

60684205: The proposed work is generally located at the northwest corner of the Magma Road and Hunt Highway intersection. One of two proposed flood control channels will proceed south to north from Magma Road along the west property line of the Superstition Views development for approximately 1,630 feet then turn east terminating approximately 200 feet east at the existing New Magma Irrigation and Drainage District (NMIDD) easement. The second proposed channel is located adjacent to the existing SRP easement south of Magma Road. The second channel begins at the Gantzel Road alignment (section line) and proceeds east approximately 1,357 feet to its terminus at the existing NMIDD easement. The entire project is located within unincorporated portions of Pinal County.

Proposed Work.

62952174: In general, the work consists of new roadway and a storm drain system including removals, grading, asphalt concrete (AC) paving, aggregate base course, geogrid, subgrade lime stabilization, pavement milling, curb and gutter, sidewalk, sidewalk ramps, concrete driveways, decomposed granite, catch basins, concrete scuppers, retention basins, dumped riprap, galvanized metal pipe hand railing, NMIDD irrigation improvements, landscaping, box culverts, structure excavation and backfill, junction structures, traffic signals, traffic signing, pavement markings and traffic control.

62170003: In general, the work consists of new roadway and drainage improvements including removals, grading, asphalt concrete (AC) paving, aggregate base course, geogrid, subgrade lime stabilization, decomposed granite, retention basins, dumped riprap, guard rail, traffic signing, pavement markings and traffic control.

60684210: In general, the work consists of earthen drainage channel, box culverts, structure excavation and backfill, dumped grouted riprap, geosynthetic filter fabric, concrete slope

protection, fencing, NMIDD irrigation improvements, galvanized metal pipe hand railing, traffic control.

60684205: In general, the work consists of new drainage channel improvements including grading, roll curb (facilitate access), channel access ramps, non-grouted & grouted riprap, and cross drainage culverts.

Technical Provisions and Specifications and Plans. The Scope of Work embraced herein shall be done in accordance with the technical provisions and specifications and requirements of the following separate documents which are incorporated herein by reference:

Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction, Latest Edition (2016 Revision), herein after referred to as “MAG Standard Specifications”.

U.S. Department of Transportation, Federal Highway Administration Manual on Uniform Traffic Control Devices for street and Highways, Latest Edition, hereinafter referred to as “MUTCD”.

The Standard Specifications for Road and Bridge Construction, Arizona Department of Transportation, Latest Edition, hereinafter referred to as “ADOT Standard Specifications”.

State of Arizona Department of Transportation Signing and Marking Standard Drawings, Latest Edition, hereinafter referred to as “ADOT Standard Signing and Marking Details”.

In these special provisions, all references to the words “County” shall mean Pinal County.

All references to “Inspector” shall mean the County’s Inspector.

All references to “County Engineer” or “Engineer” shall mean the County Engineer or his designated representative.

This project is sponsored by Pinal County.

Contract Time. The Contractor shall complete all project work within 500 calendar days beginning with the start date specified in the Notice to Proceed.

Available Informational Material. Cross Sections and Geotechnical Reports dated January 30 2014 (Hunt Highway Phase 4), August 22, 2014 (Gantzel Road Phase D-II) prepared by Ninyo and Moore and December 3, 2015 (Gantzel Channel) prepared by Speedie and Associates will be available during project advertisement for review on the Pinal County Public Works Web site. However, these documents are for information only and are not a part of the contract documents.

Method of Measurement for Payment. Shall be in accordance with the MAG Standard Specifications except as set forth as the unit price in the Bid Schedule.

When the standard specifications uses a unit of measure that differs from the unit of measure shown on the Bid Schedule, the units shown on the Bid Schedule shall be controlling. The units shown in the standard specifications shall be revised to match the units shown on the Bid Schedule.

Failure to Meet Required Projection Rates. Failure by the Contractor to timely and adequately respond to the County Engineer or designated representative's weekly notice of product requirements shall constitute a material breach of the Contract, whereupon Pinal may cancel the Contract and pursue any available legal remedy to recover for damages flowing from that breach.

Material Specifications. The Contractor shall conform to all material specifications defined in scope of work, Construction Plans, Bid Schedule, and Technical provisions and specifications as referenced earlier in these special provisions. Prior to the use or delivery of any materials, Contractor shall be required to furnish signed and notarized Certificates of Compliance to ensure that County receives material that adheres to the previously mentioned specifications.

Testing. The Contractor, at its own cost, shall provide sampling and density testing per MAG Standard Specifications. A testing lab approved by the County Engineer or designated representative shall perform such testing. The Contractor, at its own cost, shall provide Quality Control personnel. The County shall provide Quality Assurance Inspectors. Testing is a non pay item (NPI). All costs associated with this item shall be incorporated into the bid prices.

Material sampling and density testing for subgrade and aggregate base materials shall be per MAG Standard Specifications Section 300 and 700. Samples and tests shall be performed on each successive lift of material placed or as directed by the County Engineer or designated representative. Each report shall indicate the location at which the test was made, the date, the type and source of material tested, test designation and name of person performing the test. All tests shall be submitted to the County Engineer or designated representative within five field days after the test.

The frequency of samples taken shall be a minimum of one per day or as determined by the County Engineer or designated representative.

The frequency of density testing shall be not more than 660 linear foot per lift, per lane per MAG Specification Section 310.3 or as determined by the County Engineer or designated representative. Exact locations of tests may be designated by the County Engineer or designated representative. The County Engineer or designated representative has the authority to require density testing to be done by sand cone method. All costs associated with the sand cone method shall be at the Contractors expense.

Material sampling and density testing for asphalt concrete shall be per MAG Standard Specifications Section 321. Each report shall indicate the location at which the test was made, the date, the type and source of material tested, test designation and name of person performing the test. All tests are to be submitted to the County Engineer or designated representative within five field days after the test.

Material sample testing for asphalt concrete shall include gradation and asphalt content. A minimum of one sample per MAG Specification Section 321.10.1 of material, but no less than one sample from each source, is required for each day of paving or as determined by the County Engineer or designated representative.

Density testing of asphalt concrete shall be at random locations per MAG Specification 321.10.5.2.

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

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

Cox Communications Jose Aguirre	(623) 328-2998
Johnson Utilities Katherine Nierva	(480) 998-3300
Pinal County Traffic Signals Orlando Gonzales	(520) 705-1268
City of Mesa Gas Engineering Scott Sherwood	(480) 644-2509
Century Link (Telephone) Brett Beaty	(480) 768-4574
Salt River Project (Transmission) Norm Reber	(602) 809-2812
Salt River Project (Distribution) Tara Keeling	(602) 236-3752
New Magma Irrigation and Drainage District (Irrigation) Maaike Hough	(480) 921-4080
Mediacom Kevin Young	(602) 295-5213
WAPA Nancy Wilcox	(602) 605-2580

The Contractor shall coordinate directly with the City of Mesa Gas Department and Johnson Utilities for the timing of the necessary gas/water relocation work. The Contractor shall provide the City of Mesa Gas Department and Johnson Utilities with an estimated timeframe for when exposing of the gas and water line can be completed by for City of Mesa Gas Department and Johnson Utilities to be on-site to perform the necessary relocation work. Preliminarily, the Contractor should assume that the City of Mesa Gas Department and Johnson Utilities will require 2 days at each of the proposed storm drain crossings to perform their relocation work. Upon the completion of the relocation, it shall be the Contractor's responsibility to backfill and compact the trench in accordance with the details on the project plans. No separate payment shall be made for this coordination effort or any of the costs incurred in excavating, exposing, backfilling and compacting the City of Mesa and Johnson Utilities gas/water line trenches (price of work being considered to be incidental to other project bid items).

Relocate Informational (Non-Traffic) Signs. The Contractor shall note that there are several privately owned informational signs within the project limits that will require relocation. The Contractor shall relocate these signs as noted on the plans and as directed by the County Engineer.

Payment for removing and resetting informational (non-traffic) signs including removal of footings (if any), filling of the voids left by removal of the footings with clean fill material, placement of new concrete footings (if necessary) and replacement of any wood posts shall be included in the other contract items of work and no separate payment will be made.

Safety Edge. Pavement section at termination shall be per the detail shown on the construction plans. Asphaltic Concrete shall meet the requirements of MAG Standard Specifications Section 321. Mix designs shall be per plans and specifications. Quantities for the Safety Edge have been included in the quantities shown on the Bid Schedule for Asphaltic Concrete Pavement (1/2" Mix) and as such, no separate payment shall be made for this item.

Sawcut Pavement. The Contractor shall be responsible for all sawing/cutting of Asphalt as required. All cutting shall be with Asphalt/Concrete Saw. No "breaking" of asphalt shall be permitted by use of air compressors and spade without prior authorization by the County Engineer or designated representative. All asphalt joints shall require the existing pavement to be trimmed to a straight vertical face for its full depth. No separate payment will be made for any necessary AC removal required to perform sawcutting operations. Payment shall be included in the other contract items of work and no separate payment will be made. Need to add AC removal.

Cleanup and Dust Control. Cleanup and dust control shall adhere to MAG Standard Specifications Section 104.1.4. The Contractor shall be required to obtain a permit from Pinal County Air Quality Department. Contractor shall be responsible for obtaining such permits and paying.

Pinal County Contact:

Pinal County Air Quality Control District
Kale G. Walch

31 N. Pinal Street
P.O. Box 987
Florence, AZ 85232
Tele. (520) 866-6929
<http://co.pinal.az.us/AirQual/>

Final Cleaning Up. The Contractor, at its own cost, shall restore the site to pre-construction conditions. Before final acceptance, all private or public property and grounds occupied by the Contractor in connection with the Work shall be cleaned of all rubbish; excess materials, temporary structures and equipment, and all parts of the work area shall be left in a condition acceptable to the County Engineer. Costs for this item are considered to be included in the overall bid price and no separate payment shall be made.

Right of Way. All Right-of-Way (ROW), Temporary Construction Easements (TCE) and Sidewalk Easements (SWE) shown on the plans have been acquired for this project.

Character, Qualifications of Workmen, Methods and Equipment. All personnel shall have had proper training for the operation of the equipment which they may be operating. Any personnel exhibiting inadequate training shall be removed from the project at the direction of the County Engineer or designated representative. Any equipment in poor or unsafe condition and unable to produce quality work shall not be permitted on the project. Any delays in the work process or costs incurred due to the unsuitable condition of equipment or inadequate personnel shall be the responsibility of the Contractor.

Traffic Signals. There are two traffic signal proposed for this project. The proposed traffic signals for the intersection of Johnson Ranch Blvd at Hunt Highway and the intersection of Hunt Highway and Copper Mine Road will be governed by the Pinal County Public Works Department practices, standards, and details.

The Contractor shall provide four (4) sets of equipment submittals to the Pinal County Public Works Department for review and written approval prior to ordering or installing any equipment. The Contractor shall make provisions to provide the Traffic Signal Inspector with mylar plans clearly indicating deviations from the intended design, in "As-Built" fashion, signed and sealed by an Arizona Registered Professional Engineer. No project will be granted Final Acceptance by the Pinal County Public Works Department until this provision is satisfied, as appropriate for each intersection. Costs incurred by the Contractor in meeting the requirements of this section shall be included in the traffic signal bid items listed in the Bid Schedule, no additional payment shall be made for preparing and providing equipment submittals or As-Built Drawings.

Anywhere these criteria, or the current Pinal County Approved Products List, specifies a specific brand and model, that brand and model must be provided without exception. If the Contractor purchases or installs any equipment and or material prior to approval it shall be at the Contractor's expense.

The Pinal County Public Works Department reserve the right to reject proposed traffic signal material or equipment if, in the judgment of the Engineer any or all the following may apply:

1. The equipment does not meet the requirements of the specifications.

2. The material or equipment is not in the best interest of the Pinal County Public Works Department, or the public.
3. The material or equipment past field performance has been unsatisfactory.
4. The material or equipment is not compatible with the material or equipment presently in use, which may cause the need to purchase additional spare parts, provide additional training, and/or long term maintenance problems.

In addition, the Pinal County Public Works Department reserves the right to pre-approve traffic signal material and equipment by brand name model or part number which in the judgment of the Engineer meets the intended purpose of these specifications, as appropriate for each intersection.

