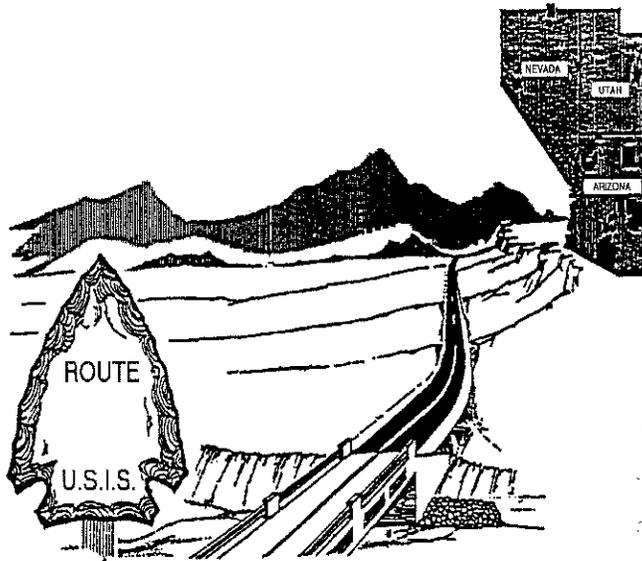


UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF INDIAN AFFAIRS

SPECIAL CONTRACT REQUIREMENTS
FOR
IRR PROJECT PYIR 101(7)
PROJECT I.D.# H55396

Pulverize Existing Pavement, Linear Grading, Construct Concrete Valley Gutter, Place Minor
Hot Asphalt Concrete Pavement, and Pavement Markings
For 0.22 Mile on BIA Route 101.



THIS SPECIFICATION
UTILIZES CONSTRUCTION DETAILS
OF FP-03, U.S. Customary Units

Exp. 9/30/2014

Pascua Yaqui Indian Reservation

Pima County, AZ

ISSUED BY
WESTERN REGIONAL OFFICE
PHOENIX, ARIZONA

January 15, 2012, edition
SPECIAL CONTRACT REQUIREMENTS, FP-03, U.S. CUSTOMARY UNITS

All material under the Divisions of the “Standard Specifications for Construction of Roads and Bridges On Federal Highway Projects, FP-03, U.S. Customary Units,” henceforth called FP-03, published in book form by the U.S. Department of Transportation, Federal Highway Administration, shall apply to this contract as revised below:

DIVISION 100 GENERAL REQUIREMENTS

Section 101 – TERMS, FORMAT, AND DEFINITIONS

101.03 Abbreviations.

(a) Acronyms.

Page 5., after “USPS” add the following: “BIA – Bureau of Indian Affairs.”

Delete (d) Slope notation (vertical:horizontal) and insert the following:

(d) U.S. Customary units slope notation (horizontal:vertical). Express the slope as a ratio of a number of units horizontal to one unit vertical.

101.04 Definitions.

Amend as follows:

Delete the text of these definitions and substitute the following:

Award — The written acceptance of an offeror’s proposal by the CO.

Bid — When used in a project package, carries the same meaning as Offer.

Bidder — When used in a project package, carries the same meaning as Offeror.

Bid Guarantee — A form of security assuring that the offeror will not withdraw an offer within the period specified for acceptance and will execute a written Task Order and furnish required bonds.

Bid Schedule — The prepared schedule included with the offer forms, containing the estimated quantities of pay items for which unit prices are requested.

Contract — The written agreement between the Government and the Contractor setting forth the obligations of the parties for the ordering of, performance of, and payment for, the prescribed work. Refers to both the Basic Contract and the Task Orders.

Contract Time — The specified time allowed for completion of all Task Order work.

Notice to Proceed — Written notice to the Contractor to begin the Task Order work.

Pay Item — A specific item of work for which a unit price is provided in the Task Order.

Payment Bond — The security executed by the Contractor and surety or sureties and furnished to the Government to ensure payments as required by law to all persons supplying labor or material according to the Task Order.

Performance Bond — The security executed by the Contractor and surety or sureties and furnished to the Government to guarantee completion of the Task Order work.

Project — The specific section of the highway or other property on which construction is to be performed under the Task Order.

Solicitation — The complete assembly of documents (whether attached or incorporated by reference) furnished to prospective offerors.

Surety — An individual or corporation legally liable for the debt, default, or failure of a Contractor to satisfy a Task Order obligation.

Work — The furnishing of labor, material, equipment, and other incidentals necessary to successfully complete the project according to the Task Order.

Add the following:

Basic Contract — The Indefinite Delivery, Indefinite Quantity (IDIQ) contract which is a written agreement between the Government and the Contractor(s) setting forth the general obligations of the parties for the ordering of, performance of, and payment for, the work to be performed under the subsequent Task Orders.

Offer — A written proposal by an offeror to perform work at a proposed price.

Offeror — Any individual or legal entity submitting an offer.

Task Order — An order for a specific level of work that may or may not be related to one or more projects.

Section 103 – SCOPE OF WORK

103.05 Partnering.

Delete the subsection in its entirety.

Section 104 – CONTROL OF WORK

104.01 Authority of the Contracting Officer (CO). Add:

The Contracting Officer's Representative (COR) may act for the Contracting Officer in administering his/her contract, but he/she shall not be empowered to award, agree to, or execute any contract modification thereto, or in any way to obligate the government, to approve Portland cement and asphalt concrete mix designs, or to make a final decision on any matter which would be subject to appeal under the disputes clause of the contract.

104.01 (b) Specific requirements for concrete and miscellaneous structures.

Add the following:

(2)(n) Structural concrete drawings and details.

104.05 Load Restrictions. Add:

No loads shall be hauled over aggregate base courses or bituminous pavements which exceed legal load limits for hauling units as prescribed within the jurisdiction of the local State Department of Transportation (Highways) [**ARIZONA REVISED STATUTES, TITLE 28, SECTION 1009.01**] or local Tribal Ordinance.

Section 105 – CONTROL OF MATERIAL

105.02 Material Sources.

Add the following to the end of this subsection:

105.02(c) Government-listed sources. The Government may list possible material sources. The Government makes no representation as to the quality or quantity of material, or rights to the availability of material from these sources. These sources are considered to be Contractor-located sources under (b) in the FP-03

105.05 Use of Material Found In Work.

Delete (a) Take possession of the excess material and direct its use, paying the Contractor only for the cost of production and substitute the following:

(a) Take possession of the material, or

Section 106 – ACCEPTANCE OF WORK

106.01 Conformity with Contract Requirements. Delete the text of this Subsection and substitute the following:

Follow the requirements of FAR Clause 52.246-12 Inspection of Construction.

References to standard test methods of AASHTO, ASTM, GSA, and other recognized standard authorities refer to the methods in effect on the date of solicitation for bids. Use the 32nd edition of the AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing and Appendix B of the Federal Lands Highway Field Materials Manual, dated October 2008. Use the modified AASHTO procedures for sampling and testing contained in the WFLHD Supplements to Nationally Developed Standard Test Procedures; except, when a specified sampling or test method is not included in this supplement, sample and test according to the referenced AASHTO test procedure. Appendix B of the Federal Lands Highway Field Materials Manual contains sampling and testing methods which may be required for this project that are not found in AASHTO.

Perform work according to the contract requirements. Perform all work to the lines, grades, cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.

Plan dimensions and contract specification values are the values to be strived for and complied with as the design values from which any deviations are allowed. Perform work and provide material that is uniform in character and reasonably close to the prescribed value or within the specified tolerance range. The purpose of a tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons.

The Government may inspect, sample, or test work at any time before final acceptance of the project. If the Government tests work, copies of test reports are furnished to the Contractor upon request. Government tests may or may not be performed at the work site.

For work that is evaluated and accepted under Subsection 106.04, if Government testing is performed, the result will be used for acceptance purposes.

For work that is evaluated and accepted under Subsection 106.05, if Contractor testing and inspection is verified by the Government, the Contractor's results may be used by the Government to evaluate work for acceptance. Contractor data will be verified using the F- and t-test statistics in comparison to Government test results at a significance level of 0.01. If the Contractor's data is not verified and the CO determines it to be appropriate, the Government will perform tests associated for that discrete portion of work. In this situation, the Government test results will control in determining the acceptability and pay factor of the work.

Do not rely on the availability of Government test results for process control

Acceptable work conforming to the contract will be paid for at the contract unit bid price. Four methods of determining conformity and accepting work are described in Subsections 106.02 to 106.05 inclusive. The primary method of acceptance is specified in each Section of work.

However, work may be rejected at any time it is found by any of the methods not to comply with the contract.

Remove, repair, or replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted. Removing, repairing, or replacing work; providing temporary traffic control; and any other related work to accomplish conformity will be at no cost to the Government.

As an alternative to removal and replacement, the Contractor may submit a written request to:

- (a) Have the work accepted at a reduced price; or
- (b) Be given permission to perform corrective measures to bring the work into conformity.

The request must contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, aesthetics, and other tangible engineering basis. The CO will determine disposition of the nonconforming work.

When standard manufactured items are specified (such as fence, wire, plates, rolled shapes, pipe conduits, etc., that are identified by gauge, unit mass, section dimensions, etc.), the identification will be considered to be nominal masses or dimensions. Unless specific contract tolerances are noted, established manufacturing tolerances will be accepted.

All specification limits, tolerances, test results, and related calculations are according to ASTM E 29, Absolute Method.

106.03 Certification. Add:

Include the following with all certifications:

- a. Contract Number
- b. Project Name
- c. Item Number
- d. Item Description
- e. Specification Requirements

106.04 Measured or Tested Conformance.

Delete the first sentence of the second paragraph beginning with “Results from . . .” and substitute the following:

Results from inspection or testing for acceptance of work incorporated in the project shall have values within the specified tolerances or specification limits.

Section 107 – LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

107.02 Protection and Restoration of Property and Landscape.

Follow the requirements of FAR Clause 52.236-9 Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements.

Preserve public and private property, and protect monuments established for the purpose of perpetuating horizontal, vertical, cadastral, or boundary control. When necessary to destroy a monument, reestablish the monument according to applicable state statute or by the direction of the agency or individual who established the monument.

Do not disturb the area beyond the construction limits. Replace trees, shrubs, or vegetated areas damaged by construction operations as directed and at no cost to the Government. Remove any damaged limbs of existing trees by an approved arborist.

Do not excavate, remove, damage, alter, or deface any archeological or paleontological remains or specimens. Control the actions of employees and subcontractors on the project to ensure that protected sites are not disturbed or damaged. Should any of these items be encountered, suspend operations at the discovery site, notify the CO, and continue operations in other areas. The CO will inform the Contractor when operations may resume at the discovery site.