Pay Items: All pay items relating to the work indicated on the project plans and/or specifications are listed in the Bid Schedule. The Contractor shall include all costs necessary to complete this project within these items. Any work necessary to complete the project as represented in the plans and/or specifications which are not specifically noted to as a pay item on the Bid Schedule shall be considered incidental to the project and no separate payment shall be made. The following pay items correspond to the bid item numbers as shown on the Bid Schedule.

Item 1:Construction Survey. The Contractor shall be responsible to provide all survey work including, but not limited to, the establishment of horizontal and vertical controls for roadway, all construction staking, structures, alignment and elevation. All monuments disturbed during the construction process shall be replaced by the Contractor at the Contractor's expense under the direction of a Registered Land Surveyor, registered in the State of Arizona.

Subgrade construction blue stake hubs shall be set on a cross-section pattern consisting of stakes set at the left hinge point, construction centerline, and right hinge point for horizontal alignment and grade control. Subgrade construction staking for alignment and grade control shall be set at a minimum of fifty foot intervals on tangents and fifty foot intervals on curves or as determined by the County Engineer or designated representative.

Finished aggregate base shall be blue topped on a cross section pattern consisting of blue tops set at the left edge of pavement, construction centerline, and right edge of pavement for horizontal alignment and grade control. Said blue tops shall be set at a minimum of fifty foot intervals on tangents and fifty foot intervals on curves or as determined by the County Engineer or designated representative.

The Registered Land Surveyor for this project shall certify As-Built drawings for this project and submit said As-Built drawings to the Engineer within 15 calendar days from the completion date for this project. As-Built Plans final submission requires: (1) 24"x36" Mylar set and (1) Digital copy either in TIFF or PDF format.

Payment shall be lump sum in accordance with Bid Schedule for all work complete and in place.

Item 2:AZPDES (NPDES) Construction Permit Requirements. This project is subject to the Arizona Pollutant Discharge Elimination System (AZPDES) general permit requirements for

construction sites under the Arizona Department of Environmental Quality (ADEQ), the AZPDES Construction General Permit.

The Contractor shall ensure construction operations shall prevent or control the discharge of pollutants into stormwater by performing all construction in accordance with the Stormwater Pollution Prevention Plans (SWPPP) included with the approved construction plans. The Contractor shall submit the NOI forms, along with SWPPP, to the Arizona Department of Environmental Quality (ADEQ) for approval prior to the start of construction.

Prior to final acceptance, contractor shall also submit a notice of termination to ADEQ after completing work included in the storm water pollution prevention plans.

Payment for Stormwater Pollution Prevention will be an allowance in accordance with Bid Schedule for all work complete and in place.

Payment for installation of all erosion control materials designated for placement within the project limits shall be included as part of this bid item. In addition to items depicted on the approved SWPPP plans. Contractor shall also install a rock tracking pad at the ingress/egress to the Contractor's designated construction yard adjacent to Hunt Highway. Contractor to submit shop drawings to, and receive approval from, the Engineer for proposed tracking pad prior to placement of any material.

Payment for all materials associated with Stormwater pollution prevention under this bid item shall be for items complete and in place.

Item 3: Mobilization. The County will compensate the Contractor for one-time, round trip mobilization/demobilization of the Contractor's personnel, equipment, supplies and incidentals, establishment of offices, buildings and other facilities required for the performance of the work on the project, as well as preparatory work and operations prior to the commencement of the work on the project site.

Mobilization/demobilization will be measured for payment by the lump sum as a single complete unit of work.

Payment for mobilization/demobilization, measured as provided above, will be made at the contract lump sum price. Payment shall be made in equal one-third portions. The first payment will be paid with Contractor's initial billing. The second payment will be made when the total payments to the Contractor for the pay items, exclusive of payments for mobilization/demobilization, equals one-half of the initial contacted amount, exclusive of mobilization, demobilization. The remaining one-third will be paid as part of the final payment due Contractor.

When other contact items are adjusted as provided in Section 109, and if the costs applicable to such items of work include mobilization costs, such mobilization costs will be considered as recovered by Contractor in the lump sum price paid for mobilization, and will be excluded from consideration in determining compensation under Section 109.

If the Contractor performs a second mobilization/demobilization of personnel, material and/or equipment at the Engineer's express written request, the county will compensate the Contractor for such expenses at the Contractor's actual costs. The Contractor shall provide all documentation for these costs at the request of the Engineer.

Item 4: Clearing and Grubbing. Clearing and Grubbing shall be according to MAG Standard Specifications Section 201 and shall be paid for as lump sum. All trees and shrubs designated for removal on the construction plans shall be paid for as a part of this bid item. Clearing and Grubbing efforts are to be kept to a minimum outside of the proposed project Right of Way and/or proposed Easements unless sight distance and/or clear zone is significantly impaired. Any miscellaneous irrigation facilities, including irrigation lines and sprinkler heads, found outside of roadway right-of-way and/or easements shall be protected and maintained in working order throughout construction. If existing facilities are damaged during the course of construction, they shall be replaced by the Contractor at no additional expense to the County. Payment for this item shall be lump sum in accordance with the Bid Schedule.

Item 5: Roadway Excavation. Roadway Excavation shall be accomplished per MAG Standard Specification Section 205, the construction plans and the Final Geotechnical Reports prepared for both Hunt Highway and Gantzel Road. Construction includes quantities for excavation and fill according to cross section calculations for in place material based on comparing field topography with design finish grade. It is the Contractor's responsibility to determine the extent of earthwork to be accomplished and no extra measurement or payment shall be made for additional earthwork without prior written approval by the Engineer. On-site soils are to be re-used as engineering fill only for the locations shown on the plans and the subgrade shall be treated per the requirements specified on Final Geotechnical Reports. Field sampling and laboratory testing will be required to evaluate the suitability of the site soils per the Geotechnical Report prepared for this project. **Payment for testing on-site soils shall be incidental to this bid item.** Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place. All other costs associated with this item including but not limited to shrink / swell, ground compaction and disposing of surplus material are incidental to this bid item.

Item 6: Earthwork for Open Channels. Earthwork for open channels shall be accomplished per MAG Standard Specification Section 215, the construction plans and the Final Geotechnical Reports prepared for Gantzel Channel. Earthwork for open channels shall consist of clearing, stripping, excavation, fill, backfill, grading and disposal of excavated and removed material. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place. All other costs associated with this item including but not limited to shrink / swell, ground compaction and disposing of surplus material are incidental to this bid item.

Project cross-sections are available to the Contractor. Cross sections are not a part of these Contract Documents and are for informational purposes only.

Item 7: Structure Excavation. Structure Excavation shall be accomplished per MAG Standard Specification Section 206 and the construction plans and shall consist of the removal of material for the construction of box culverts (including headwalls). Structure excavation will be measured by the cubic yard with accordance with the details shown on the ADOT Standard Drawings B-19.50 and SD 6.01 (4 of 5). Payment shall be per cubic yard in accordance with the

Bid Schedule for all work complete and in place. All other costs associated with this item including but not limited to shrink / swell, ground compaction and disposing of surplus material are incidental to this bid item.

Item 8: Structure Backfill. Structure Backfill shall be accomplished per MAG Standard Specification Section 206 and the construction plans and shall consist of furnishing material and placing and compacting backfill material around the box culverts (including headwalls). Structure backfill will be measured by the cubic yard with accordance with the details shown on the ADOT Standard Drawings B-19.50 and SD 6.01 (4 of 5). Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place. All other costs associated with this item including but not limited to shrink / swell, ground compaction and disposing of surplus material are incidental to this bid item.

Item 9: Subgrade Lime Stabilization – 18” Below Subgrade. Subgrade Lime Stabilization shall be accomplished per MAG Standard Specification Section 309, the construction plans and the Final Geotechnical Reports. Subgrade lime stabilization will be measured by the square yard, measured in place, treated, compacted, to the proper depth, and accepted. The quantity of curing seal shall be measured by the ton and shall be incidental to this bid item. Payment shall be per square yard in accordance with the Bid Schedule for all work complete and in place. All other costs associated with this item, including the curing seal, are incidental to this bid item.

Item 10: Grouted Riprap. Grouted Riprap shall consist of furnishing and placing stone at the depths and locations depicted on the construction plans per MAG Standard Specifications Section 215, 220 and 703 and modified herein.

- A. Anchor stakes shall conform to MAG Section 505.
- B. Weep holes shall be 3” PVC.
- C. Waste concrete shall not be used.
- D. Rock shall be angular with a minimum specific gravity of 2.65.
- E. Penetration of grout shall be full-depth. 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.
- F. The grout shall fill the interstices to within 1/3 to 1/4 the rocks diameter above the grouted surface.
- G. The top surfaces of rock in grouted rip rap shall be exposed, cleaned, and free from excess grout. If required, use water pressure to clean stone faces of any residual grout after the mortar has achieved sufficient strength.
- H. The amount of slump shall be the minimum amount needed to permit gravity flow into interstices with limited spading and brooming. The consistency of the grout shall be as approved by the Engineer.
- I. A color admixture shall be added to grout to match the surrounding earth tones. Color to be approved by the engineer prior to placement.

Payment shall be per cubic yard of grouted riprap in accordance with the Bid Schedule for all work and materials complete and in place.

Item 11: Dumped Riprap, D50=6”, Bed Thickness 12”. Dumped Riprap, D50=6” shall consist of furnishing and placing stone at the depths and locations depicted on the construction plans per

MAG Standard Specifications Section 220. Aggregate must be color-matched with adjacent landscape and the Contractor must receive approval from the County Engineer prior to construction as per MAG Standard Specification Section 703. Payment shall be per ton of D₅₀=6" Riprap in accordance with the Bid Schedule for all work and materials complete and in place.

Item 12: Dumped Riprap, D₅₀=8", Bed Thickness 16". Dumped Riprap, D₅₀=8" shall consist of furnishing and placing stone at the depths and locations depicted on the construction plans per MAG Standard Specifications Section 220. Aggregate must be color-matched with adjacent landscape and the Contractor must receive approval from the County Engineer prior to construction as per MAG Standard Specification Section 703. Payment shall be per ton of D₅₀=8" Riprap in accordance with the Bid Schedule for all work and materials complete and in place.

Item 13: Dumped Riprap, D₅₀=12", Bed Thickness 24". Dumped Riprap, D₅₀=12" shall consist of furnishing and placing stone at the depths and locations depicted on the construction plans per MAG Standard Specifications Section 220. Aggregate must be color-matched with adjacent landscape and the Contractor must receive approval from the County Engineer prior to construction as per MAG Standard Specification Section 703. Payment shall be per ton of D₅₀=12" Riprap in accordance with the Bid Schedule for all work and materials complete and in place.

Item 14: Dumped Riprap, D₅₀=18", Bed Thickness 36". Dumped Riprap, D₅₀=18" shall consist of furnishing and placing stone at the depths and locations depicted on the construction plans per MAG Standard Specifications Section 220. Aggregate must be color-matched with adjacent landscape and the Contractor must receive approval from the County Engineer prior to construction as per MAG Standard Specification Section 703. Payment shall be per ton of D₅₀=18" Riprap in accordance with the Bid Schedule for all work and materials complete and in place.

Item 15: Geosynthetic Filter Fabric. Geosynthetic Filter Fabric shall consist of furnishing and installation of filter fabric per the locations depicted on the construction plans per MAG Standard Specifications Sections 220.4 and 796.2.2, Table 796-2. Payment shall be square yard in accordance with the Bid Schedule for all work and materials complete and in place.

Item 16: Concrete Slope Protection. Concrete Slope Protection shall consist of all labor, materials, tools and equipment necessary for the construction of concrete slope protection per the locations depicted on the construction plans per MAG Standard Specifications Sections 505. Payment shall be square yard in accordance with the Bid Schedule for all work and materials complete and in place.

Item 17: Subgrade Preparation. Subgrade preparation shall be per MAG Standard Specification Section 301, per the typical roadway section and per the approved Geotechnical Reports. Work under this section shall include all grading within the right-of-way in addition to all grading outside the pavement area to bring the finished product to the typical section shown on the plans. Subgrade within the area of measurement shall be compacted to a minimum of 95% at the optimum moisture content prior to base course placement. Sheepsfoot or segmented steel rollers shall be used during initial compaction. Work under this section shall also include grading and compacting the fore slope and back slope per the typical roadway section. The Contractor shall

request an inspection of the finish subgrade 72 hours prior to inspection. Contractor shall pre-string the roadway cross-slope and longitudinal slope prior to the inspection. Measurement for Subgrade Preparation is made under pavement structure or any area called out on the plans to receive an aggregate base course (includes 4' shoulders on either side of the roadway) all other subgrade preparation within the right-of-way to meet compaction standards is incidental to this bid item. The finished surface of subgrade shall not vary from the grades established by the plans and specifications by more than ± 0.04 feet. Payment may be withheld for work that is not satisfactorily accomplished under the section. Payment shall be per square yard according to the bid schedule for all work complete and in place. All other costs associated with this item shall be incorporated into the bid price.

Item 18: TriAX Geogrid Reinforcement (TX-5). TriAX Geogrid Reinforcement by Tensar (www.tensarcopr.com), or approved equivalent by the Engineer. Material shall meet the following specifications:

DEFINITIONS

Stabilized Aggregate Layer (SAL) – A SAL is a layer of a defined thickness of unbound aggregate or base course materials that have been modified or improved through mechanical methods whereby the resulting layer behaves as a composite layer and has improved properties and performance capabilities.’

Mechanically Stabilized Layer (MSL) – A composite layer of a defined thickness comprised of unbound aggregate or base course materials combined with one or more layers of a polymeric geogrid grid structure that has been formed by a regular network of integrally connected, multi-directional tensile elements of appropriate orientation, size and shape with triangular apertures of appropriate size and shape to allow interlocking with the unbound aggregate or base course materials. The combination of the two materials creates an improved or modified composite layer with significantly improved properties and performance capabilities.

Unbound Aggregate Layer – A layer of a defined thickness of unbound aggregate or base course materials that has not be modified or improved in any way. To achieve equivalent properties and performance to a SAL, an unbound aggregate layer will require greater thickness than a SAL.

Geogrid - A biaxial or triaxial polymeric grid formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth to function primarily as reinforcement.

Minimum Average Roll Value (MARV) - Value based on testing and determined in accordance with ASTM D4759-92.

F. Modified Layer Coefficients – Measured improvement in the elastic response of a pavement section determined through full-scale, field or accelerated pavement testing. Individual products each perform differently and therefore values for individual products need to be tested and calibrated.

SYSTEM DESCRIPTION

A. This work shall consist of Mechanical Stabilization to reinforce the aggregate base layer. Mechanically Stabilized Aggregate includes, but is not limited to, the confinement of the aggregate material by use of a geogrid reinforcement system whereby the design requirements of the project are achieved.

B. The design of the pavement shall be in accordance with the 1993 American Association of State Highway and Transportation Officials (AASHTO) Guide for Design of Pavement Structures.

C. The MSL shall be incorporated into the pavement design by utilizing modified layer coefficients. These values shall be calibrated and validated with the results of full scale laboratory, field and/or accelerated pavement testing where actual geogrids are tested in-soil and in representative conditions.

SYSTEM DESCRIPTION

The design of the pavement shall be in accordance with the 1993 American Association of State Highway and Transportation Officials (AASHTO) Guide for Design of Pavement Structures.

The Mechanically Stabilized Layer within the pavement structure shall have a thickness of (user defined) inches or as shown on the contract plans.

The design of the pavement shall be based on the following parameters:

Hunt Highway

Design Structural Number= 4.16

Design traffic = 5,331,000 ESALs

Gantzel Road

Design Structural Number= 3.46

Design traffic = 3,233,000 ESALs

The MSL shall be incorporated into the pavement design by utilizing modified layer coefficients. Modified layer coefficients shall be calibrated and validated with the results of full scale laboratory, field and/or accelerated pavement testing where actual geogrids are tested in-soil and in representative conditions. These results must be reviewed by a credible third party pavement research company such as Applied Research Associates (ARA).

Per AASHTO R50-09, in-air index testing of geogrid properties, or explanations of performance based on in-air index testing of geogrid properties are not sufficient to understand the complex mechanisms involved in soil/geogrid interaction and/or the performance of MSLs. Therefore, no acceptance of alternates based on material property comparisons or explanations of performance based on in-air testing of geogrid properties will not be allowed.

SUBMITTALS

A. Submit representative geogrid product sample.

- B. Submit geogrid product data sheet and certification from the Manufacturer that the geogrid product supplied meets the requirements of sub-part 2.2 of this Section.
- C. Submit Manufacturer's installation instructions and general recommendations.
- D. Product must have at least 5 documented projects in Arizona.
- E. Product not meeting sub-part 2.2 of this Section, can be used provided that they provide the following submittal. The submittal for an alternative MSL must be submitted to the Engineer of Record (EOR) *at least 2 weeks in advance* of the bid date. The EOR should forward the submittal to the engineer-of record. The submittal must include the following:
 - 1. A design signed and sealed by a professional engineer registered to practice in the country, state or province in which the project is located.
 - 2. A submittal from the alternative MSL design engineer-of-record that includes:
 - a. Full scale laboratory, field and/or accelerated pavement testing where the specific geogrids are tested in-soil and representative conditions
 - b. A letter by the engineer-of-record stating that the submitted design utilizes modified layer coefficients that have been properly calibrated and validated for the geogrid reinforcement utilized in the MSL.

DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection
 - 1. Prevent excessive mud, wet concrete, epoxy, or other deleterious materials from coming in contact with and affixing to the geogrid materials.
 - 2. Store at temperatures above -20 degrees F (-29 degrees C).
 - 3. Rolled materials may be laid flat or stood on end.
 - 4. Geogrid materials should not be left directly exposed to sunlight for a period longer than the period recommended by the manufacturer.

QUALITY ASSURANCE

- A. Pre-Construction Conference - Prior to the start of construction of the MSL, the Contractor shall arrange a meeting at the site with the geogrid material supplier and, where applicable, the geogrid installer. The Owner and the Engineer shall be notified at least 5 days in advance of the time of the meeting. A representative of the geogrid supplier shall be available on an "as needed" basis during construction.

ACCEPTANCE

- A. Department rejects geogrid at installation if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transport, handling or storage.

PRODUCTS

2.1 GEOGRID – GENERAL

- A. Synthetic fiber net at least 85-percent by weight of polypropylene, polyethylene, or polyester.
- B. Resistant to chemical attack, rot and mildew.
- C. No tears or defects that will adversely alter properties of product.

ROADWAY AGGREGATE GEOGRID

Structural Soil Reinforcement Geogrid – The geogrid component of the SAL shall be integrally formed and produced from a punched sheet of polypropylene which is then oriented in three substantially equilateral directions so that the resulting ribs shall have a high degree of molecular orientation, which continues at least in part through the mass of the integral node.

The resulting geogrid structure shall have apertures that are triangular in shape, and shall have ribs with depth-to-width ratios greater than 1.0.

The geogrid shall have the typical characteristics shown in the table below, and shall be certified in writing by the manufacturer to have the properties outlined in the table below. Alternate materials can be used, but usage will be based on actual performance testing. Submittals must follow:

Geogrid Properties	Longitudinal	Diagonal	Transverse	General
Rib pitch, mm (in) ⁽¹⁾	40 (1.60)	40 (1.60)	-	
Mid-rib depth, mm (in) ⁽¹⁾	-	1.3 (0.05)	1.2 (0.05)	
Mid-rib width, mm (in) ⁽¹⁾	-	0.9 (0.04)	1.2 (0.05)	
Rib shape				rectangular
Aperture shape				triangular

Nominal Dimensions

Unless indicated otherwise, values shown are minimum average roll values (MARV) determined in accordance with ASTM D-4759.

Multiple layers of geogrid used to meet the requirements set forth in the preceding table shall not be accepted.

In-air index testing of geogrid properties, or explanations of performance based on in-air index testing of geogrid properties are not sufficient to understand the complex mechanisms involved in soil/geogrid interaction and/or the performance of MSLs. Therefore, no acceptance of alternates based on material property comparisons or explanations of performance based on in-air testing of geogrid properties will not be allowed.

The names and contact people for at least three projects of similar size and type that have been installed using the geogrid.

A professional engineer stamped design specific to this project.

EXECUTION

GRANULAR BASE REINFORCEMENT

A. Place geogrid at the proper elevation and alignment as shown on the construction drawings. Provide minimum overlap per manufactures recommendations. Install geogrid in accordance with the installation guidelines provided by the manufacturer or as directed by the Engineer. Geogrid may be temporarily secured in place with ties, staples, pins, sand bags or backfill as required by fill properties, fill placement or weather conditions or as directed by the Engineer.

B. Granular fill material shall be placed, spread, and compacted in such a manner that minimizes the development of wrinkles in the geogrid and/or movement of the geogrid.

C. A minimum loose fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid. If subgrade conditions permit, rubber-tired equipment may pass over the geogrid reinforcement at slow speeds (less than 10 mph) when integrally-formed geogrids are used. When woven, multi-layer or welded strip geogrids are used, rubber-tired equipment shall not be allowed directly on the geogrid. Sudden braking and sharp turning movements shall be avoided.

D. Any roll of geogrid damaged before, during and/or after installation shall be replaced by the Contractor at no additional cost to the Owner. Proper replacement shall consist of replacing the affected area and overlapping the geogrid 1 foot on all sides adjacent to the damaged area.

PROTECTION

A. At least 6-inches of fill cover is required if tracked vehicles are operated over geogrid.

MEASUREMENT AND PAYMENT

Payment shall be per square yard in accordance with the Bid Schedule for all work complete and in place.

Item 19: Aggregate Base Course, MAG 702, (Thickness per plan). An Aggregate Base Course layer shall be constructed in accordance with MAG Standard Specifications Section 310, 701, 702, construction plans and the approved Geotechnical Reports. Should there be a discrepancy between the plans and the Geotechnical Report, the Geotechnical Report shall govern. Compaction shall have a density of not less than 100%. The Contractor shall place aggregate base course per the project plans and placement shall adhere to MAG Standard Specifications Section 310. Finish grade shall be string-lined/level checked and accepted by the

County Engineer or designated representative a minimum of 24 hours in advance of placement of subsequent surface course. The finish surface of aggregate base course shall not vary from the grades established by the plans and specifications by more than ± 0.02 feet. The Contractor shall maintain the accepted grade with the proper moisture content until placement of subsequent surface course. Traffic shall be restricted to a minimum until placement of subsequent surface course to avoid segregation of the aggregate base material. The compacted layers of aggregate base shall be maintained in a condition satisfactory to receive any subsequent surface material or traffic, when so required. Areas not within the allowable tolerance shall be corrected by scarifying, placing additional material, remixing, reshaping recompacting to the specified density and surface tolerance, at the Contractor's expense. Payment shall be per ton in accordance with the Bid Schedule for all work complete and in place.

There are a total of three (3) pavement structural sections throughout the project limits. This bid item will be used on the following pavement structural sections:

Pavement Structural Section #1 (Hunt Highway, between Bella Vista Road and Magma Road)

Pavement Structural Section #3 (Gantzel Road, between Hunt Highway and Omega Drive)

Copies of load tickets organized in sequential order by ticket number, date, and quantity shall be listed on a summary sheet developed and submitted with each pay request by the Contractor for verification by the Engineer. Approval for payment shall not be made until quantities for this item are verified by the Engineer. All other costs associated with this item shall be incorporated into the bid price.

Item 20: Asphalt Concrete Pavement (3/4" Mix – Thickness per Plan). AC Pavement (3/4" Mix) layer shall be constructed per the requirements of MAG Standard Specifications Section 321 and the approved Geotechnical Reports. Should there be a discrepancy between the plans and the Geotechnical Report, the Geotechnical Report shall govern. The Contractor shall place asphaltic concrete per the project plans and placement shall adhere to MAG Standard Specifications Section 710 using a minimum of a 30 foot skid on the paving machine. **To ensure a continuous operation, the asphaltic concrete shall be delivered in belly dumps and placed upon the surface being paved in win rows and subsequently loaded into the paving machine by a self loading hopper. No end dump trucks will be allowed to load directly into the paving machine hopper on the main roadway.** The asphaltic concrete pavement shall have density of not less than 95% and shall be tested per MAG Specification 321.10.5.2. Final compacted shoulders and turnouts shall be at the same grade as the finished paved surface. Mix designs shall be per plans and specifications. Payment shall be per ton in accordance with the Bid Schedule for all work complete and in place.