When utilities are to be relocated or adjusted, the Government will notify all utility owners affected by the relocations or adjustments. The relocations or adjustments will be performed by others or will be included in the contract work.

Before beginning work in an area, the Contractor shall have all utility owners locate their utilities. Protect utilities from construction operations. Cooperate with utility owners to expedite the relocation or adjustment of their utilities to minimize interruption of service and duplication of work.

If utility services are interrupted as a result of damage by the construction, immediately notify the utility owner, the CO, and other proper authorities. Cooperate with them until service is restored. Do not work around fire hydrants until provisions for continued service are made and approved by the local fire authority.

If utility adjustment work, not included in the contract, is required, compensation for the work will be provided under applicable clauses of the contract. Satisfactorily repair damage due to the fault or negligence of the Contractor at no cost to the Government.

Repair of damage to underground utilities that were not shown on the plans or identified before construction, and not caused by the fault or negligence of the Contractor, will be paid for by the Government.

107.03A Public Notice. (Added Subsection).

Publish notices of the road work in local newspapers and on local radio stations. Include a description of the work, expected delays, and periods when the road is open to traffic without delays. Issue the notice at least 5 days before beginning work on the project or beginning work after a winter suspension, and at least two times during the normal tourist season.

107.10 Environmental Protection. Delete the text of this Subsection and substitute the following:

Conform to the following:

(a) The Federal Water Pollution Control Act (33 USC § 1251 et seq.).

(1) Except as authorized by this contract, do not operate mechanized equipment, discharge or place material within the boundaries of any U.S. waters as identified by the ordinary high water mark, high tide line, or edge of the wetland. This includes wetlands, unless authorized by a permit issued by the U.S. Army Corps of Engineers according to 33 USC § 1344, and if required by the state agency having jurisdiction over the discharge of material into the waters of the U.S. In the event of an unauthorized discharge:

- (a) Immediately prevent further contamination;
- (b) Immediately notify appropriate authorities and the CO; and
- (c) Mitigate damages as required.

(2) Separate work areas, including material sources by the use of a suitable barrier that prevents sediment, petroleum products, chemicals, other liquids, or solid materials from entering the waters of the U.S. Construct and remove barriers to avoid discharge of material into the waters of the U.S. Remove and properly dispose of sediment or other material collected by the barrier.

(b) Oil and hazardous substances. A Spill Prevention, Control, and Countermeasure (SPCC) plan will be required to be submitted for sites that meet regulatory requirements.

Submit and follow a Hazardous Spill Plan when an SPCC plan is not in effect. Submit the plan at least 2 days before beginning work. Develop a plan describing what actions will be taken in case of a spill and incorporate preventative measures to be implemented (such as the placement of refueling facilities, storage and handling of hazardous materials, etc).

Do not use equipment that is leaking fluids. Repair leaks on equipment immediately. Keep a supply of absorbent materials at the job site in the event of spills. Acceptable absorbent materials are those manufactured specifically for the containment and clean up of hazardous materials.

Immediately notify the CO of all hazardous spills.

GUIDE FOR ENVIRONMENTAL COMPLIANCE PLAN

PROJECT:

1. Compliance with CLEAN AIR ACT and CLEAN WATER ACT.

- A. Roadway. (list equipment)
 - 1. Dust.
 - 2. Emissions.
- B. Borrow and aggregate pits. (list equipment)
 - 1. Dust.
 - 2. Emissions.
 - 3. Restoration.
- C. Crusher, Asphalt and Concrete Batch Plants. (list equipment)
 - 1. Dust.
 - a. Permits.
 - b. Spray bars.
 - 2. Emissions.
 - a. Permits.
 - b. Stacks.
 - c. Type of fuel.
- D. Equipment yard.
 - 1. Dust.
 - 2. Fuel storage.
 - 3. Disposal of used oil.
 - 4. Restoration.
- E. Detours and haul roads.
 - 1. Dust.
 - 2. Emissions.
 - 3. Restoration.
- F. Hazardous Materials.
 - 1. Safety Practices.
 - 2. Contingency Spill Plan.
 - 3. Minor Spill Cleanup.
- G. Project Cleanup.
- H. Disposal of Materials.

II. Compliance with NATIONAL ENVIRONMENTAL POLICY ACT and NATIONAL HISTORIC PRESERVATION ACT.

Contractor's Signature

Date

Recommended by COR

Date

Approved by CO

Date

As part of the compliance with the **National Environmental Policy Act**, the Contractor must complete an environmental document in accordance with **BIA NEPA Handbook 59 IAM 3-H**, if he elects to do any of the following:

1. Produce materials from a contractor-furnished source.
2. Utilize a site to set up a plant for the crushing and processing of the base and/or surfacing materials, or an equipment yard.
3. Dispose of materials in other than a commercial or approved public land fill.
4. Construct a haul road or detour out of the approved right-of-way.

Before the Contractor may enter/occupy any area outside of the right-of-way, including vehicle turnaround areas, construction yards, staging areas, material sources, etc., the Contractor must submit to the CO a detailed location map and activity description. If the CO determines that NEPA documentation is necessary, the Contractor must prepare an environmental assessment which shall include but not be limited to the following:

1. A Cultural Resource Survey and Report for the areas that may be affected by the project, must be completed by a person with acknowledged credentials.
2. An Endangered Species Biological Assessment must be prepared by a qualified person, if there are any threatened or endangered species that may be in the project area.
3. The location and ownership of the proposed material source, equipment yard, haul road, etc., with vicinity maps.
4. The anticipated area to be impacted, volume of material to be removed, length and width of haul road, and other pertinent features.
5. Former use, if known, of the source and/or haul roads and the existing condition.
6. Identify and location of nearby lakes, streams, parks, wildlife refuges or similar areas that may be affected.
7. A description of the visual surroundings and the impact of this action on the visual setting.
8. Description of the wildlife and plants and their habitat.
9. Identification of present and planned future land use and an analysis of the compatibility of this action with future use.
10. Procedures to minimize dust and noise.
11. Description of the impacts to the quality and quantity of water resulting from runoff, watering, flooding, or pumping.

12. Effects of hauling activities upon local traffic and roads and the mitigation measures planned where problems are expected.
13. Handling of fuel, potential spills and disposal of used oil.
14. Include proof of compliance and permits if required with **Sections 308, 401 and 404 of the Clean Water Act, Section 114 of the Clean Air Act** and other requirements that may apply concerning zoning, health, mining land use, flood plains, etc.
15. Effects which could result from removing and/or stockpiling materials within flood plains.
16. Final condition in which the affected features will be left, such as sloped, topsoil replaced, area seeded, etc.

The Environmental Assessment shall be submitted to the CO for review. *If the CO determines that the environmental document is sufficient*, then the Contractor shall submit the Environmental Assessment to the Agency Superintendent for approving signature and a copy given to the COR, prior to engaging in any activity outside of the existing right-of-way.

If the CO determines that the environmental assessment is insufficient, then the assessment will be returned to the Contractor for additional work and re-submittal to the CO.

Where appropriate, permission from allottees, private land owners and/or other government entities must be obtained.

Section 108 – PROSECUTION AND PROGRESS

108.01 Commencement, Prosecution, and Completion of Work.

In the second paragraph, second sentence, **delete** “Seven days before the preconstruction conference,” and insert “Ten days after the award of the Contract,”.

108.03 Determination and Extension of Contract Time. Add:

Stop work orders on some but not all items will be considered “partial suspension”. Stop work orders on all items will be considered “total suspension”.

When the CO, in accordance with **Subsection 108.05(a)**, orders the total suspension of the performance of work for one or more calendar days, the number of days from the effective date of the suspension until the effective date of the CO’s order to resume operations, will not be included in the count of the contract time.

During periods of partial suspension of the work in accordance with **Subsection 108.05(a)**, the total number of calendar days to be charged as contract time, shall be computed by multiplying the number of calendar days of the original contract time by the ratio of the amount earned during the period of partial suspension to the original contract amount.

In no case shall the number of calendar days to be charged as contract time for a period of partial suspension (computed as described in the previous paragraph) exceed the total time of the effective dates of the partial suspension issued by the CO.

For the purpose of computing the number of calendar days to be charged, the amount earned during a period of partial suspension shall exclude any allowance for materials not incorporated in the work but shall include any allowance made for the roadside production of aggregate and other work performed at the site.

Reasonably predictable weather conditions are not a valid reason for adjustment of contract time.

108.04 Failure to Complete Work on Time.

Delete the fourth paragraph which begins with “Liquidated damages in an amount equal to 20 percent....”

108.05 Stop Order. (Suspension of Work)

In the first line of the last paragraph **delete** the words “time or”

Section 109 – MEASUREMENT AND PAYMENT

109.01 Measurement of Work. Delete the text of this Subsection and substitute the following:

Take and record measurements and perform calculations to determine pay quantities for invoicing for work performed. Take or convert all measurements of work according to United States customary measure.

Unless otherwise specified, measure when the work is in place, complete, and accepted. Measure the actual work performed, except do not measure work outside the design limits or other adjusted or specified limits (staked limits). Measure structures to the lines shown on the plans or to approved lines adjusted to fit field conditions.

Take measurements as described in Subsection 109.02 unless otherwise modified by the Measurement Subsection of the Section controlling the work being performed. Measurement of quantities for payment for the individual pay items will be based on the awarded unit price for each pay item according to Table 109-1.

Table 109-1
Decimal Accuracy of Quantities for Payment

Awarded unit price	Decimal Accuracy of Quantities for Payment
< \$1.00	0 decimals
≥ \$1.00 to < \$100.00	1 decimals
≥ \$100.00 to < \$1000.00	2 decimals
≥ \$1000.00	3 decimals

Decimal precision for measurement is one decimal beyond accuracy of the quantities for payment.

Remeasure quantities if it has been determined that any portion of the work is acceptable but has not been completed to the lines, grades, and dimensions shown on the plans or established by the CO.

Submit measurement notes to the CO within 24 hours of completing the work. For on-going work, submit measurement notes weekly. When work is not complete, identify the measurement as being an interim measurement. Submit the final measurement when the installation is completed. Measurement notes form the basis of the Government's receiving report (see Subsection 109.08(d)). For lump sum items, submit documentation to support invoiced progress payment on a monthly basis.

Prepare pay item measurement notes on Form FHWA 17348 *Record of Miscellaneous Items*. For an electronic version of the form go to:

<http://www.wfl.fha.dot.gov/other/it/forms/17348.pdf>

As a minimum, include the following information in all records of measurement:

- (a) Project name and number;
- (b) Pay item number;
- (c) Date the work was performed;
- (d) Location of the work;
- (e) Measured quantity;
- (f) Calculations made to arrive at the quantity;
- (g) Supporting sketch and details as needed to clearly define the work performed and the quantity measured;
- (h) Names of persons measuring the work;
- (i) Identification as to whether the measurement is interim or final; and
- (j) Signed certification statement by the persons taking the measurements, performing the calculations, and submitting them for payment that the measurement and calculations are correct to the best of their knowledge and that the quantity being measured is subject to direct payment for the identified item under the contract.