There are a total of three (3) pavement structural sections throughout the project limits. This bid item will be used on the following pavement structural sections:

Pavement Structural Section #1 (Hunt Highway, between Bella Vista Road and Magma Road)

Pavement Structural Section #3 (Gantzel Road, between Hunt Highway and Omega Drive)

Copies of load tickets organized in sequential order by ticket number, date, and quantity shall be

listed on a summary sheet developed and submitted with each pay request by the Contractor for verification by the Engineer. Approval for payment shall not be made until quantities for this item are verified by the Engineer. All other costs associated with this item shall be incorporated into the bid price.

Item 21: Asphalt Concrete Pavement (1/2" Mix –Thickness per Plan). AC Pavement (1/2" Mix) layer shall be constructed per the requirements of MAG Standard Specifications Section 321 and the approved Geotechnical Reports. Should there be a discrepancy between the plans and the Geotechnical Report, the Geotechnical Report shall govern. The Contractor shall place asphaltic concrete and placement shall adhere to MAG Standard Specifications Section 710 using a minimum of a 30 foot skid on the paving machine. **To ensure a continuous operation, the asphaltic concrete shall be delivered in belly dumps and placed upon the surface being paved in win rows and subsequently loaded into the paving machine by a self loading hopper. No end dump trucks will be allowed to load directly into the paving machine hopper on the main roadway.** The asphaltic concrete pavement shall have density of not less than 95%. Final compacted shoulders and turnouts shall be at the same grade as the finished paved surface. Mix designs shall be per plans and specifications. Payment shall be per ton in accordance with the Bid Schedule for all work complete and in place.

There are a total of three (3) pavement structural sections throughout the project limits. This bid item will be used on the following pavement structural sections:

Pavement Structural Section #1 (Hunt Highway, between Bella Vista Road and Magma Road)

Pavement Structural Section #2 (Hunt Highway, between Bella Vista Road and Thistle Trail)

Pavement Structural Section #3 (Gantzel Road, between Hunt Highway and Omega Drive)

Copies of load tickets organized in sequential order by ticket number, date, and quantity shall be listed on a summary sheet developed and submitted with each pay request by the Contractor for verification by the Engineer. Approval for payment shall not be made until quantities for this item are verified by the Engineer. All other costs associated with this item shall be incorporated into the bid price.

Item 22: Bituminous Tack Coat SS-1h, Diluted. SS-1h tack coat shall meet the requirements of MAG Standard Specifications Section 329 and Section 713. Payment for the emulsified bituminous tack coat shall be by the ton, diluted. Payment shall be per ton in accordance with the Bid Schedule for all work complete and in place.

Item 23: Crack Sealing Interlayer Product. Crack Sealing Interlayer Product shall meet the requirements of MAG Standard Specifications Section 337 and shall be used as-needed in the areas of pavement milling identified on the project plans. Payment for the crack sealing interlayer product shall be per square yard in accordance with the Bid Schedule for all labor, materials, equipment, tools and incidentals used for surface preparation, placement of crack sealant, blotter materials and cleanup.

Item 24: Vertical Curb & Gutter, MAG Std Det 220, Type A, H=6". Vertical Curb and Gutter shall be constructed per MAG Standard Detail 220, Type A, H=6" and per MAG Standard Specifications Section 340. Included in this item is the construction of inverted gutter sections at

locations depicted on the construction plans as well as transitions from inverted gutter sections to normal gutter sections. Also included in the cost of this item are Curb Terminations along proposed curb and gutter sections per the construction plans. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete in place.

Item 25: Single Curb per MAG Std Det 222, Type A. Single Curb shall be constructed per MAG Standard Detail 222, Type A, and per MAG Standard Specifications Section 340.

Item 26: Concrete Sidewalk, MAG Std Det 230. Sidewalk shall be constructed per MAG Standard Detail 230 and per MAG Standard Specifications Section 340. There are two segments along Gantzel Road (between Bella Vista Road and Poston Butte High School) where the sidewalk thickness shall be modified from 4" to 9" (station limits shown on plans). The costs associated with the additional sidewalk thickness shall be incidental to this bid item. Payment shall be per square foot in accordance with the Bid Schedule for all work complete in place.

Item 27: Concrete Sidewalk Ramp per details on Sheets 16-22. Sidewalk Ramp shall be constructed per MAG Standard Details, the project plans and MAG Standard Specifications Section 340. Payment shall be per square foot in accordance with the Bid Schedule for all work complete in place.

Item 28: Furnish and Install Truncated Domes for Existing Sidewalk Ramps. Truncated Domes shall be constructed per MAG Standard Details, the project plans and MAG Standard Specifications Section 340. Payment shall be per square foot in accordance with the Bid Schedule for all work complete in place.

Item 29: Concrete Apron and Valley Gutter per MAG Std Det 240. Concrete Apron and Valley Gutter shall be constructed per MAG Standard Detail 240 and MAG Standard Specifications Section 340. 4" thick concrete paving limits shall be in accordance with the project plans. Payment shall be per square foot in accordance with the Bid Schedule for all work complete in place.

Item 30: Concrete Driveway per MAG Std Det 250-1 (Modified without Sidewalk). Concrete Driveway shall be constructed per MAG Standard Detail 250-1 and per MAG Standard Specifications Section 340. Payment shall be per square foot in accordance with the Bid Schedule for all work complete in place.

Item 31: Wing Type Alley Entrance per MAG Std Det 262. Wing Type Alley Entrance shall be constructed per MAG Standard Detail 262 and per MAG Standard Specifications Section 340. Payment shall be per square foot in accordance with the Bid Schedule for all work complete in place.

Item 32: 3" AC Driveway Connection on Compacted Native. The Contractor shall connect to existing driveways with 3 inches of AC (1/2" Mix) on compacted native soil per the limits shown on the Construction Plans. Prior to placement of AC, Contractor shall scarify upper 12" of native soil and compact to 95%. Asphaltic Concrete shall meet the requirements of MAG Standard Specifications Section 321. Placement of asphaltic concrete shall adhere to MAG Standard Specifications Section 710.

Item 33: Adjust Valve Box & Cover & New Valve Box, MAG Std Det 391-1 Type A.

Adjusting Valve Boxes and installing new Valve Boxes shall meet the requirements of MAG Standard Specifications Section 345 and per MAG Standard Detail 391-1. Payment shall be at the contract price per unit of measure, for each particular item, which shall be full compensation for supplying and furnishing all materials, facilities and services and performing all work involved as specified in MAG Standard Specifications Section 345. Payment shall be per adjusted valve in accordance with the Bid Schedule for all work complete and in place.

Item 34: Adjust Manhole Frame & Cover, MAG Std Det 422.

Adjusting Sewer Manholes shall meet the requirements of MAG Standard Specifications Section 345 and per MAG Standard Detail 422. Payment shall be at the contract price per unit of measure, for each particular item, which shall be full compensation for supplying and furnishing all materials, facilities and services and performing all work involved as specified in MAG Standard Specifications Section 345. Payment shall be per adjusted manhole in accordance with the Bid Schedule for all work complete and in place.

Item 35: Pavement Milling.

The milling shall be per MAG Standard Specifications Section 317 and as indicated on the construction plans. Millings shall be hauled from the project site and delivered to the Pinal County San Tan maintenance facility located at 3535 E. Hunt Highway in Queen Creek, Arizona. The milling cut depth shall be the depth indicated on the construction plans plus or minus $\frac{3}{4}$ inch. If cracks larger than $\frac{1}{4}$ -inch wide are observed at the surface of the AC after milling operation is finished, Contractor shall treat the surface per the recommendations shown on the approved Geotechnical Reports for this project. Payment shall be per square yard in accordance with the Bid Schedule for all work complete and in place.

Item 36: Removal of Existing Curb.

Removal of Concrete Single Curb, Curb and Gutter shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 37: Removal of Existing Concrete Apron and Valley Gutter.

Removal of Concrete Apron and Valley Gutter shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 38: Removal of Existing Concrete Pad.

Removal of Existing Concrete Pad shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 39: Removal of Existing Concrete Spillway.

Removal of Existing Concrete Spillway shall be per MAG Standard Specifications Section 350 and as indicated on the construction

plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 40: Removal of Existing Sidewalk. Removal of Existing Sidewalk shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 41: Removal of Existing Private Irrigation Concrete Channel. Removal of Existing Private Irrigation Concrete Channel shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 42: Removal of Existing Concrete Headwall. Removal of Existing Concrete Headwall shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 43: Removal of Existing Storm Drain Pipe. Removal of Existing Storm Drain pipe shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 44: Removal of Existing Sidewalk Ramp. Removal of Existing Sidewalk Ramp shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 45: Removal of Existing Scupper. Removal of Existing Scupper shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 46: Remove and Reconstruct Existing Monument Sign. Removal and reconstruction of

existing monument sign shall be per MAG Standard Specifications and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 47: Remove and Relocate Existing Fence (Type per Plan). Removal of existing fence shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. If the existing fence cannot be re-used, the Contractor shall furnish new fencing at no additional cost. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 48: Removal of Existing Trees. Removal of Existing Trees shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. Contractor shall be responsible for the removal of the trees and any associated irrigation infrastructure (valves, irrigation lines, drip systems, etc) near the vicinity of the tree to be removed. The Contractor shall also be responsible for disposal of the trees. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 49: Remove and Relocate Existing Gate. Removal and relocation of existing gate shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. If the existing gate cannot be re-used, the Contractor shall furnish a new gate at no additional cost. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 50: Removal of Existing Landscape Curb. Removal of Existing Landscape Curb shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 51: Removal of Existing Lawn and Irrigation System. Removal of Existing Lawn and Irrigation System shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 52: Landscape Restoration (Allowance). Landscape restoration shall be in conformance to MAG Standard Specifications Sections 107.9 and 430 for any landscape work not identified

on the construction plans (i.e. irrigation water mains, irrigation drip systems, irrigation water meters, etc). Any removal/relocation of existing landscaping required for the construction of the roadway improvements shall be either removed from the project site, or relocated and restored.

Prior to commencement of any landscape removal and/or replacement, Contractor shall coordinate with County Project Manager regarding timing of any removals and subsequent reconstruction. If requested to do so by the County, Contractor shall also coordinate with the Johnson Ranch HOA on planned Landscape Restoration to ensure restoration is in conformance with HOA guidelines. Coordination efforts with the County, as well as with the HOA, are included as part of this bid item. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 53: Removal of Existing Rip Rap. Removal of existing Rip Rap shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per square foot in accordance with the Bid Schedule for all work complete and in place.

Item 54: Survey Marker, MAG Std Det 120-1, Type A. Furnish and install survey monuments per MAG Standard Detail 120-1 Type A and MAG Standard Specifications Section 405. Survey monument shall be installed under the direction of a Registered Land Surveyor. Brass Cap shall be stamped "Pinal County" and with the Registered Land Surveyor license number. The horizontal and vertical location of each hand hole shall be documented in a field book and submitted to the County for record. Payment shall be made per each survey monument in accordance with the Bid Schedule for all work complete and in place.

Item 55: Survey Marker, MAG Std Det 120-1, Type B. Furnish and install survey monuments per MAG Standard Detail 120-1 Type B and MAG Standard Specifications Section 405. Survey monument shall be installed under the direction of a Registered Land Surveyor. Brass Cap shall be stamped "Pinal County" and with the Registered Land Surveyor license number. The horizontal and vertical location of each hand hole shall be documented in a field book and submitted to the County for record. Payment shall be made per each survey monument in accordance with the Bid Schedule for all work complete and in place.

Item 56: 1/4" Minus Decomposed Granite, Madison Gold, 2" Thick. Decomposed Granite shall be installed in areas as depicted by the construction Plans. Decomposed Granite shall be 1/4" minus in size, color shall be Madison Gold, and it shall be 2" thick. Decomposed Granite shall be installed per MAG Standard Specifications Section 430. Payment shall be per ton in accordance with the Bid Schedule for all work complete and in place.

Item 57: Pre-Emergence Control. The following areas shall be treated with a Pre-Emergence control, such as "Surflan" or equal, applied in accordance with the manufacturer's recommendations.

Project No. 62972173:

Between the back of curb and the daylight line across the ASLD parcel (STA 305+50 to STA 325+65)

Project No. 62170003:

East side of Gantzel Road from edge of pavement to back of retention basin (Hunt Highway to Omega Drive).