109.02 Measurement Terms and Definitions

109.02 Measurement Terms and Definitions. Amend the following:

Delete the second paragraph (b) designator and substitute the following:

(c) Cubic yard.

Add the following to paragraph (e):

(4) Weighing.

Delete the text in paragraph (m) and substitute the following:

(m) Square yard. 9 square feet. Longitudinal and transverse measurements for area computations will be made horizontally. No deductions from the area computation will be made for individual fixtures having area of 9 square feet or less. Do not measure overlaps.

Delete **(c) Cubic yard.** And insert **(c) Cubic yard (yd³, Cu.Yd. or CY). 27 cubic feet.**

Delete **(d) Each.** And insert **(d) Each (EA).**

Delete **(g) Linear foot.** And insert **(g) Linear foot (LF).**

Delete **(h) Lump sum**. And insert **(h) Lump sum (LS)**.

Delete **(k) Pound**. And insert **(k) Pound (LB)**.

Delete **(l) Square foot**. And insert **(l) Square foot (ft², Sq.ft. or SF)**.

Delete **(m) Square yard**. And insert **(m) Square yard (yd², Sq.Yd. or SY)**.

Add the following:

(p) Contingent sum. Perform the work only when authorized by written order. The work will be measured and paid for at agreed unit prices, lump sum prices or force account as established in the order authorizing the work. When the unit is designated “Lump Sum”, the quantity is designated as “1”.

109.06 Pricing of Adjustments.

Add the following sentence after the first paragraph:

(b) Postwork pricing.

(1) Direct costs.

(c) Equipment.

Delete the paragraphs under **(1), (2), and (3)** and substitute the following:

For any machinery or special equipment (other than small tools), including fuel and lubricants, plus transportation costs, the use of which has been authorized by the COR including the use for hauling of materials and equipment, the Contractor shall receive the hourly equipment rental rates in effect at the time force account work is authorized. These hourly rental rates shall be determined by using the monthly rental rate taken from the Rental Rate Blue Book for construction equipment divided by 176. The Rental Rate Blue Book for Construction Equipment is published by Equipment Guide-Book Company, Palo Alto, California. Operating costs in accordance with the rates listed in the Rental Rate Blue Book will be allowed for each and every hour the machinery or equipment is actually operated. Rates not provided by the Rental Rate Blue Book must be approved by the CO prior to the start of any Force Account work on which the equipment will be used. No adjustment percentage, as shown on the maps in the Rental Rate Blue Book shall be used with the rental rate because of a predominate area condition.

If the machinery or equipment is required to be at the work site on standby, but is not operating, the Contractor may be compensated at the hourly rate exclusive of operating costs. The duration of standby time is to be determined when standby time is approved.

When the equipment is to be used on multiple shifts, a charge of 50 percent of the base rental rate plus operating service rate for each hour of additional shifts will apply. The number of hours for each shift shall be agreed upon by the Contractor and COR prior to starting of work.

“Move-in” and Move-out” charges required by the piece of equipment not available on the job will be included as part of the extra work at actual transportation cost, if the particular piece of equipment is not moved onto the specific job under its own power. Total hourly rate, without operator, shall be allowed for equipment moved to the site of the work under its own power. This shall apply to equipment moved within the limits of the project. “Move-in” charges will be paid only once for any particular piece of equipment except in unusual circumstances which must be justified in writing and agreed to by the COR.

Whenever the “Manufacturer’s Rated Capacity” falls between those shown in this book, the closest will be used. Do not interpolate for rates in between.

All rates shall be agreed upon in writing before any work is begun. No percentages shall be added to this amount.

(2) Overhead.

Delete the first paragraph and substitute the following:

The overhead factor shall be applied to the direct costs. The Contractor shall be limited to 10% overhead when he and/or his subcontractors perform work for that portion performed with their respective forces.

(3) Profit.

Delete the first paragraph.

109.08 Progress Payments.

Delete (a), (b), (c), (d) and (e) and insert the following:

Progress payments will be made on the first of each month as the work proceeds except no payment will be made for less than \$2,500. Progress payments will be prepared by the COR and made by the CO in full without retention when progress is considered satisfactory and the work may reasonably be expected to be completed within the contract time, progress payments will be withheld if the Contractor’s Construction Schedule (CPM) is not current and accepted by the Government.

Noncompliance with or the failure to provide timely submittal of contract requirements will be justification of withholding of progress payments or portions thereof.

(f) Partial payments.

Add: Partial Payments for Material on Hand

Materials listed below may be considered for partial payment when the materials are delivered and stockpiled or produced on the project site or on another site approved by the COR. Such

partial payment will be made at the contract unit price for the quantity of material on hand and multiplied by the Partial Payment Factor.

Type of Material	Partial Payment Factor
Aggregate Subbase	0.35
Aggregate Base	0.35
Mineral Aggregate	0.35
Cover Aggregate	0.35

The cost of hauling the stockpiled material listed above to the project site may be included in the partial payment at a rate of \$0.15 per ton per mile.

Cover aggregate will be measured by the Ton in the hauling vehicle immediately prior to placement on the roadway surface to be treated.

Delete the last paragraph of this subsection beginning with “The quantity paid . . .”

DIVISION 150 – PROJECT REQUIREMENTS

Section 151 – MOBILIZATION

151.03 Payment

After the sentence “Progress payments for mobilization lump sum will be paid as follows:” **delete** (a), (b), (c) and (d) and replace with the following:

One third of the mobilization lump sum, not to exceed 5% of the original contract amount, will be paid when the COR has determined that a significant amount of equipment has been mobilized to the project site which will be used to perform portions of the contract work.

The remaining payment(s) of mobilization will be determined by the percentage of work completed for the contract up to 90 percent of the mobilization lump sum. The remaining balance shall be paid after final acceptance of the project.

Section 152 – CONSTRUCTION SURVEY AND STAKING

152.01(a) Personnel. Add:

The person responsible for the surveying shall be a Registered Land Surveyor (RLS) in the state where the project is located and be proficient in construction surveying and have a sound knowledge of the specifications as they relate to construction staking. The crew chief shall be NICET Certified Level III or a RLS and shall be capable of supervising a survey crew, calculating grades, horizontal and vertical curves, and all other work necessary to complete the construction staking. **The crew chief shall be on the project whenever surveying and/or staking is in progress.** A minimum of 50 percent of the survey crew shall be NICET Certified Level II or possess at least a Land Surveyor-In-Training certificate.

152.03 Survey and Staking Requirements.

(a) Control points. Add:

Reference all control points with **5/8” diameter x 24”** rebar with aluminum or plastic caps.

(c) Slope stakes and references. Add:

The Contractor shall set slope stakes on 100 foot stations along tangents and at 50 foot increments along curves and transitions on both sides of centerline. Slope stakes shall be set at right angles to roadway centerlines. Slope stakes for roadway and drainage structures shall be set and marked as shown on the Slope Staking Examples in the project plans.

All slope stakes shall be sprayed with one coat of fluorescent red, pink or orange paint prior to marking the slope stake data on the slope stake.

(f) Grade finishing stakes. Add:

The Contractor shall set blue-top hubs, **2”x 2” x 6”**, on centerline and shoulders for subgrade, special subbase and aggregate base course. Vertical tolerance for these hubs shall be ± 0.03 feet (see Table 152-1).

(j) Borrow and waste sites. Add:

No measurements shall be performed until the site has been cleared and grubbed.

(k) Permanent monuments and markers.

Delete the existing wording and replace with the following: Perform all survey and staking necessary to reference and re-establish public land monuments. Set permanent public land monuments according to Section 621.

(l) Miscellaneous survey and staking.

Delete “(10) Pavement markings.” and insert “(10) Pavement markings. Mark roadway centerline at 50 foot intervals for pavement marking.”

Added Table.

**Table 152-2
Measurement Tolerances**

Pay Unit	Horizontal	Vertical
Acre	1.0 foot or 1:100 whichever is greater	—
Cubic Yard	0.2 foot or 1:500 whichever is greater	0.3 foot or 1:333 whichever is greater
Linear Foot	0.2 foot or 1:500 whichever is greater	—
Square Foot	0.1 foot or 1:1000 whichever is greater	—
Station	1.0 foot or 1:1000 whichever is greater	—

152.05 Measurement.

Delete the text under this subsection and substitute the following:

Construction survey and staking will be measured by the lump sum.

152.06 Payment. Add:

Payment will be made under:

Pay Item	Pay Unit
15201 Construction survey and staking	LS

Section 153 – CONTRACTOR QUALITY CONTROL

153.02 Contractor Quality Control Plan. Add:

Delete the second sentence and replace with the following:

The Contractor’s Quality Control Plan must be stamped by a Civil Engineer who is registered in the state where the work is to be performed.

153.06 Measurement.

Delete this subsection and replace with the following:

Measure Quality control by the lump sum.

Add the following to this subsection:

153.07 Payment.

Five percent of the original contract amount shall be paid upon acceptance of the Quality Control Plan. No other payments for this item shall be made until the Quality Control Plan has been accepted.

Forty-five percent of the original contract amount shall be paid when 50% of the testing outlined in the Quality Control Plan has been submitted to the COR and accepted.

The remaining amount shall be paid when all of the testing outlined in the Quality Control Plan has been submitted to the COR and accepted.

Payment will be made under:

Pay Item	Pay Unit
15301 Quality control	LS

Section 154 – CONTRACTOR SAMPLING AND TESTING

154.02 Description. Add:

General Requirements, Independent Testing Laboratory.

Sampling and testing on Western Region Bureau of Indian Affairs (WRBIA) road construction projects shall be performed by an Independent Testing Laboratory. The Independent Testing Laboratory and its technicians must be experienced and proficient in the fields for which the work is to be performed.

To receive WRBIA approval the Independent Testing Laboratory shall meet the following requirements:

a) Programs Participation.

The Independent Testing Laboratory shall participate in the AASHTO Materials Reference Laboratory (AMRL) and/or Cement and Concrete Reference Laboratory (CCRL) laboratory inspection program as appropriate for the testing being performed. A copy of the current Certificate of Accreditation shall be submitted with their Quality Control Plan. Copies of all applications, correspondence, reports and corrective actions shall be submitted to the Regional Road Engineer as requested.

b) Documentation.