West side of Gantzel Road from edge of pavement to back of retention basin (Hunt Highway to Omega Drive).

Payment shall be per lump sum in accordance with the Bid Schedule for the all work complete in place.

Item 58: Traffic Control. Contractor shall provide all on-site and off-site traffic control required during the construction project per the Manual of Uniform Traffic Control Devices (MUTCD), MAG Standard Specifications Section 401, and shall adhere to the project plans and these specifications. A Traffic Control Plan and Construction Sequencing Plan are included with the Project Plans. All Traffic Control shall be in accordance with the MUTCD 2012 edition. No work shall be started until the Engineer accepts the contractor's Traffic Control Plan (for that sequence shown which requires submission) in writing. Access to local businesses shall be maintained open at all times during construction.

During construction, at least one lane of traffic in each direction shall be maintained open on the affected roads such as Hunt Highway and Gantzel Road. The contractor shall be responsible for maintaining all Temporary Traffic Control Devices accepted by the Engineer at all times during construction until Final Acceptance of the project is issued.

Adequate barricades and lighted warning signs shall be installed and maintained by the contractor around the work area and work-in-progress signs placed in locations as approved by the Engineer or designated representative. All shall be channelized around all Work locations in a manner approved by the Engineer or designated representative.

Maintenance of Traffic shall be to MAG Standard Specifications Section 104.1.2. Contractor shall obtain prior approval from the County Engineer or designated representative for any traffic restrictions as shown on plans to affect the Work. Contractor shall further provide prior notification of such restrictions to the public and affected property owners.

Existing Regulatory Traffic Control Signs shall be maintained at all times during the contract period unless changes have written approval from the Engineer.

If deemed necessary, the Contractor shall place Temporary Asphalt Pavement, for the purposes of Traffic Control, consisting of 2 inches of AC on compacted native soil. Asphaltic Concrete shall meet the requirements of MAG Standard Specifications Section 321. Placement of asphaltic concrete shall adhere to MAG Standard Specifications Section 710. At the time that the Temporary AC Pavement no longer becomes necessary, the Contractor may grind the Temporary Pavement and use it as base material provided that it meets MAG Standard Specifications Section 310. No separate payment shall be made for the temporary asphalt pavement.

Any temporary striping obliteration required as part of the traffic control (between construction

phases) shall be included as part of this bid item. No separate payment shall be made for temporary striping obliteration.

Contractor shall maintain access to all residents and business at all times in a practicable manner. Contractor shall exercise measures to mitigate inconveniences to adjacent property such as for mail delivery, etc. Adjacent property owners shall be notified a minimum of 24 hours in advance of any Temporary Road Closure. Payment for traffic control shall be lump sum in accordance with the Bid Schedule for all work complete and in place. All other costs associated with this item shall be incorporated into the bid price.

Item 59: Storm Drain Manhole Complete, MAG Std Det 520, 522 and 423-1. Storm Drain manhole shall be constructed per MAG Standard Details referenced and MAG Standard Specifications Section 505. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 60: Catch Basin, MAG Std Det 530 Type A, 3'-6" Opening. Concrete Catch Basin shall be constructed per MAG Standard Detail 530, Type A (curb opening 3'-6") and MAG Standard Specifications Section 505. Payment shall be made per each Catch Basin in accordance with the Bid Schedule for all work complete and in place.

Item 61: Catch Basin, MAG Std Det 530 Type B, 5'-6" Opening. Concrete Catch Basin shall be constructed per MAG Standard Detail 530, Type B (curb opening 5'-6") and MAG Standard Specifications Section 505. Payment shall be made per each Catch Basin in accordance with the Bid Schedule for all work complete and in place.

Item 62: Catch Basin, MAG Std Det 530 Type C, 8'-0" Opening. Concrete Catch Basin shall be constructed per MAG Standard Detail 530, Type C (curb opening 8'-0") and MAG Standard Specifications Section 505. Payment shall be made per each Catch Basin in accordance with the Bid Schedule for all work complete and in place.

Item 63: Concrete Scupper, MAG Std Det 206, Width and Opening per Plan. Concrete Scupper shall be constructed per MAG Standard Detail 206 and MAG Standard Specifications Section 505. The width of the proposed scupper shall be as noted on the Construction Plans. Payment shall be made per each Scupper in accordance with the Bid Schedule for all work complete and in place.

Item 64: Concrete Spillway per Detail on Sheet 28. Concrete Spillway shall be constructed per the project plans and MAG Standard Specifications Section 505. Payment shall be made per each in accordance with the Bid Schedule for all work complete and in place.

Item 65: Concrete Headwall (U Type), MAG Std Det 501-1 & 501-2 (Modified per Sheet 27). Concrete Headwall shall be constructed per the project plans and MAG Standard Specifications Section 505. Payment shall be made per each in accordance with the Bid Schedule for all work complete and in place.

Item 66: Chain Link Fence, MAG Std Det 160. Chain Link Fence shall be constructed per MAG Standard Detail 166, the project plans and MAG Standard Specifications Section 420. As part of this bid item, Contractor shall provide shop drawings for a connection between the chain

link fence and the existing masonry wall. Payment shall be made per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 67: Safety Rail, MAG Std Detail 145, Type 2. Safety Rail shall be fabricated, installed and painted per MAG Standard Detail 145, Type 2 and per MAG Standard Specifications Section 520. Sample colors shall be provided and the selected color shall be approved by the County Engineer. Payment shall be made per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 68: 15 Gal Trees. Contractor shall furnish a new 15-gallon tree for every tree removal identified as part of bid item #48-Removal of Existing Trees. Tree type shall be combination of southern live oak, cascalote and desert museum palo verde. Contractor shall coordinate with the Copper Basin HOA and the County Project Manager to determine the type of tree and location where the trees need to be delivered to. It is not anticipated that the Contractor will be required to install/plant the new 15-gallon trees. Payment shall be made per each in accordance with the Bid Schedule for all work complete and in place.

Item 69: Concrete End Section (30”), MAG Std Detail 545. Concrete End Sections for 30” Storm Drain Pipe shall be constructed per MAG Standard Detail 545 and per MAG Standard Specifications Section 618. Payment shall be per End Section in accordance with the Bid Schedule for all work complete and in place.

Item 70: Concrete End Section (24”), MAG Std Detail 545. Concrete End Sections for 24” Storm Drain Pipe shall be constructed per MAG Standard Detail 545 and per MAG Standard Specifications Section 618. Payment shall be per End Section in accordance with the Bid Schedule for all work complete and in place.

Item 71: Concrete End Section (18”), MAG Std Detail 545. Concrete End Sections for 18” Storm Drain Pipe shall be constructed per MAG Standard Detail 545 and per MAG Standard Specifications Section 618. Payment shall be per End Section in accordance with the Bid Schedule for all work complete and in place.

Item 72: Concrete End Section (15”), MAG Std Detail 545. Concrete End Sections for 15” Storm Drain Pipe shall be constructed per MAG Standard Detail 545 and per MAG Standard Specifications Section 618. Payment shall be per End Section in accordance with the Bid Schedule for all work complete and in place.

Item 73: 15” RGRCP, Class V. 15” Rubber Gasket Reinforced Concrete Pipe, Class V shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 618. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 74: 18” RGRCP, Class V. 18” Rubber Gasket Reinforced Concrete Pipe, Class V shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 618. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 75: 24" RGRCP, Class V. 24" Rubber Gasket Reinforced Concrete Pipe, Class V shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 618. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 76: 30" RGRCP, Class III. 30" Rubber Gasket Reinforced Concrete Pipe, Class III shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 618. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 77: 30" RGRCP, Class V. 30" Rubber Gasket Reinforced Concrete Pipe, Class V shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 618. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 78: 36" RGRCP, Class V. 36" Rubber Gasket Reinforced Concrete Pipe, Class V shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 618. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 79: 36" CMP. 36" Corrugated Metal Pipe, shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 621. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 80: 42" RGRCP, Class V. 42" Rubber Gasket Reinforced Concrete Pipe, Class V shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 618. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 81: 48" CMP. 48" Corrugated Metal Pipe, shall be constructed per the construction plans and per MAG Standard Specifications Section 601 and 621. Also included as a part of this pay item shall be any fittings, trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 82: 36" Flap Gate. Furnish and Install Flap Gate per the construction plans, MAG Standard Specifications Section 600 and per manufacturer's recommendations. Contractor shall submit shop drawings to be approved by the Engineer and/or County Inspector. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 83: Trash Rack per MAG Std Det 502 (Type C). Furnish and Install Trash Rack per the construction plans, MAG Standard Specifications Section 600 and per manufacturer's

recommendations. Contractor shall submit shop drawings to be approved by the Engineer and/or County Inspector. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 84: Prefabricated Cross, 30''x15''x15''. Furnish and Install Prefabricated Cross per the construction plans, MAG Standard Specifications Section 206.4.5 and per manufacturer's recommendations. Contractor shall submit shop drawings to be approved by the Engineer and/or County Inspector. Payment shall be per each Cross in accordance with the Bid Schedule for all work complete and in place.

Item 85: Prefabricated Tee, 42''x15''. Furnish and Install Prefabricated Tee per the construction plans, MAG Standard Specifications Section 206.4.5 and per manufacturer's recommendations. Contractor shall submit shop drawings to be approved by the Engineer and/or County Inspector. Payment shall be per each Tee in accordance with the Bid Schedule for all work complete and in place.

Item 86: Prefabricated Tee, 36''x15''. Furnish and Install Prefabricated Tee per the construction plans, MAG Standard Specifications Section 206.4.5 and per manufacturer's recommendations. Contractor shall submit shop drawings to be approved by the Engineer and/or County Inspector. Payment shall be per each Tee in accordance with the Bid Schedule for all work complete and in place.

Item 87: Prefabricated Tee, 18''x15''. Furnish and Install Prefabricated Tee per the construction plans, MAG Standard Specifications Section 206.4.5 and per manufacturer's recommendations. Contractor shall submit shop drawings to be approved by the Engineer and/or County Inspector. Payment shall be per each Tee in accordance with the Bid Schedule for all work complete and in place.

Item 88: Modified Concrete Headwall Drop Inlet per MAG Std Det 501-5 and Sheets 26-28. Construct Modified Concrete Headwall Drop Inlet per the construction plans and MAG Standard Specifications Section 505. Contractor shall submit shop drawings to be approved by the Engineer and/or County Inspector. Payment shall be per each headwall in accordance with the Bid Schedule for all work complete and in place.

Item 89: Junction Structure per Details on Sheets 29-32. Construct junction structures per details on approve project plans. Payment shall be per each junction structure in accordance with the Bid Schedule for all work complete and in place (on the next submittal, this bid item will be included as part as structure excavation, structure backfill, structural concrete and reinforcing steel).

Item 90: Structural Concrete (Class S, f'c=3,000 psi). Structural Concrete for the Concrete Box Culverts, and Headwalls shall be constructed per the ADOT Standard Drawings referenced on the construction plans and per ADOT Standard Specifications Section 601. Payment shall be per cubic yard of Structural Concrete in accordance with the Bid Schedule for all work and materials complete and in place.

Item 91: Reinforcing Steel. Reinforcing Steel for the Concrete Box Culverts for the Concrete Box Culverts and Headwalls shall be constructed per the ADOT Standard Drawings referenced on the construction plans and per ADOT Standard Specifications Section 605. Payment shall be

per pound of Reinforcing Steel in accordance with the Bid Schedule for all work and materials complete and in place.

Item 92: Off-Duty Pinal County Sheriff Officer. When determined necessary by the Contractor, an off-duty Pinal County Sheriff Officer shall be used for traffic control. Contact shall be made through the Pinal County Sheriff's Officer Representative to be designated at pre-construction meeting. Deputy time, including vehicle and equipment shall be measured by the hour for each hour required to perform traffic control duties. Any time over 3 hours shall be measured by the hour. Payment for Off-Duty Pinal County Sheriff Officer shall be made by the hour in accordance with the Bid Schedule. All other costs associated with this item shall be included with this bid item.

Item 93: 6" WHITE Stripe, Thermoplastic Pavement Marking, 90MIL, Hot-Sprayed. Pavement Markings shall be in accordance with ADOT Standard Specifications Section 704 and the construction plans. Water base painted pavement markings shall be installed as a primer for the thermoplastic stripes and markings. The initial water base paint application is considered to be included in the overall bid price for this item and no separate payment shall be made. The thermoplastic shall be installed no sooner than 30 days and no later than 37 days after the water base painted pavement markings are installed. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 94: 6" YELLOW Stripe, Thermoplastic Pavement Marking, 90MIL, Hot-Sprayed. Pavement Markings shall be in accordance with ADOT Standard Specifications Section 704 and the construction plans. Water base painted pavement markings shall be installed as a primer for the thermoplastic stripes and markings. The initial water base paint application is considered to be included in the overall bid price for this item and no separate payment shall be made. The thermoplastic shall be installed no sooner than 30 days and no later than 37 days after the water base painted pavement markings are installed. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 95: WHITE Stripe, Thermoplastic Pavement Marking (Transverse). 90MIL, Alkyd Extruded. Pavement Markings shall be in accordance with ADOT Standard Specifications Section 704 and the construction plans. Water base painted pavement markings shall be installed as a primer for the thermoplastic stripes and markings. The initial water base paint application is considered to be included in the overall bid price for this item and no separate payment shall be made. The thermoplastic shall be installed no sooner than 30 days and no later than 37 days after the water base painted pavement markings are installed. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place. Measurement for striping with a plan width greater or less than four inches as shown on the plans or directed by the Engineer will be made by the same method and then adjusted by the following factor: Plan (Width of Striping (inches)/4) x Linear Feet

Item 96: Thermoplastic Pavement ARROW, 90MIL, Alkyd Extruded. Thermoplastic Pavement Markings shall be in accordance with ADOT Standard Specifications Section 704 and the construction plans. The plastic film shall be a minimum of 0.090 inch (90 MIL) thick. Payment shall be per each symbol in accordance with the Bid Schedule for all work complete and in place.

Item 97: Thermoplastic Pavement “ONLY” Legend, 90MIL, Alkyd Extruded.

Thermoplastic Pavement Markings shall be in accordance with ADOT Standard Specifications Section 704 and the construction plans. The plastic film shall be a minimum of 0.090 inch (90 MIL) thick. Payment shall be per each legend item in accordance with the Bid Schedule for all work complete and in place.

Item 98: Thermoplastic Pavement Bike Lane Symbol, 90MIL, Alkyd Extruded.

Thermoplastic Pavement Markings shall be in accordance with ADOT Standard Specifications Section 704 and the construction plans. The plastic film shall be a minimum of 0.090 inch (90 MIL) thick. Payment shall be per each legend item in accordance with the Bid Schedule for all work complete and in place.

Item 99: Reflectorized Raised Pavement Marker (Type D, Yellow 2-Way).

Reflectorized Raised Pavement Markers shall be installed in accordance with ADOT Standard Specifications Section 706 and the construction plans. Payment shall be per each Reflectorized Raised Pavement Markers in accordance with the Bid Schedule for all work complete and in place.

Item 100: Reflectorized Raised Pavement Marker (Type G, Clear 1-Way).

Reflectorized Raised Pavement Markers shall be installed in accordance with ADOT Standard Specifications Section 706 and the construction plans. Payment shall be per each Reflectorized Raised Pavement Markers in accordance with the Bid Schedule for all work complete and in place.

Item 101: Reflectorized Raised Pavement Marker (Type H, Yellow 1-Way).

Reflectorized Raised Pavement Markers shall be installed in accordance with ADOT Standard Specifications Section 706 and the construction plans. Payment shall be per each Reflectorized Raised Pavement Markers in accordance with the Bid Schedule for all work complete and in place.

Item 102: Paint Median Nose, ADOT Std DWG M-1.

Paint Median Nose shall be in accordance with ADOT Standard Specifications Section 704 and the construction plans. The median nose shall be painted for the distances shown in the plans. Payment shall be per each median nose painted in accordance with the Bid Schedule for all work complete and in place.

Item 103: Obliteration of Existing Pavement Markings.

Pavement marking obliteration shall be in accordance with ADOT Standard Specifications Section 701-3.06 and the construction plans. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 104: Remove and Salvage Traffic Sign.

Remove and Salvage Traffic Sign shall be per MAG Standard Specifications Section 350 and as indicated on the construction plans. Removal of traffic sign shall include removal of the traffic sign, sign post, foundation, and backfilling to restore terrain to natural grade. Sign shall be delivered to the maintenance yard of the agency governing the roadway the sign was removed from, with costs associated with the delivery of the sign included in the bid unit price. Payment shall be per each sign removed in accordance with the Bid Schedule for all work complete and in place.

Item 105: Relocate Traffic Sign.

Relocate Traffic Sign shall be per MAG Standard Specifications Section 350 for removal and ADOT Drawing No. S-3 for the reinstallation of the traffic sign and as indicated on the construction plans. Removal of traffic sign shall include removal of the traffic sign, sign post, foundation, and backfilling to restore terrain to natural

grade. Payment shall be per each sign relocated in accordance with the Bid Schedule for all work complete and in place.

Item 106: Perforated Sign Posts, 2"x2". Square tube sign posts shall be per ADOT Signing and Marking Standard Detail S-1, sheet 1. Payment shall be made per linear feet post in accordance with the Bid Schedule for all work complete and in place.

Item 107: Perforated Sign Post Foundation. Square tube sign post foundations shall be per ADOT Signing and Marking Standard Detail S-1, Sheets 2 of 3. Payment shall be made per each post base in accordance with the Bid Schedule for all work complete and in place.

Item 108: Flat Sheet Aluminum Sign Panel, High Intensity Grade. All Flat Sheet Aluminum Sign Panels, High Intensity Grade shall be in accordance with ADOT Standard Specifications Section 608 and the construction plans. All Signs must be manufactured of High Intensity Grade sheeting which shall be attached to the standard signage aluminum plates. Sign imaging shall be in compliance with the reflective sheeting manufactures matched component system. Payment shall be made per square foot in accordance with the Bid Schedule for all work complete and in place. All other costs associated with this item, including installation of the sign to sign post, are incidental to this bid item.

Item 109: Guardrail, Type A, per ADOT Dwg. C-10.01. Guardrail Type A shall be installed per the construction plans and ADOT Standard Specification Section 905. Payment for guardrail shall be made per linear foot in accordance with the Bid Schedule for all work complete in place.

Item 110: Guardrail End Anchor. Guardrail End Anchor shall be installed per the construction plans and ADOT Standard Specification Section 905. Payment for guardrail shall be made per each in accordance with the Bid Schedule for all work complete in place.

Item 111: Guard Rail End Terminal (SRT-350). Guardrail End Terminal (SRT-350) shall be installed per the construction plans and ADOT Standard Specification Section 905. Payment for guardrail shall be made per each in accordance with the Bid Schedule for all work complete in place.

Item 112: Remove (Existing Signal Equipment). Removal of the existing wood span wire poles, signals, mountings, conductors, foundations and cabinets shall be in accordance with ADOT Standard Specifications and as indicated on the construction plans. Removal shall include removal of the traffic equipment, wiring and cables, down guys, anchors, and necessary backfilling and compaction to restore terrain to natural grade.

All existing poles, signals, conductors, cabinets, and mountings shall be salvaged Pinal County Traffic Signal Maintenance. The contractor shall provide an itemized list of salvaged materials to Pinal County, upon delivery.

Salvaged poles and equipment shall be loaded, transported, delivered and unloaded at the Pinal County maintenance yard, as directed by the Traffic Signal Technician, with costs associated with the delivery of the materials included in the bid unit price. Any materials damaged or lost between the start of construction and delivery to the Pinal County yard shall be the responsibility of the contractor to replace in kind, with new items.

The Contractor shall remove and salvage the ten (10) existing detector pucks embedded in the existing pavement. Removal and salvage shall be coordinated with the Traffic Signal Technician.

Payment shall be lump sum for all removals as noted, in accordance with the Bid Schedule, for all work complete and in place.

Item 113: Remove (Pull Box). Removal of existing pull boxes shall be in accordance with ADOT Standard Specifications and as indicated on the construction plans. Removal shall include removal of the pull box, removal of the existing stone sumps, and backfilling and compaction to restore terrain to natural grade.

Removed pull boxes shall become the property of the contractor, to be properly disposed of, with costs associated with the transport and disposal included in the bid unit price. Payment shall be per pull box removed, in accordance with the Bid Schedule for all work complete and in place.

Item 114: Pole (Pedestrian Push Button Post).

Item 115: Pole (Type A).

Item 116: Pole (Type G).

Item 117: Pole (Type Q).

Item 118: Pole (Type R).

Traffic signal poles shall conform to ADOT Specification Section 731, ADOT Traffic Signal & Lighting Standard Drawings, and shall be furnished by the Contractor and transported to the Project site and installed as shown on the plans. All poles shall conforming to ADOT specifications and be contained on the ADOT Approved Products List, unless otherwise noted on the project plans.

All poles shall be galvanized. All poles except the pedestrian pushbutton posts, shall be tapered. The Contractor shall be responsible to insure that the end of mast arm height over the roadway conforms to the applicable ADOT Standard Drawings, the cost of which is to be included in this item.

The work under this item shall consist of all equipment and labor necessary to provide and completely install the pole. Measurement and payment for this item of work shall be as stated in the ADOT Standard Specifications.

Item 119: Pole Foundation (Pedestrian Push Button Post).

Item 120: Pole Foundation (Type G) (Standard Base).

Item 121: Pole Foundation (Type A).

Item 122: Pole Foundation (Type Q).

Item 123: Pole Foundation (Type R).

The work under this item shall consist of furnishing all labor, equipment and materials required to construct the traffic signal pole foundations, as called for in the Project Plans. The foundations shall be constructed, measured and paid for in accordance with ADOT Standard Specification Section 731.

The Contractor is responsible for furnishing all anchor bolts, grounding conductors and rebar as shown in the applicable ADOT Standard Drawings. All foundation reinforcement cages shall be

furnished and installed by the Contactor. Measurement and payment for this item of work shall be as stated in the ADOT Standard Specifications.

Item 124: Mast Arm (20') (Tapered).

Item 125: Mast Arm (35') (Tapered).

Item 126: Mast Arm (40') (Tapered).

Item 127: Mast Arm (45') (Tapered).

Item 128: Mast Arm (50') (Tapered).

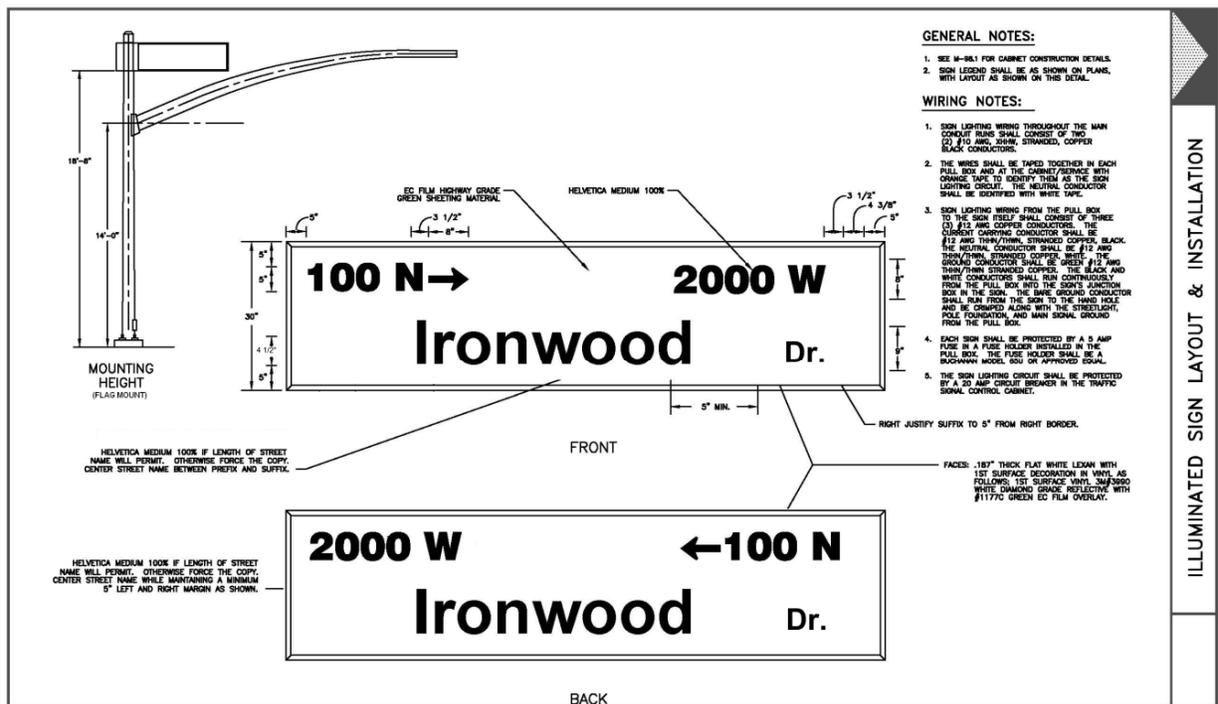
Traffic signal tapered steel galvanized mast arms shall conform to ADOT Specification Section 731, ADOT Traffic Signal & Lighting standard drawings, and shall be furnished by the Contractor and transported to the Project site and installed as shown on the plans.