1. The Independent Testing Laboratory shall provide documentation describing their organization, organizational chart, personnel responsibility, authority, education, training, experience and certifications; inventory of facilities and equipment used for testing (manufacturer, model and serial number, calibration and tolerances); written laboratory procedural manual; methods used for recording, processing and reporting data; inventory of reference material, standards and test methods. This documentation shall be updated annually, or more frequently when substantial changes occur.
2. The Independent Testing Laboratory shall provide documentation outlining their own Quality Control, Quality Assurance and Equipment Calibration programs for their main lab and any satellite or project labs.
3. It shall be the responsibility of the Contractor to promptly provide the documents from the Independent Testing Laboratory necessary to show existing and continuing compliance with the requirements outlined herein.

c) Personnel.

1. The services of the Independent Testing Laboratory shall be under the direction of a full-time employee who is a licensed engineer in the State the project is located. He/she shall have a minimum of (5) five years of professional engineering experience in laboratory and field testing of the specific materials such as soils, Portland cement and asphalt concrete to be

incorporated into the project which he/she directs. **The Engineer shall review the work in the field at the project site on a bi-weekly basis, or more frequently, if required.**

2. The supervisors of laboratory and/or field technicians shall have at least three years experience in inspection and/or testing of materials involved in the related area of construction. The field supervisors of the laboratory and/or field technicians shall be certified by the National Institute for Certification in Engineering Technologies (NICET) at Level III or above in the appropriate Construction Materials Testing field or meet one of the following requirements:
 - (aa) Be a licensed Engineer by the State in which the project is located with one year of highway experience acceptable to the WRBIA.
 - (bb) Be licensed as an Engineer-In-Training by the State in which the project is located with two years of experience acceptable to the WRBIA.
 - (cc) Hold a Bachelor of Science Degree in Civil Engineering or an Associate Degree in Civil Engineering Technology with three years of highway experience acceptable to the WRBIA.
3. Supervisory Technicians performing the actual testing and/or inspection shall be NICET certified at Level III or above in the appropriate Construction Materials Testing field or meet the requirements of 2 (a)-(c).

d) Equipment.

1. Testing machines and equipment must be calibrated annually or more frequently by impartial means using devices of accuracy traceable to the National Bureau of Standards.
2. The Independent Testing Laboratory will be open to inspection of equipment and procedures by the Regional Road Engineers.

e) Other Work.

In fields other than those covered by the referenced AASHTO or ASTM Standards, the Independent Testing Laboratory shall accept only those assignments which it is able to perform competently by use of its own personnel and equipment. Any work to be subcontracted must be performed by laboratories meeting the same criteria. If any work is subcontracted, the subcontractor shall submit documentation in accordance with paragraph 154.01 (b), to the Contracting Officer for approval 21 calendar days prior to the subcontractor commencing work.

f) Preconstruction Meeting.

The Independent Testing Laboratory shall be present during the technical portion of the preconstruction meeting. Supervisory personnel and the lead field technician shall be in attendance at this meeting.

154.02 Sampling. Add:

Delete the first sentence of the second paragraph and substitute the following:

Acceptance samples shall be split into 3 samples according to AASHTO or other acceptable procedures designated by the CO. One of the acceptance sample splits shall be tested by the Independent Testing Laboratory and the other two of the acceptance split sample shall become property of the government. One of the splits shall be marked “BIA”, the third shall be marked “Referee”. Samples shall be stored in canvas, plastic or metal containers. Paper containers will not be acceptable. All acceptance sample splits shall be delivered to the Agency Roads Office by the Contractor on a weekly basis.

Add the following to this subsection:

(k) Sample Identification System.

Samples for testing shall be consecutively numbered throughout the project. All tests shall be prefixed as shown in the following examples (for specific tests pertaining to this Project refer to the applicable Section):

1.0 Density Tests.

Prefix	Description
OGD	Original ground density
ED	Embankment density
DD	Dike density
SGD	Finished Subgrade density
PBFD	Pipe backfill density
PBD	Pipe bedding density
SBD	Structural backfill density
SSBD	Select subbase density
ABD	Aggregate base density
ACD	Asphalt Concrete density

Any retests of the above shall be suffixed with alpha letters, e.g., OGD-1 (failed), OGD-1A (failed), OGD-1B (passed).

Embankment tests must indicate elevation of test, either actual elevation from subgrade or distance in feet above OG. Backfill tests must indicate which lift is being tested, 1st, 2nd, etc., to an elevation 12 inches above a structure.

Each item listed above shall be presented to the COR on separate test report sheets.

2.0 Maximum Density-Optimum Moisture Tests.

Prefix	Description
OGMD	Original ground maximum density-optimum moisture
EMD	Embankment maximum density-optimum moisture
ABMD	Aggregate base maximum density-optimum moisture

Moisture density curves for all materials shall be required to have as a minimum four (4) points, two (2) on each side of optimum. Each curve will be identified with a unique laboratory number, material source and usage.

3.0 Sieve Analysis P.I. & Additional Aggregate Tests.

Prefix	Description
ABS	Aggregate base sieve analysis
SSBS	Select subbase sieve analysis
SCS	Structural concrete aggregate sieve analysis
PCS	Prestressed concrete aggregate sieve analysis
CCS	Cover coat aggregate sieve analysis
MAS	Mineral aggregate sieve analysis

P.I. and additional aggregate test results shall be shown on same form as sieve analysis.

4.0 Concrete Tests.

Prefix	Description
SC	Structural concrete sieve analysis
PC	Prestressed concrete sieve analysis

5.0 Asphalt Concrete Tests.

Prefix	Description
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AC-1, 2, 3,	Test performed on asphalt concrete mixture to include: Extraction, moisture and gradation for each 500 tons (455 M-t). 1 st a.m. & p.m. sample each day – stability & flow, air voids, VMA, unit weight, rice gravity.
SE-1, 2, 3,	Sand Equivalent – One sample each day
TSR-1, 2,	Tensile Strength Ratio – One sample each day

In addition to test results, each data unit shall contain; date, time sampled and load number of material represented by test results.

6.0 Paving and Liquid Asphalt Tests.

Prefix	Description
PA	Paving grade asphalt
LA	Liquid asphalt
EA	Emulsified asphalt

154.03 Testing. Add:

The acceptance split samples shall be tested by the Independent Testing Laboratory. The CO reserves the right to test the second split acceptance samples marked “BIA” and if the results do not conform to those of the Contractor’s test results, then the basis of payment will be on the CO tests. If the Contractor elects to contest the test results of the CO, then a mutually agreed upon “Testing Lab” shall be selected to perform the tests on the third acceptance split samples marked “Referee”.

The Contractor and the CO shall abide by the “Testing Lab’s” results. The Contractor shall bear all costs in running the split samples by the “Testing Lab”.

Results of tests shall be in accordance with AASHTO or industry standards except for the following:

- Sieve analysis – nearest whole %, except the No. 200 sieve which shall be reported to the nearest 0.1%.

- Voids – nearest 0.1%.
- Asphalt and moisture content, retention factor – nearest 0.01%.
- Unit weight – nearest 0.1 lb/ft³.
- Specific gravity – nearest .001unit.
- All compaction tests – nearest 0.1%.
- Compression tests – nearest 10 psi.

The original of all test reports shall be submitted to the COR in accordance with the required time frames.

One copy of all test reports shall be submitted to the Contractor's Superintendent in accordance with the required time frames. **If the test results are not submitted within the required time frames the Contractor shall suspend work on those items of work until the test results are current.**

Indexed binders for testing shall be prepared and submitted to the COR for approval at the preconstruction conference. All test results including summaries shall be incorporated into the binder on a daily basis. The binder shall be kept at the COR's field office.

In addition to the submittal of test reports in accordance with the required time frame, any reports submitted to the COR which are incomplete, illegible or reported on the wrong form will be returned for correction and a **\$50.00 per day charge** will be assessed until they are resubmitted correctly.

154.04 Records. Add:

Reporting Test Results

Time constraints for applicable tests and reports submitted to the COR are as follows:

Mix Designs – All Materials.	Design to COR 21 days prior to beginning production.
Proctors – All Materials.	Reports to COR before taking density tests.
Density Tests – All Materials.	Results given to COR at completion of tests. Report to COR the following work day.
All aggregate quality tests such as L.A. Abrasion, Sulphate, etc.	Reports to COR one week prior to hauling.
Special subbase and aggregate base sieve analysis and PI.	Reports to COR one day after samples have been taken.
Cover coat aggregate for surface treatments. Sieve analysis and PI.	Reports to COR 1/2 day after samples have been taken.
Concrete compression, air, slump and temperature. Concrete aggregate sieve analysis (1 per 100 yd ³)	Results of air content, slump and temperature to COR at time of placement with report the following day. Compression test reports one day after test is made. Sieve analysis one day after sample is taken.
Asphalt concrete stability and flow, air voids, V.M.A., asphalt content, moisture content, unit weight, sieve analysis, and sand equivalent.	Report to COR the following work day.
Tensile Strength Ratio, %	Reports to COR within 2 days of sampling.
Straightedge measurements.	Results to COR at completions of tests. Report to COR the following work day.
Profilograph Measurements.	Reports to COR within 14 days after final rolling or compaction is completed.
Complete Asphalt Test Series for paving, cutback, asphalt rubber and emulsified asphalts.	Reports to COR within four (4) working days after sampling.
Emulsified Asphalt – percent of residue.	Reports to COR the following work day after sampling.
Partial paving asphalt tests for paving, cutback, asphalt rubber and emulsified asphalts.	Partial test series reports to COR within two (2) work days of sampling.

154.06 Measurement.

Delete subsection and replace with the following:

Contractor sampling and testing will not be measured directly but will be considered a subsidiary obligation of the contract.

154.07 Payment.

Delete this subsection in its entirety.

Section 155 – SCHEDULES FOR CONSTRUCTION CONTRACTS

155.02 General.

In the first paragraph **delete**, “at least 7 days before the preconstruction conference,” and insert, “10 days after award of the contract”.

In the second paragraph, first sentence after “contract activities,” **delete**, “for the first 45 days after the notice to proceed,” and insert “after the award”.

In the second paragraph, second sentence **delete**, “Within 7 days after,” and insert, “at”.

In the second paragraph, fourth sentence **delete**, “,except mobilization and traffic control, and **Section 637** work,”.

In the fourth paragraph **delete**, “within 30 days,” and insert, “within 7 days”.

155.03 Bar Chart Method (BCM).

In paragraph (a)(3) after “submittals,” insert, “testing and startup procedures”.

155.04 Critical Path Method (CPM).

In paragraph (a)(3) after “submittals,” insert, “testing and startup procedures”.

155.06 Schedule Updates.

Any schedule update showing a completion date beyond the contract time shall be accompanied with a request for a time extension in accordance with **Subsection 108.03**.

155.08 Measurement.

Delete this subsection and replace with the following:

The Construction schedule will not be measured directly for payment but will be considered a subsidiary obligation of the Contract.