All traffic signal mast arms shall conform to ADOT specifications and be contained on the ADOT Approved Products List, unless otherwise noted on the project plans.

The work under this item shall consist of all equipment and labor necessary to provide and completely install the mast arms. Measurement and payment for this item of work shall be as stated in the ADOT Standard Specifications.

Item 129: LED Internally Illuminated Street Name Sign. The Contractor shall provide and install LED internally illuminated street name signs in accordance with City of Mesa standards referenced on the project plans, with face lettering as shown herein. The Contractor shall furnish drawings/specification sheets for both the street name sign housing and face layouts. No materials shall be purchased by the Contractor until Pinal County reviews and approves the proposed materials submitted for use.

Payment shall be made for each approved sign provided and installed, according to the Bid Schedule for all work complete and in place. All other costs associated with this item including any necessary conductors, brackets, mounting hardware or other items resulting in a complete functional system shall be included with the bid item.



Item 130: Electrical Conduit (2") (PVC).

Item 131: Electrical Conduit (2 1/2") (PVC).

Item 132: Electrical Conduit (3") (PVC).

Item 133: Electrical Conduit (4-4") (PVC).

Item 134: Electrical Conduit (4") (PVC).

The work under this item consists of furnishing and installing electrical conduit as shown on the plans. The contractor shall assume any new conduits crossing existing paved roadways or driveways shall be installed by directional boring, unless otherwise specified on the plans. The Contractor shall either pothole or hand dig locations where there is the potential for underground conflicts with existing utilities or other obstructions, and shall be included with the cost of this bid item. The work shall include excavation, horizontal boring, installation of conduit, removal of spoil, backfill, pull tape, mule tape (where called for on the project plans), connectors and fittings, and restoration of the surface to match the surrounding area.

All conduit materials and installation shall be in accordance with ADOT Standard Specifications Section 732, unless noted otherwise in the project plans.

Measurement and payment for this item of work shall be as stated in the ADOT Standard Specifications. No extra compensation will be paid for directional drilled conduit or mule tape, where specified on the project plans. All conduit shall be measured for payment per size of conduit installed, regardless of method of installation, per ADOT Standard Specifications.

Item 135: Pull Box (No. 7).

Item 136: Pull Box (No. 7 w/Extension).

All pull boxes shall be ADOT approved brands and models of polymer boxes, lids, and locking systems, conforming to ADOT specifications and contained on the ADOT Approved Products List, unless otherwise noted on the project plans. No concrete pull boxes shall be used.

Traffic signal pull box lids shall say:

PINAL COUNTY
TRAFFIC SIGNAL

All pull boxes shall be "heavy duty". All "No. 7 Pull Box with Extension" units shall be 24 inches in depth, and one piece.

The No. 7 pull box with extension, closest to the controller cabinet, shall have a ground rod installed inside, at no additional cost to the project.

Measurement and payment for this item of work shall be as stated in the ADOT Standard Specifications.

Item 137: Conductors. The work under this section shall include the furnishing and installation of all electrical conductors and cables, including all equipment and labor, in accordance with the project plans.

All conductors and cables shall be provided and installed in accordance with Subsection 732-2.01 of the ADOT Standard Specifications, and as noted on the project plans.

Conductors shall be installed in accordance with Subsection 732-3 of the ADOT Standard Specifications.

Measurement and payment for this item of work shall be Lump Sum per signalized intersection, and as stated in the ADOT Standard Specifications.

Item 138: Traffic Signal Face (Type F).

Item 139: Traffic Signal Face (Type O).

Item 140: Traffic Signal Face (Pedestrian).

Signal indications, back plates and visors conforming to the ADOT Standard Specification Section 733, shall be furnished by the Contractor for transport to the Project site and installation. All signal faces shall be LED, conforming to ADOT specifications and contained on the ADOT

Approved Products List, unless otherwise noted on the project plans.

Pedestrian signals shall be LED countdown heads, contained on the ADOT Approved Products List, unless otherwise noted on the plans.

Measurement and payment for this item of work shall be as stated in the ADOT Standard Specifications.

Item 141: Traffic Signal Mounting Assembly (Type II).

Item 142: Traffic Signal Mounting Assembly (Type IV).

Item 143: Traffic Signal Mounting Assembly (Type V).

Item 144: Traffic signal Mounting Assembly (Type VII).

Traffic signal mountings conforming to ADOT Standard Specification Section 733, and contained on the ADOT Approved Products List, unless otherwise noted on the project plans, shall be furnished and installed by the Contractor.

Measurement and payment for this item of work shall be as stated in the ADOT Standard Specifications.

Item 145: Pedestrian Pushbutton Assembly. This item shall include furnishing and installing the pedestrian pushbutton sign specified on the project plans. All pedestrian pushbutton housings shall be the nominally 9 x 12 size. Measurement and payment for this item of work shall be as stated in the ADOT Standard Specifications.

Item 146: Control Cabinet Assembly (Type IV). The Contractor shall furnish and install a completely wired controller assembly, including the foundation, cabinet, controller and all necessary equipment to provide a fully functional system including all items as described in Section 734 of the ADOT Standard Specifications, and as shown on the project plans. The equipment shall be transported to the project site by the Contractor and installed, as shown on the project plans. It shall be the responsibility of the Contractor to correct or replace any equipment that fails.

Equipment shall include but not be limited to the following:

- The Cabinet shall be 2-door, Type IV (Size P) with 18" Base Extension;

- Controller shall be Siemens M60 series;
- EDI SSm-12LE Conflict Monitor;
- D Panel for Pre-emption;
- Opticom Card Rack, Model 760, series with any necessary interface panel;
- Opticom Phase Selector, Model 764;
- PDC Model SSF-86-3 Solid State Flasher;
- PDC Model SSS-87 Load Switch;
- EDI PS-175 Rack Power Supply;
- Clary UPS Model SP1250LX-N, with Manual Bypass Switch SPD-302C, Single String Straight Connectors SP-19N, 41 Ah Batteries #OP72C, and 5 ft Battery Cable #SP-19N1;
- Terminal Tie Points;
- Cabinet Ventilation Fan;
- Radio Interference Suppressor; and,
- Surge Protector.

The concrete foundation shall be 3,000 PSI, Class S concrete, as described in Section 734 of the ADOT Standard Specification.

Maintenance pads shall be provided, as part of this item, on the front and back side of the cabinet, unless other concrete surface, such as sidewalk, provides the necessary area in substitute for the maintenance pad. Maintenance pad shall be 4 inches in thickness, match the width of the cabinet foundation, and extend 48 inches from cabinet on both sides of the cabinet.

Payment shall be made for each controller cabinet assembly, with foundation, maintenance pads and all internal components, provided and installed according to the Bid Schedule for all work complete and in place. All other costs associated with this item shall be included with the bid item.

Item 147: Emergency Vehicle Preemption (Sensors & Confirmation Lights). The Contractor shall provide and install Opticom infrared emergency vehicle preemption system sensors and confirmation lights as shown on the project plans. Cabinet components, such as the card rack and phase selector shall be a part of the Controller Cabinet Assembly bid item. All cables and conductors between the controller cabinet assembly and field sensors and confirmation lights shall be a part of the Conductors bid item.

Equipment shall include but not be limited to the following:

- Opticom Sensors, Model 722
- Confirmation Light Kit 575

The equipment should be delivered to the project site and installed as shown on the project plans and as directed by the Traffic Signal Technician. Payment shall be per each pair consisting of a sensor and confirmation light assembly on a single mast arm, for a complete system provided and installed according to the Bid Schedule for all work complete and in place. All other costs associated with this item shall be included with the bid item.

Item 148: Meter Pedestal (Electrical). The Contractor shall provide and install a Myers Model MEUG 16-TS power meter pedestal, with all necessary ground rods and grounding

conductors, on a new concrete foundation with maintenance pad under this item.

Meter pedestal shall be furnished and installed with a lighting contactor, test switch and photoelectric cell.

The concrete foundation and maintenance pad shall be 3,000 PSI, Class S concrete, as described in Section 734 of the ADOT Standard Specifications. Concrete maintenance pad shall be 3 foot by 3 foot, by 4 inches thick, in front of the meter pedestal.

Measurement and payment for this item of work shall be per each, inclusive of foundation and maintenance pad.

Item 149: Video Detection System (3-Camera) (Iteris Radar Vantage Vector).

Item 150: Video Detection System (4-Camera) (Iteris Radar Vantage Vector).

The Contractor shall provide and install an Iteris Radar Vantage Video Detection System, with cameras, manufacturer-specified cabling, lightning suppressor, interface panel and processor, with a 10" flat screen monitor, to be placed in the controller cabinet. This item shall consist of all necessary equipment to provide a fully functional system.

It shall be the responsibility of the Contractor to coordinate with the Pinal County Traffic Signal Technician for proper aiming and to correct or replace any equipment that fails to perform satisfactorily.

Cameras shall be mounted on 6-foot pipe extensions, provided by the manufacturer and attached at the specific locations along the signal mast arm, as identified by the Pinal County Traffic Signal Technician. The Contractor shall set up detection zones as directed by the Pinal County Traffic signal Technician. The system shall be furnished with all software, mouse, user interfaces necessary for subsequent adjustments or modifications deemed necessary by the County after project completion, including any requested training in methods for set-up and adjustment.

Payment shall be lump sum for a complete video detection system, provided and installed according to the Bid Schedule, correctly aimed and accepted, in place. All other costs associated with this item shall be included with the bid item.

Item 151: Luminaire (LED). LED luminaires shall be furnished and installed by the Contractor as specified on the plans. The work under this item shall consist of furnishing all labor, light kits, lamps, technical support, wire, load switches, fixtures and any other equipment or materials required to install a fully operation LED luminaire.

The luminaire shall be Cooper Navion Catalog # NVN-AE-03-E-U-T3R-10K-4-AP, and shall be controlled from the photocell and contactor housed in the meter pedestal. Luminaire circuit shall be 120 VAC.

Luminaires shall be measured per each (EA). Luminaire, as measured above, shall be paid for at the Contract unit price each for the completed work in-place.

Item 152: Miscellaneous Electrical (Record Drawings). The work under this item consists of

preparing record drawings of all installed equipment, conduit, pull boxes, poles, cabinets and equipment. The contractor shall provide “red line” drawings of all installed electrical equipment on project plan sheets. Record drawings shall be full size in native file, PDF, with red used to indicate changes from the original plans. Record drawings shall be made using Adobe Acrobat or similar editing software, with text and symbology of legible size and weight.

Underground conduit shall be dimensioned from edge of roadway. All pull boxes and foundations shall indicate offset from edge of roadway or face of curb. Distance from pull box to pull box and pull box to foundation shall be shown.

Conductor and Pole Schedules shall reflect all changes made, such as variations from items called for on plans, pole and cabinet locations, phase number, number and routing of conductors, size of conductors, type of signal head, mounting assembly, poles and mast arms.

Two hard copy (one at full size and one at 11 x 17 size) and one PDF file sets of record drawings shall be submitted to the Engineer prior to final acceptance of the project.

Final acceptance of all electrical work will not be made until the complete sets of electrical record drawings sheets have been submitted and approved by the Engineer.

Record drawings of all installed electrical equipment will be measured as a single complete unit of work. Record drawings of all installed electrical equipment, measured as provided above, will be paid for at the contract lump sum price upon complete submittal to and approval by the Engineer and shall be full compensation for the item, completed as specified herein.

Item 153: Allowance (Provide Electrical Service). Contractor shall contact and coordinate with the Salt River Project (SRP) representative, John Doe, at (602) 236-XXXX to establish new power service, clarify the items to be furnished by the Contractor and items furnished by SRP. At project initiation, the contractor will be furnished with plans associated with SRP WO# YYYYYY, which indicate specific responsibilities of each party and drawings of designed power service components.

The Contractor shall obtain any required permits and pay any fees associated with establishing this relocated electrical service. At least 3 working days shall be given to both Pinal County and SRP when scheduling inspections and service turn-on.

The costs of establishment of power charged by SRP, and permits and inspections required for service establishment will be reimbursed to the Contractor under this Allowance item. Payment for Allowance (Provide Electrical Service) will be the actual costs as shown on the invoices from SRP, as submitted by the contractor, without any markup.

Item 154: Notification Signage. Four (4) orange project signs approximately 6 foot x 4 foot with black lettering and detail per MUTCD Temporary Construction Zone Signage, shall be furnished, installed and maintained by the Contractor for the duration of the project at the locations designated by the County’s Inspector. Signs shall be in place 7 days prior to the start of construction. The signs shall also be placed to be visible to motorists and kept clean.

The signs shall be mounted on break-away posts per the MUTCD manual.

Message:

**HUNT HIGHWAY IMPROVEMENTS
CONSTRUCTION
START TBD
FINISH TBD
EXPECT DELAYS**

And:

**GANTZEL ROAD IMPROVEMENTS
CONSTRUCTION
START TBD
FINISH TBD
EXPECT DELAYS**

After completion of the project and as directed by the County Inspector, the Contractor shall remove the signs and posts and properly dispose of them. An Approved electronic variable message board may be used as an alternative to the 6'x4' signage. This item will be measured on a lump sum basis and be paid at the price established in the Bid Schedule for all labor, materials, tools and equipment to complete the work.

Item 155: Variable Message Signs (Board). Changeable message signs capable of displaying electronic variable messages shall be provided and operated by the Contractor in accordance with ADOT Standard Specification Section 701-3.08, except modified as follows:

The power supply for the changeable message signs shall be a fully independent self-contained trailer-mounted system. The changeable message board power supply shall be battery operated and rechargeable from a solar panel mounted above the changeable message board.

The Contractor shall submit, at the pre-construction conference, a Certificate of Compliance that the changeable message sign (aka: board) to be used on this project shall be as described in ADOT Specification Section 701-3.08.

When in operation, the changeable message sign trailer shall be offset a minimum of eight feet from the nearest edge of pavement. If the trailer is located behind temporary concrete barrier, a minimum offset of six feet will be required. Should the specified shoulder width not be available, a minimum of two-foot offset from the nearest edge of pavement or temporary concrete barrier shall be required. When positioned on the highway, the changeable message board trailer shall be delineated with a minimum of 10 Type II barricades or vertical panels with Type C steady burn lights at a spacing of 10 to 20 feet, or as shown on the approved traffic control plan.

When not in operation, the changeable message sign shall be moved a minimum of 30 feet from the edge of pavement.

Two signs shall be in place at least two weeks prior to the start of each construction sequence (6 of them) and shall be removed after two weeks has exceeded. Contractor shall request approval

from the Engineer for the location of the sign to be placed along project site.

Payment for changeable message sign shall be per each according to the bid schedule for all materials, labor, and equipment necessary to furnish, operate, maintain, and relocate said signs for the duration of the sign usage. All other costs associated with this item shall be included into the bid price.

Item 156: NMIDD Construction Observation (Allowance). Contractor shall communicate and coordinate with NMIDD's Engineer, George Cairo Engineering (GCE), per the following. The Contractor will provide GCE with a preliminary and final construction schedule covering any improvements to be constructed within USBR rights-of-way. GCE will attend the preconstruction meeting to provide the Contractor with any testing requirements not already provided and to answer any questions regarding construction within the USBR rights-of-way. An advance warning of at least 48 hours must be given to both NMID and GCE for all construction scheduling requiring observation, including structural pours, or beginning work within the right-of-way. All pipelines must be inspected before backfilling. The County shall pay, based upon approved time and material invoices, an amount not to exceed the *ALLOWANCE* shown in the Fee Schedule. All other costs associated with this item shall be incorporated into the bid price.

Item 157: Demolish and Removal of Existing NMIDD Concrete Canal. Removal and disposal of NMIDD concrete canal facilities shall be per MAG Standard Specifications Section 350, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 158: Demolish and Removal of Existing NMIDD Outlet Headwall. Removal and disposal of NMIDD outlet headwall shall be per MAG Standard Specifications Section 350, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 159: Demolish and Removal of Existing NMIDD Inlet Headwall. Removal and disposal of NMIDD inlet headwall shall be per MAG Standard Specifications Section 350, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 160: Demolish and Salvage of Existing NMIDD Trash Rack. Removal of NMIDD trash rack shall be per MAG Standard Specifications Section 350, NMIDD Specification Section **XX**

and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Trash rack shall be hauled from the project site and delivered to NMIDD's maintenance facility located at 34630 N Schnepf Road in Queen Creek, Arizona. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 161: Demolish and Salvage of Existing Chain Link Fence. Removal of NMIDD chain link fence shall be per MAG Standard Specifications Section 350, NMIDD Specification Section XX and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. Chain link fence shall be hauled from the project site and delivered to NMIDD's maintenance facility located at 34630 N Schnepf Road in Queen Creek, Arizona. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 162: Demolish and Salvage Existing NMIDD 54" Pipe. Removal of NMIDD 54" pipe shall be per MAG Standard Specifications Section 350, NMIDD Specification Section XX and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. The 54" pipe shall be hauled from the project site and delivered to NMIDD's maintenance facility located at 34630 N Schnepf Road in Queen Creek, Arizona. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 163: Demolish and Salvage Existing NMIDD 30" Pipe. Removal of NMIDD 30" pipe shall be per MAG Standard Specifications Section 350, NMIDD Specification Section XX and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. The 30" pipe shall be hauled from the project site and delivered to NMIDD's maintenance facility located at 34630 N Schnepf Road in Queen Creek, Arizona. Payment shall be per linear foot in accordance with the Bid Schedule for all work complete and in place.

Item 164: Remove and Salvage Existing NMIDD Weir Gate. Removal of NMIDD weir gate shall be per MAG Standard Specifications Section 350, NMIDD Specification Section XX and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. The weir gate shall be hauled from the project site and delivered to NMIDD's maintenance facility located at 34630 N Schnepf Road in Queen Creek, Arizona. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 165: Demolish and Salvage Existing NMIDD Canal Gate. Removal of NMIDD canal gate shall be per MAG Standard Specifications Section 350, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of removal to be accomplished and no extra measurement or payment shall be made for additional removal without prior written approval by the Engineer. The canal gate shall be hauled from the project site and delivered to NMIDD's maintenance facility located at **34630 N Schnepf Road in Queen Creek, Arizona**. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 166: Import and Backfill NMIDD Canal to Future Grade (95% Compaction). Import and backfill of NMIDD Canal shall be accomplished per MAG Standard Specifications Section 210, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. It is the Contractor's responsibility to determine the extent of earthwork to be accomplished at no extra measurement or payment shall be made for additional earthwork without prior written approval by the Engineer. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place. All other costs associated with this item including but not limited to shrink / swell, ground compaction and disposing of surplus material are incidental to this bid item.

Item 167: NMIDD 60" RGRCP, Class V. Installation of 60" Rubber Gasket Reinforced Concrete Pipe, Class V shall be constructed per MAG Standard Specifications Section 601 and 618, NMIDD Specification Section 619 and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Also included as a part of this pay item shall be trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 168: NMIDD 30" RGRCP, Class V. Installation of 30" Rubber Gasket Reinforced Concrete Pipe, Class V shall be constructed per MAG Standard Specifications Section 601 and 618, NMIDD Specification Section 619 and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Also included as a part of this pay item shall be trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 169: NMIDD 18" Steel Pipe. Installation of 18" Steel Pipe, shall be constructed per MAG Standard Specifications Section 601 and 759, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Also included as a part of this pay item shall be trench excavation, bedding, backfilling and compaction of backfill and bedding of trenches. Payment shall be per linear foot of pipe in accordance with the Bid Schedule for all work complete and in place.

Item 170: NMIDD Inlet Headwall #1 per Sheet S-1. Construction of inlet headwall, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. The structural concrete shall be class AA, f'c=4,000 psi.

Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 171: NMIDD Inlet Manhole #1 per Sheet S-2. Construction of manhole, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. The structural concrete shall be class AA, $f'c=4,000$ psi. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 172: NMIDD Inlet Headwall #2 per Sheet S-3. Construction of inlet headwall, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. The structural concrete shall be class AA, $f'c=4,000$ psi. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 173: NMIDD Outlet Headwall #1 per Sheet S-4. Construction of outlet headwall, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. The structural concrete shall be class AA, $f'c=4,000$ psi. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 174: NMIDD Inlet Headwall #3 per Sheet S-5A & S-5B. Construction of inlet headwall, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. The structural concrete shall be class AA, $f'c=4,000$ psi. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 175: NMIDD Inlet Manhole #2 per Sheet S-6. Construction of inlet headwall, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. The structural concrete shall be class AA, $f'c=4,000$ psi. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 176: NMIDD Outlet Headwall #2 per Sheet S-7. Construction of outlet headwall, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. The structural concrete shall be class AA, $f'c=4,000$ psi. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 177: NMIDD Turnout Structure per Sheet S-8. Construction of turnout structure, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the

NMIDD Specifications shall govern. The structural concrete shall be class AA, $f'c=4,000$ psi. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 178: NMIDD Spillway Structure per Sheet S-9. Construction of spillway structure, shall be constructed per MAG Standard Specifications Sections 505 and 725, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. The structural concrete shall be class AA, $f'c=4,000$ psi. Payment shall be per cubic yard in accordance with the Bid Schedule for all work complete and in place.

Item 179: NMIDD 4' Swing Gate. Installation of 4' swing gate shall be per MAG Standard Specifications Section **XX**, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 180: NMIDD Concrete Lining with Fiber mesh). Installation of trash rack shall be per MAG Standard Specifications Section **XX**, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per square yard in accordance with the Bid Schedule for all work complete and in place.

Item 181: NMIDD 2" Thick Hand Placed Concrete Drainage Protection). Construction of concrete drainage protection, shall be constructed per MAG Standard Specifications Section **XX**, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per square yard in accordance with the Bid Schedule for all work complete and in place.

Item 182: NMIDD Trash Rack per Sheet S-1. Installation of trash rack shall be per MAG Standard Specifications Section **XX**, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 183: NMIDD Trash Rack per Sheet S-3. Installation of trash rack shall be per MAG Standard Specifications Section **XX**, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 184: NMIDD Trash Rack per Sheet S-5A & 5B. Installation of trash rack shall be per MAG Standard Specifications Section **XX**, NMIDD Specification Section **XX** and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 185: NMIDD Trash Rack per Sheet S-8. Installation of trash rack shall be per MAG Standard Specifications Section **XX**, NMIDD Specification Section **XX** and as indicated on the

construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 186: NMIDD Canal Gate per Sheet S-8. Installation of canal gate shall be per MAG Standard Specifications Section XX, NMIDD Specification Section XX and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 187: NMIDD Canal Gate Structure per Sheet S-9. Installation of canal gate structure shall be per MAG Standard Specifications Section XX, NMIDD Specification Section XX and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 188: NMIDD Concrete Pipe Collar. Construction of concrete pipe collar, shall be constructed per MAG Standard Specifications Sections 505 and 618, NMIDD Specification Section XX and as indicated on the construction plans. If any discrepancies are encountered, the NMIDD Specifications shall govern. Payment shall be per each in accordance with the Bid Schedule for all work complete and in place.

Item 189: Contingencies Allowance. A contingency allowance line item is included in the bid schedule to facilitate any unforeseen modification to the design or construction process. This item is ONLY to be used if written approval is given by the Engineer prior to commencement of extra work. When a line item in the bid schedule is available for the additional work requested extension of that line item shall be used. The County may pay, based upon a method of payment (i.e. time and material invoices, lump sum estimate, etc.) agreed on with the engineer, an amount not to exceed the ALLOWANCE shown in the Bid Schedule.

(END OF SECTION)

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