Section 156 – PUBLIC TRAFFIC

156.03 Accommodating Traffic During Work.

Add the following paragraph:

The Traffic Control Plan must be submitted for acceptance, accepted and implemented before any other work can commence at the project site.

Section 157 – SOIL EROSION CONTROL

157.01 Description.

Delete this subsection and insert the following:

This work consists of developing and designing the Storm Water Pollution Prevention Plan (SWPPP), preparing and submitting the Notice of Intent (NOI) and Notice of Termination (NOT), and furnishing materials, constructing, and maintaining permanent and temporary erosion and sediment control measures.

This work shall be in accordance with the requirements of the National Pollutant Discharge Elimination System (NPDES) Construction General Permit (for Nevada(NVR100001)) for erosion control due to storm water runoff from construction sites.

The contractor shall implement the requirements for erosion control due to storm water runoff from construction sites as noticed in the Federal Register (Vol. 77, No. 40, Feb 29, 2012) and as specified under Environmental Protection Agency (EPA) Regulations published at EPA's website, <http://cfpub.epa.gov/npdes/stormwater/cgp.cfm> NPDES General Permit for Storm Water Discharges From Construction Activities and NPDES General Permit for Storm Water Discharges From Construction Activities – Fact Sheet, in accordance with the Clean Water Act, 33 U.S. C. §1251 et. Seq., as amended by the Water Quality Act of 1987, P.L. 100-4.

157.03 General. Delete this subsection and insert the following:

157.03 Erosion Control Plan.

Delete the text of this subsection and substitute the following:

The contractor shall prepare and implement a comprehensive SWPPP. The SWPPP shall include descriptions of proposed measures to be implemented, a schedule detailing the proposed coordination for accomplishing the erosion control features in a timely and appropriate manner, and site-specific diagrams indicating proposed locations where erosion control devices or measures may be required during successive construction stages. This plan should include provisions for providing, installing, maintaining, removing and disposing of erosion control devices such as gravel filter berms, dikes, catch basin inlet protection, end-of-pipe filtering devices, silt fences, dams, sediment basins, netting, straw bale barriers, slope drains, and other erosion control devices or methods. The SWPPP will describe and ensure the implementation of practices which will be used to reduce the pollutants in storm water discharges to assure compliance with the terms and conditions of the NPDES Construction General Permit in accordance with good engineering practices and cost-effective approaches.

Construction activities shall not commence until fourteen (14) calendar days after acknowledgment of receipt of your complete NOI is posted on EPA's NPDES website at <http://www.epa.gov/npdes/stormwater/cgp>. See search bar.

Also, prior to the start of construction, all subcontractors shall sign certifications stating that they understand the requirements of the NPDES General Permit. All subcontractors shall comply with the requirements of the permit under the supervision of the contractor.

A print of the posted NOI as well as the subcontractor certifications shall be submitted to the Contracting Officer at the Pre-Construction Conference.

Ten (10) days after the award of contract the Contractor will provide the Contracting Officer with the draft SWPPP for review. Upon acceptance of the SWPPP, the contractor will submit five (5) copies of the accepted plan to the Contracting Officer. The SWPPP must be accepted by the Contracting Officer prior to the Pre-Construction Conference.

Address the following items as part of the plan:

SWPPP Contents: Site and Activity Description

- A. The SWPPP must identify all operators for the project site, and the areas of the site over which each operator has control.
- B. The SWPPP must describe the nature of the construction activity, including:
 - 1. The function of the project (e.g., low density residential, shopping mall, highway, etc.);
 - 2. The intended sequence and timing of activities that disturb soils at the site;
 - 3. Estimates of the total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas;
 - 4. General location map (e.g. USGS quadrangle map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and waters of the United States within one mile of the site.
- C. The SWPPP must contain a legible site map, showing the entire site, identifying:
 - 1. Direction(s) of storm water flow and approximate slopes anticipated after major grading activities;
 - 2. Areas of soil disturbance and areas that will not be disturbed;
 - 3. Locations of major structural and nonstructural BMPs identified in the SWPPP;
 - 4. Locations where stabilization practices are expected to occur;
 - 5. Locations of off-site material, waste, borrow or equipment storage areas;
 - 6. Locations of all waters of the United States (including wetlands);
 - 7. Locations where storm water discharges to a surface water; and
 - 8. Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.
- D. The SWPPP must describe and identify the location and description of any storm water discharge associated with industrial activity other than construction at the site. This includes storm water discharges from dedicated asphalt plants and dedicated concrete plants that are covered by this permit.

Pollution Prevention Plan Contents: Controls to Reduce Pollutants

- A. The SWPPP must include a description of all pollution control measures (i.e., BMPs) that will be implemented as part of the construction activity to control pollutants in storm water.
- B. The SWPPP must include a description of interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is preserved where possible and that disturbed portions of the site are stabilized. Use of impervious surface for stabilization should be avoided.
- C. The following records must be maintained as part of the SWPPP:
 - 1. Dates when major grading activities occur;
 - 2. Dates when construction activities temporarily or permanently cease on a portion of the site; and
 - 3. Dates when stabilization measures are initiated.
- D. The SWPPP must include a description of structural practices to divert flows from exposed soils, retain/detain flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Placement of structural practices in floodplains must be avoided to the degree practicable.
- E. The SWPPP must include a description of all post-construction storm water management measures that will be installed during the construction process to control pollutants in storm water discharges after construction operations have been completed. Structural measures should be placed on upland soils to the degree practicable. Such measures must be designed and installed in compliance with applicable federal, local, state, or tribal requirements.
- F. The SWPPP must describe measures to prevent the discharge of solid material, including building materials, to waters of the United States, except as authorized by permit issued under section 404 of the Clean Water Act.
- G. The SWPPP must describe measures to minimize, to the extent practicable, off-site vehicle tracking of sediments onto paved surfaces and the generation of dust.
- H. The SWPPP must include a description of construction and waste materials expected to be stored on-site with updates as appropriate. The SWPPP must also include a description of controls, including storage practices, to minimize exposure of the materials to storm water, and spill prevention and response practices.
- I. The SWPPP must include a description of pollutant sources from areas other than construction (including storm water discharges from dedicated asphalt plants and dedicated concrete plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

Non –Storm Water Discharge Management

The SWPPP must identify all allowable sources of non-storm water discharges listed in Subpart 1.3 of the permit, except for flows from fire fighting activities that are combined with storm water discharges associated with construction activity at the site. Non-storm water discharges should be eliminated or reduced to the extent feasible. The SWPPP must identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

Maintenance of Controls

- A. All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. If site inspections required by Subpart 3.10 of the permit identify BMPs that are not operating effectively, maintenance must be performed as soon as possible and before the next storm event whenever practicable to maintain the continued effectiveness of storm water controls.
- B. If existing BMPs need to be modified or if additional BMPs are necessary for any reason, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as possible.
- C. Sediment from sediment traps or sedimentation ponds must be removed when design capacity has been reduced by 50 percent.

Documentation of Permit Eligibility Related to Endangered Species

The SWPPP must include documentation supporting a determination of permit eligibility with regard to Endangered Species, including:

- A. Information on whether federally-listed endangered or threatened species, or federally-designated critical habitat may be in the project area;
- B. Whether such species or critical habitat may be adversely affected by storm water discharges or storm water discharge related activities from the project;
- C. Results of the Appendix C listed species and critical habitat screening determinations;
- D. Confirmation of delivery of NOI to EPA or to EPA's electronic NOI system. This may include overnight, express, or registered mail receipt acknowledgement; or electronic acknowledgement from EPA's electronic NOI system;
- E. Any correspondence for any stage of project planning between the U.S. Fish and Wildlife Service (FWS), EPA, the U.S. National Marine Fisheries Service (NMFS), or others and you regarding listed species and critical habitat, including any notification that delays your authorization to discharge under this permit;
- F. A description of measure necessary to protect federally-listed endangered or threatened species, or federally-designated critical habitat. The permittee must describe and implement such measure to maintain eligibility for coverage under this permit.

BIA Division of Transportation personnel will provide information to the Contractor as needed regarding the disposition of Endangered Species Compliance, including the appropriate Criterion to be declared in Section VI of the NOI.

Copy of Permit Requirements

Copies of this permit and the signed and certified NOI form that was submitted to EPA must be included in the SWPPP. Also, upon receipt, a copy of the letter from the EPA Storm Water Notice Processing Center notifying you of their receipt of your administratively complete NOI must also be included as a component of the SWPPP

Applicable State, Tribal, or Local Programs

The SWPPP must be consistent with all applicable federal, state, tribal, or local requirements for soil and erosion control and storm water management, including updates to the SWPPP as necessary to reflect any revisions to applicable federal, state, tribal, or local requirements for soil and erosion control.

Inspections

- A. Inspections must be conducted in accordance with one of the two schedules listed below. You must specify in the SWPPP which schedule will be followed.
 - 1. At least once every 7 calendar days, OR
 - 2. At least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

- B. Inspection frequency may be reduced to at least once every month if:
 - 1. The entire site is temporarily stabilized,
 - 2. Runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen), or
 - 3. Construction is occurring during seasonal arid period in arid areas and semi-arid areas.

Sections C thru G of Subpart 3.10 (Inspections) of the permit will be the responsibility of BIA DOT personnel unless specifically contracted for (i.e., 638 Contract).

Maintaining an Updated Plan

- A. The SWPPP, including the site map, must be amended whenever there is a change in design, construction operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants to the waters of the United States that has not been previously addressed in the SWPPP.
- B. The SWPPP must be amended if during inspections or investigations by site staff, or by local, state, tribal, or federal officials, it is determined that the discharges the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site.

- C. Based on the results of an inspection, the SWPPP must be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP must be completed within seven (7) calendar days following the inspection. Implementation of these additional or modified BMPs must be accomplished as described in Subpart 3.6.B. of this permit.

Signature, Plan Review and Making Plans Available

- A. A copy of the SWPPP (including a copy of the permit), NOI, and acknowledgement letter from EPA must be retained at the construction site (or other location easily accessible during normal business hours to EPA, a state tribal or local agency approving sediment and erosion plans, grading plans, or storm water management plans; local government officials; the operator of a municipal separate storm sewer receiving discharges from the site; and representatives of the U.S. Fish and Wildlife Service or the National Marine Fisheries Service) from the date of commencement of construction activities to the date of final stabilization. If you have day to day operation control over the SWPPP implementation, you must have a copy of the SWPPP available at a central location on-site for the use of all those identified as having responsibilities under the SWPPP whenever they are on the construction site. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance at the construction site.
- B. A sign or other notice must be posted conspicuously near the main entrance of the construction site. If displaying near the main entrance is infeasible, the notice can be posted in a local public building such as the town hall or public library. The sign or other notice must contain the following information;
 - 1. A copy of the completed Notice of Intent as submitted to the EPA Storm Water Notice Processing Center; and
 - 2. If the location of the SWPPP or the name and telephone number of the contact person for scheduling SWPPP viewing times has changed (i.e., is different than that submitted to EPA in the NOI), the current location of the SWPPP and name and telephone number of a contact person for scheduling viewing times.

For linear projects, the sign or other notice must be posted a publicly accessible location near the active part of the construction project (e.g., where a pipeline project crosses a public road).

- C. SWPPPs must be made available upon request by EPA; a state, tribal or local agency approving sediment and erosion plans, grading plans, or storm water management plans; local government officials; the operator of municipal separate storm sewer receiving discharges from the site; and representatives of the U.S. Fish and Wildlife Service or the National Marine Fisheries Service to the requestor. The copy of the SWPPP that is required to be kept on-site or locally available must be made available, in its entirety, to the EPA staff for view and copying at the time of an on-site inspection.
- D. All SWPPPs must be signed and certified in accordance with Appendix G, Section 11 of this permit.

Management Practices

- A. All control measures must be properly selected, installed, and maintained in accordance with any relevant manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately, or

incorrectly, the operator must replace or modify the control for site situations as soon as practicable.

- B. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts.
- C. Litter, construction debris, and construction chemicals that could be exposed to storm water must be prevented from becoming a pollutant source in storm water discharges.
- D. Except as provided below, stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more that 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.
 - 1. Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.
 - 2. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 14 days, temporary stabilization measures do not have to be initiated on that portion of the site.
 - 3. In arid, semiarid, and drought-stricken areas where initiating perennial vegetative stabilization measures is not possible within 14 days after construction activity has temporarily or permanently ceased, final vegetative stabilization measures must be initiated as soon as practicable.
- E. A combination of sediment and erosion control measures is required to achieve maximum pollutant removal.
 - 1. Sediment Basins: For common drainage locations that serve an area with 10 or more acres disturbed at one time, a temporary (or permanent) sediment basin that provides storage for a calculated volume of runoff from the drainage area from a 2-year, 24-hour storm, or equivalent control measure, must be provided where attainable until final stabilization of the site. Where no such calculation has been performed, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, must be provided where attainable until final stabilization of the site. When computing the number of acres draining into a common location, it is not necessary to include flows from offsite areas and flows from on-site areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. In determining whether installing sediment basins is attainable, the operator may consider factors such as site soils, slope, available area on-site, etc. In any event, the operator must consider public safety, especially as it relates to children, as a design factor for the sediment basin, and alternative sediment controls must be used where site limitations would preclude a safe design.
 - 2. For drainage locations which serve 10 or more disturbed acres at one time and where a temporary sediment basin or equivalent controls is not attainable, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions).
 - 3. For drainage locations serving less than 10 acres, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for a calculated volume of

runoff from a 2-year, 24-hour storm or 3,600 cubic feet of storage per acre drained is provided.

- F. Velocity dissipation devices must be placed at discharge locations and along the length of any outfall channel to provide a non-erosive flow velocity from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., no significant changes in the hydrological regime of the receiving water).

Documentation of Permit Eligibility Related to Total Maximum Daily Loads

The SWPPP must include documentation supporting a determination of permit eligibility with regard to waters that have an EPA-established or approved TMDL, including:

- A. Identification of whether your discharge is identified, either specifically or generally, in an EPA-established or approved TMDL and any associated allocations, requirements, and assumptions identified for your discharge;
- B. Summaries of consultation with State or Federal TMDL authorities on consistency of SWPPP conditions with the approved TMDL, and
- C. Measures taken to ensure that discharge of pollutants from the site is consistent with the assumptions and requirements of the EPA-established or approved TMDL, including any specific wasteload allocation that has been established that would apply to your discharge.

See section 1.3.C.5 of the permit for further information on determining permit eligibility related to TMDLs.

Termination of Coverage

Requirements

You may only submit a Notice of Termination (NOT) after one or more of the following conditions have been met:

- A. Final stabilization has been achieved on all portions of the site for which you are responsible;
- B. Another operator has assumed control according to Appendix G, Section 11.C (of the permit) over all areas of the site that have not been finally stabilized;
- C. Coverage under an individual or alternative general NPDES permit has been obtained; or
- D. For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.

The NOT must be submitted within 30 days of one of the above conditions being met. Authorization to discharge terminates at midnight of the day the NOT is signed.

Submitting a Notice of Termination

It is the Contractor's responsibility to submit a complete and accurate NOT to EPA electronically at <http://cfpub.epa.gov/npdes/stormwater/agpenoi.cfm>. If EPA notifies dischargers (directly, by public notice, or by making information available on the Internet) of other NOT form options (e.g., electronic submission), you may take advantage of those options to satisfy the requirements of Part 5 of the permit.

Retention of Records

Copies of the SWPPP and all documentation required by this permit, including records of all data used to complete the NOI to be covered by this permit, must be retained for at least three years from the date that permit coverage expires or is terminated. This period may be extended by request of EPA at any time.

Waivers

Waivers are available for small construction sites between 1 and 5 acres in size and not part of a larger common plan exceeding 5 acres. The rainfall erosivity waiver may be used if the project occurs during a dry period of the year. Instructions of eligibility and certification for the erosivity waiver are available at EPA's NPDES website.

157.05 Filter Barriers. Add:

In the first sentence delete the words "and brush barriers".

Delete the second sentence.

Install filter barriers in accordance with the details shown on the accepted SWPPP.

157.11 Temporary Turf Establishment.

Delete the text of this subsection and substitute the following:

Soil preparation, fertilizing, seeding and mulching for temporary and permanent soil erosion protection shall be in accordance with **Section 625. – Turf Establishment.**

157.15 Methods of Measurement.

Delete the text of this subsection and substitute the following:

Measure "Soil erosion control" by the lump sum.

No direct measurement for payment will be made for the soil erosion and pollution control work, development and implementation of the SWPPP, the Contractor's "good housekeeping" practices and requirements, and NPDES permits associated with soil erosion control activities.

Temporary and permanent seeding of cuts, fills, borrow pits, aggregate pits and obliterated roadways will not be measured for payment under this section. Payment for this work will be included under **Section 625 – Turf Establishment**.

157.16 Payment.

Delete (a), (b) and (c) and insert the following:

(a) Five percent of the original contract amount for Item 15714 shall be paid upon acceptance of the Erosion Control Plan.

(b) Within the first four weeks after the start of construction, the Western Regional Roads Environmental Specialist will conduct a site visit to inspect the Contractor’s compliance with the Erosion Control Plan. If the Contractor is in compliance, the WRR/DOT Environmental Specialist shall recommend payment of forty-five percent of the original contract amount for Item 15714. If the Contractor is not in compliance, the WRR Environmental Specialist shall schedule a follow-up site visit and no payments shall be made for Item 15714 at this time.

(c) After the follow-up visit, if the Contractor is in compliance, the WRR Environmental Specialist shall recommend payment of forty-five percent of the original contract amount for Item 15714. If the Contractor is still not in compliance, the WRR Environmental Specialist shall recommend to the CO that the project be stopped until the accepted Erosion Control Plan is in place.

(d) The remaining amount for Item 15714 shall be paid at the time of “substantial completion” of the project.

Add:

Payment will be made under:

Pay Item	Pay Unit
15714 Soil erosion control	LS

SECTION 159 – TERO FEE AND TRIBAL TAX

159.01 Description.

The Pascua Yaqui Tribe charges 3% TERO (Tribal Employment Rights Office) fee and a 2 ½% Tribal tax on the original contract amount.

159.02 Acceptance.

Acceptance shall be based on an invoice from the TERO Office and an invoice from the appropriate Tribal Administration Office on the tax.

159.03 Measurement.

Measurement of the TERO Fee and Tribal Tax shall be lump sum.

159.04 Payment.

Payment shall be made under:

Pay Item	Pay Unit
15901 TERO fee and tribal tax	LS

Section 203 – REMOVAL OF STRUCTURES AND OBSTRUCTIONS

203.01 Description. Add:

Refer to the project plans for the specific items to be removed, salvaged and/or disposed of.

Disposal of material described above will be the Contractor’s responsibility. Disposing of material shall comply with **Subsection 107.10**. Salvageable material shall be stockpiled as directed by the COR.

203.05 Disposing of Material.

Delete (b) Burn and (c) Bury.

203.08 Payment. Add:

Payment will be made under:

Pay Item	Pay Unit
20305 Removal of structures and obstructions	LS

Section 212 – LINEAR GRADING

212.01 Description.

Delete this subsection and substitute the following:

This work shall consist of breaking up and pulverizing the full width and depth of the existing bituminous surface of the roadway and road approaches, blend the pulverized bituminous material into the existing aggregate base by scarifying to a depth of 6 inches, mixing, reshaping and compacting to the lines and grades shown on the plans or as established by the Project COR.

212.03 Roadway Excavation and Embankment.

Delete the title and text of this subsection and replace with the following:

212.03 Construction Requirements.

The existing bituminous surface is approximately 3 inches thick. The bituminous material shall be pulverized such that 100 percent passes a 1 inch sieve. The pulverized bituminous material shall be spread evenly over the roadbed. The roadbed shall then be scarified to a depth of 6 inches and the pulverized bituminous material shall be blended with the existing aggregate base until a uniformly graded mixture is obtained.

The compaction of the uniformly graded mixture shall conform to the requirements of **Subsection 301.05** of the FP-03 and these Special Contract Requirements. In-place density tests shall be performed at 500 foot intervals on the roadway.

After compaction and density has been achieved on the uniformly graded mixture, Blue top hubs, 2"x 2" x 6", shall be set at 100 foot increments on the roadway centerline and shoulders for the finished aggregate base grades. Vertical tolerance for these hubs will be ± 0.03 feet.

All shoulders and embankment slopes shall be bladed and reshaped within a distance of 20 feet from the edge of pavement for the entire length of the project.

Shoulder material is to be bladed and shaped in such a way as to conform to the slopes shown on the plans and to match the edge of the new asphalt concrete pavement.

Grade and shape road approaches.

Prior to beginning linear grading work, the Contractor shall verify the horizontal location by electrical magnetic means and vertical location by vacuum method of all utilities within the project area. If any utilities are damaged, the Contractor is responsible for all repairs to damaged utility lines at no cost to the Owner. The Contractor will not be reimbursed for repairs to damaged utilities.

The locating of utilities by the Contractor will not be measured for payment and shall be

considered incidental to the Linear Grading item.

212.04 Grading Tolerance.

Delete this subsection and replace with the following:

The Contractor shall not deviate from the lines, grades, typical section and dimensions shown on the plans.

212.07 Payment. Add:

The locating of utilities by the Contractor will not be measured for payment and shall be considered incidental to the Linear Grading item.

Payment will be made under:

Pay Item	Pay Unit
21202 Linear grading	LF

DIVISION 300 – AGGREGATE COURSES

Section 301 – UNTREATED AGGREGATE COURSES

301.05 Compacting.

In the third paragraph, second sentence, after AASHTO T 310, delete “or other approved test procedures” and insert “direct transmission method”.

DIVISION 400 – ASPHALT PAVEMENTS AND SURFACE TREATMENTS

Section 404 – MINOR HOT ASPHALT CONCRETE

404.01 Description

Delete this subsection and insert the following:

This work consists of constructing one or more courses of hot asphalt concrete pavement and constructing speed humps.

A locally approved mix design by Federal, State, or County Government Agencies may be accepted but must be submitted for review.

404.02 Composition of Mixture (Job-Mix Formula). Add:

The Contractor shall submit for review three (3) copies of a mix design along with documentation showing that the mix has been previously approved by a Federal, State, or County Agency. The asphalt concrete mix design shall be submitted for approval at least 21 calendar days before production.

404.04 Weather Limitations.

Delete this subsection and insert the following:

Bituminous plant-mix shall be placed on a dry, unfrozen surface when the atmospheric temperature in the shade is above 40°F (4°C) and rising or above 50°F (10°C), if falling. Bituminous plant-mix shall not be placed when weather conditions prevent the proper handling or finishing of the bituminous mixtures. The temperature of the road surface shall be 55°F (13°C) or greater before placement of lifts 3 inches or less.

404.10 Measurement. Add:

No direct payment will be made for asphalt cement, mineral filler or anti-strip additive required in the asphalt mixture.

404.11 Payment.

Add the following to this subsection:

Payment for Item 40401 Minor Hot Asphalt Concrete is limited to 80% of the plan quantity until all tests and pavement smoothness results are received by the CO.

Pit restoration will not be paid for directly, but will be considered as subsidiary obligation of the contractor under other contract items.

Payment will be made under:

Pay Item	Pay Unit
40401 Minor hot asphalt concrete	SY

DIVISION 600 INCIDENTAL CONSTRUCTION

Section 601 – MINOR CONCRETE STRUCTURES

601.03 Concrete Composition.

Delete the first and second sentences and substitute the following:

Not to Designer – Edit “Design and produce concrete mixtures that develop a minimum compressive strength (f’c) of 3000 psi” in 28 days which has an air content of 5% ± 1% and a slump of not more than 4 inches except that concrete for guardrail posts shall develop a minimum compressive strength of 4000 psi. Twenty one days prior to production the Contractor shall submit for approval three copies of a current Portland cement concrete mix design prepared for a supplier by the Independent Testing Laboratory.

601.07 Acceptance. Add:

In **Table 601-2**, under the heading “Sampling Frequency”, for “Air content” and “Slump”, delete the notation “1 set per 30 yd³ but not less than 1 per day” and insert “Sample each load for slump and air prior to placement.”

Two sets of two cylinders will be tested for compressive strength for each days production except the COR may exclude concrete testing for fencing, thrust blocks, manholes, and concrete monuments and markers.

Minor concrete compressive strength will be accepted as follows:

One continuous concrete production operation, herein defined as a lot, will be accepted or rejected on the basis of acceptance test results. Acceptance samples will be taken in the morning and the afternoon. A sample shall consist of two cylinders each which will be randomly selected by the COR from each lot. An acceptance test result is the average strength of the cylinder samples.

The quantity of the lot will be determined based on batch tickets and converted to the appropriate pay unit.

Acceptance of the lot with regard to compressive strength will be made at the full contract price provided no acceptance test result is below the specified f’c. If any acceptance test result is below the specified f’c, the specification concrete will be evaluated in accordance with **Table 601-3** of the Special Contract Requirements. If the average of the 28-day acceptance test results does not meet the minimum limit shown under the 1.00 pay factor, the CO will determine the detrimental effect of the non-specification concrete. If any or all of the lot is allowed to remain in place it will be accepted at a reduced pay factor in accordance with **Table 601-3** and the following paragraphs, or the Contractor may elect to remove and replace it with specification concrete.

The pay factor for concrete which is allowed to remain in place when it is determined to be outside the 0.85 pay factor limits for compressive strength will be 0.70.

TABLE 601-3	
Pay Factor Schedule for Compressive Strength at 28 Days (Lots Represented by one sample)	
Pay Factor	Average of Test Results
1.00	Not less than 1.00 f'c
0.95	Not less than 0.97 f'c
0.85	Not less than 0.94 f'c
0.70	Less than 0.94 f'c

All batches must be sampled to be accepted unless waived as noted above.

Section 604 – MANHOLES, INLETS, AND CATCH BASINS

Manhole cover adjustments shall be performed per utility requirements and per the details shown on the project plans. The Contractor shall conform to the requirements specified in the City Of Tucson And Pima County Standard Specifications For Public Improvements, 2003 Edition.

604.10 Payment Add:

Payment will be made under:

Pay Item	Pay Unit
60401 Manhole, adjust frame and cover	EA

Section 609 – CURB AND GUTTER

609.03 General. Add:

All gutters shall be water tested for drainage by the Contractor. Any gutter failing to meet the water test shall be removed and replaced at the Contractors expense.

609.04 Stone and Precast Concrete Curb.

In the first and second sentence of the second paragraph **delete** “25 feet” and insert “100 feet”.

609.05(a)(1) Contraction joints.

Delete the second sentence and substitute the following:

“Construct the expansion and contraction joint with a 3/16 inch radius edging tool.”

609.05(a)(2) Expansion joints.

In the first sentence **delete** “60 feet” and insert “30 feet”.

609.09 Acceptance. Add:

Sidewalk, drive pad, and paved median material will be accepted under **Subsections 106.04 and 601.07.**

609.11 Payment.

Delete the first sentence and substitute the following:

“The accepted quantities, measured as provided above, will be paid for at the contract price per unit of measurement adjusted according to **Subsection 601.07** for the pay items that are shown below and in the bid schedule.

Payment will be made under:

Pay Item	Pay Unit
60911 Portland cement concrete gutter, valley	SF

Section 611 – WATER SYSTEMS

611.01 Description.

Delete the first sentence and substitute the following:

This work consists of locating/verifying existing utilities (i.e. underground telephone cables, waterlines, sewer lines, etc.); Constructing, repairing, adjusting and/or relocating water systems which include water valves, water lines, fire hydrants, etc.; and repairing, adjusting and/or relocating underground telephone systems which shall include junction boxes, cables, and appurtenances.

It is the Contractor's responsibility to obtain any necessary permits as well as coordinate all utility work with the appropriate utility authority. Water valve frame and cover adjustments shall be performed per utility requirements and per the details shown on the project plans. The Contractor shall conform to the requirements specified in the City Of Tucson And Pima County Standard Specifications For Public Improvements, 2003 Edition.

Acceptance Add:

Locating/verifying existing utilities will be accepted under **Subsection 106.02**.

611.07 Measurement. Add:

Locating/verifying existing utilities will not be measured directly for payment but will be considered a subsidiary obligation of the contract.

The Contractor's coordination work as well as the obtaining of all necessary permits from the appropriate utility authorities will not be measured directly for payment but will be considered a subsidiary obligation of the contract.

<p>The quantity shown on the Quantity List, Unit Price Schedule and Engineer's Estimate for Item 61108 is for obtaining a unit price only and does not reflect an estimated quantity for the project. It is not anticipated at this time that any work will need to be done on the existing waterlines.</p>
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611.08 Payment. Add:

The Contractor shall be responsible for verifying the location of the water system shown on the plans.

The Contractor shall be responsible for verifying the location of the telephone system shown on the plans.

Payments shall be full compensation for furnishing materials, fittings, pipe, other appurtenances, excavation, backfill, testing and incidentals for making the necessary repairs and adjustments, up or down.

Payment will be made under:

Pay Item	Pay Unit
61107 Water valve, adjust frame and cover	EA
61108 Repair, adjust and/or relocate existing water system	LF

Section 633 – PERMANENT TRAFFIC CONTROL

633.01 Description

Delete the second and fourth paragraphs and substitute the following:

“Sign panels shall be aluminum. Posts shall be steel”.

Add the following:

This work shall also include the installation of street sign assemblies.

633.03 General. Add:

For street sign installations, the top most street sign shall be for the street that is perpendicular or in front of the driver and the lower street sign shall be for the street that the driver is traveling on.

633.05 Panels.

Delete the first sentence and substitute the following: “Use Type III reflective sheeting which meets the requirements of **AASHTO M 268.**”

Delete the second and third sentences in the second paragraph and substitute the following: “Apply a graffiti-resistant overlay film to the retro reflective sheeting. Use Scotchlite Series 1150, Nikkalite F-Cal, or equivalent”.

Add the following to the fourth paragraph: “Furnish fastener hardware which conforms to recommendations of the manufacturers of the sign panels, retro reflective sheeting and overlay film”.

In the second sentence of the fifth paragraph **delete** “where possible”.

633.05 Panels. Add the following:

Fabricate sign panels from aluminum.

633.09 Measurement

Delete (a) and replace with the following:

- (a) When a guide, warning or regulatory sign installation is measured by the each, measure each installation as one sign, regardless of the number of guide, warning or regulatory sign panels or posts in the installation.

Add:

(d) When a street sign assembly is measured by the each, measure each installation as one sign regardless of the number of street signs in the installation. Each street sign assembly includes two street signs, u-channel base, cross-piece, foundation, and other minor appurtenances required for the installation.

633.10 Payment. Add:

Payment will be made under:

Pay Item	Pay Unit
63309 Sign installation, warning and regulatory with new steel post(s) and foundation(s)	EA
63310 Sign installation, street sign assembly	EA

Section 634 – PERMANENT PAVEMENT MARKINGS

634.01 Description

Add the following: This work shall also include furnishing all materials, equipment, tools and labor required to place temporary pavement markings/markers.

634.08 Thermoplastic Markings (Type H and I).

In the second paragraph, third sentence, delete the words “or at a rate of 17.8 square feet per gallon”.

In the second paragraph, fourth sentence, delete the words “or at a rate of 26.7 square feet per gallon”.

634.11 Acceptance. Add:

- a) When more than five (5) percent but less than ten (10) percent of the striping varies more than ½ inch but less than 1 inch from the centerline of the marking established by the Contractor, a pay factor of 0.75 will be applied.

Striping tolerance that fails the above and is allowed to remain in place will be accepted at a reduced contract unit price based on a pay factor of 0.50. The CO may also reject the striping. If the Co rejects the striping, the Contractor shall remove the striping in accordance with Subsection 635.13 and re-stripe the project at no additional cost to the Government.

- b) When Paint and Reflective beads are not applied at the minimum rates specified in FP-03, the unit price will be reduced by the sum of the percentages the paint and beads are deficient. Paint and beads will not be accepted if they are applied at less than 70% of the contract requirements.
- c) Paint markings shall not be applied to the newly overlaid bituminous surfaces and bituminous treated surfaces for a minimum of three weeks after the surfacing work is completed.

634.14 Payment Add:

When a pay factor of less than 1.0 is determined as per **Subsection 634.12**, payment for sections involved will be made at a reduced price arrived at by reducing the length of traffic markings by the factor prior to multiplying by the contract price.

Payment will be made under:

Pay Item	Pay Unit
63401d Pavement markings, type H, 18 inch solid white, 0.090 inch thick	LF
63401g Pavement markings, type H, crosswalk, 12 inch solid yellow lines, 0.090 inch thick	EA
63401h Pavement markings, type H, 12 inch solid white lines, 0.090 inch thick	LF

Section 635 – TEMPORARY TRAFFIC CONTROL

635.01 Description Add:

Three copies of a traffic control plan that is in accordance with the MUTCD will be submitted for each item impacting traffic **10 days after award** of this contract for review. *The plan will include the maximum spacing distance that the Contractor is proposing to use when placing channeling devices.* If the traffic control plan does not conform with the MUTCD requirements because the Contractor changed his operations and/or special or hazardous conditions arise, the COR shall direct the Contractor to revise his plan and temporary traffic control devices and services immediately to conform with the MUTCD.

The use of detours will be allowed whenever the Contractor's operation and field conditions warrant. Prior approval of the detours must be given before work starts. *The detours shall be located on the upstream side of the roadway.* The installation of pipe will be limited to a one day operation whenever possible. The work area will be left in a safe condition possible, with no detours remaining overnight without prior approval by the COR.

All detours left in place for more than one week shall have at least 4 inches (100 mm) of aggregate base with a bituminous surface using a cut-back asphalt when the existing surface is a bituminous treatment on either side of the detour.

In the first sentence **delete** the words "as ordered".

635.13 Temporary Pavement Markings and Delineation. Add:

The Contractor shall place the temporary traffic marking on all asphalt surface treatments and/or pavement placed before allowing two way traffic.

635.26 Measurement.

Delete this subsection and substitute the following:

Temporary traffic control will be measured by the lump sum and no measurement for payment will be made for furnishing, installing, and maintaining all traffic control devices and services required for the control and protection of traffic.

Add the following:

Signs used to delineate passing zones and raised pavement markers used for vehicle positioning guides according to Subsection 635.13A will not be measured.

635.27 Payment. Add:

Payment will be made under:

Delete (b).

Pay Item	Pay Unit
63501 Temporary traffic control	LS

DIVISION 700 MATERIAL

Section 701 – CEMENT. (a) Portland Cement. Delete the sentence and substitute the following:

Conform to AASHTO M85, type II, and the low-alkali cement criteria of Table 2-Optional Chemical Requirements.

Section 702 – ASPHALT MATERIAL

702.01 Asphalt Binder Add:

Standard Method of Test For

BITUMINOUS MATERIAL CONTENT OF ASPHALTIC CONCETE MIXTURES BY THE IGNITION FURNACE METHOD

1. SCOPE

- 1.1 This procedure describes a method for determining the percent bituminous material content of asphaltic concrete mixtures, by ignition of the bituminous material at 538°C in a furnace. The aggregate remaining can be used for sieve analysis as indicated in Section 9 of this standard test method procedure.
- 1.2 This test method involves hazardous material, operations, and equipment. This test method does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.
- 1.3 Metric (SI) units and values are shown in this test method.

2. APPARATUS

Apparatus for this test procedure shall consist of the following:

- 2.1 A forced air ignition furnace, capable of maintaining the temperature at 578°C, with an internal weighing system thermally isolated from the furnace chamber and accurate to 0.1 gram. The balance shall be capable of weighing a 3500 gram sample in addition to the sample baskets. A data collection system shall also be included so that the sample weight loss can be automatically determined to an accuracy of 0.1 gram and displayed during a test. The test is deemed complete when the measured weight loss does not exceed 0.01 percent of the sample weight for three consecutive one minute intervals. The furnace shall provide a printout with the initial sample weight, sample weight loss, temperature compensation (if used), correction factor, corrected asphalt content (%), test time, and test temperature. The furnace shall provide an audible alarm and indicator light when the sample weight loss does not

exceed 0.01 percent of the total sample weight for three consecutive one minute intervals. A filter capable of reducing furnace emissions to an acceptable level shall also be incorporated in the furnace. The furnace shall be vented into a hood or to the outside and be set up properly so that there are no noticeable odors escaping into the laboratory. The furnace will have a fan with the capability to pull air through the furnace to expedite the test and to reduce escape of smoke into the laboratory. The furnace shall be equipped so that the door cannot be opened during the ignition test.

- 2.2 Stainless Steel Perforated Baskets, (minimum of two): The baskets shall be an appropriate size that allow the samples to be a thickness which allows air to flow up through and around the sample particles. The sample shall be completely enclosed with screen mesh or perforated stainless steel plate or other suitable material. Screen mesh or other suitable material with openings of 2.36 mm has been found to perform well.
- 2.3 Stainless Steel Catch Pan: Pan of sufficient size to hold the sample baskets so that aggregate particles and melting asphalt binder falling through the screen mesh are caught.
- 2.4 Oven – capable of heating to $177 \pm 3^{\circ}\text{C}$.
- 2.5 Scales(s) or balance(s) capable of measuring the maximum weight to be determined and conforming to the requirements of AASHTO M 231, except the readability and sensitivity of any balance or scale utilized shall be at least 0.1 gram.
- 2.6 Safety Equipment: Safety glasses or face shield, high temperature gloves, and long sleeve jacket. Additionally, a heat resistant surface capable of withstanding 650°C and a protective cage capable of surround the sample baskets shall be provided.
- 2.7 Miscellaneous Equipment: A pa with the dimensions (L x W x H) of approximately 28 x 38 x 5 cm minimum for transferring samples after ignition, spatulas, bowls, spoons, and wire brushes.
- 2.8 Mixing apparatus – Mechanical mixing is recommended: A 19 liter capacity mixer is required. (Hand mixing may be performed if desired).
- 2.9 Thermometer with temperature range 10 to 260°C .
- 2.10 A hot place capable of maintaining at temperature of $149^{\circ}\text{C} \pm 6^{\circ}\text{C}$.
- 2.11 Sieve analysis apparatus as specified in AASHTO T 27 and T 11.

3. SAMPLING

- 3.1 For preparing calibration samples, obtain samples of aggregates in accordance with AASHTO T 2. Samples shall be adequately dried, if necessary, to a free-flowing condition of the portion passing the 4.75 mm sieve.

- 3.2 The size of the test sample shall be governed by the type of mix that will be utilized and shall conform to the weight requirement shown in the table below.

Size of Test Sample	
Nominal Maximum Aggregate Size	Weight of Sample, grams
37.5 mm	4000 - 4500
25.0 mm	3000 - 3500
19.0 mm	2000 - 2500
12.5 mm	1500 - 2000
9.5 mm	1000 - 1500
4.75 mm	500 - 1000

NOTE: When the mass of the test specimen exceeds the capacity of the equipment used, the test specimen may be divided in suitable increments, tested, and the results appropriately combined.

NOTE: Large samples of fine mixes tend to result in incomplete ignition of the asphalt.

- 3.3 For testing field samples of asphalt concrete, obtain a sample of the freshly produced mix in accordance with AASHTO T 168.

4. CALIBRATION

Two calibration procedures are provided; Method A, mixture calibration, and Method B, aggregate calibration, as outlined in Sections 5 and 6. Either method may be required by the Engineer. One of the calibration procedures must be performed before any acceptance testing is completed. In case of dispute the mixture calibration shall be performed. A calibration should be repeated each time there is a change in the mix design, or as requested by the Engineer.

5. MIXTURE CALIBRATION – METHOD A

5.1 This method may be affected by the type of aggregate in the mixture. Accordingly, to optimize accuracy, a correction factor will be established with the testing of a set of calibration samples for each mix type.

5.2 Two calibration samples conforming to the mass requirement of Subsection 3.2 shall be prepared at the design asphalt content. A “butter mix” should be prepared at the design bituminous material content, to condition the mixing equipment prior to mixing any of the calibration specimens to ensure an accurate bituminous material content. It can either be discarded, or be burned after the calibration for a check of bituminous material content and gradation. An additional aggregate (and

mineral admixture when used) sample shall be prepared and a sieve analysis performed according to Section 9 to determine the actual gradation values. The gradation shall fall within mix design tolerances. Aggregate used for the calibration specimens shall be sampled from stockpile or cold feed material produced in the current construction season. Any method may be used to combine the aggregates as long as the result matches the mix design criteria.

- 5.3 For the calibration samples, weigh the aggregate samples so the ending weight (after bituminous material is added) will be approximately the same size sample that will be split out during production of the mix. If mineral admixture is used, the appropriate type and amount shall be added to the aggregate and thoroughly blended. Dry the samples to constant weight at $143 \pm 6^{\circ}\text{C}$.
- 5.4 The same grade and type of bituminous material shall be used in the calibration samples as that which will be used in the asphalt concrete mixture to be tested. Two samples shall be mixed at the design bituminous material content.

The percent of bituminous material is based on the weight of total mix. The weight of bituminous material is determined by the following:

$$B = \frac{A}{100 - C} \times C$$

Where: A = Wt. Of Aggregate (and mineral admixture when used)

B = Wt. Of Bituminous Material

C = Percent of Bituminous Material

- 5.6 All bowls, sample pans, and mixing tools shall be heated to approximately 149°C . As an alternate to preparing a “butter” mix, the mixing equipment may be scraped consistently clean with a spatula after each batch. All samples shall be mixed at the same mixing temperature $\pm 6^{\circ}\text{C}$. At the time mixing begins, the temperature of the bituminous material and aggregate (and mineral admixture when used) shall be in accordance with the following:

BITUMINOUS MATERIAL	TEMPERATURE RANGE
AC-10, AC-20	149 ± 6°C
AC-30, AC-40	152 ± 6°C
PG 58-XX, PG 64-XX	149 ± 6°C
PG 70-XX, PG 76-XX	152 ± 6°C
Polymer Modified Asphalt	160 ± 6°C
Asphalt-Rubber	163 ± 6°C

- 5.7 Preheat the ignition furnace to 538°C. Record the furnace temperature set point prior to the initiation of the test.
- 5.8 Enter a correction factor of 0.00 in the ignition furnace.
- 5.9 Place the basket assembly on the balance, weigh and record the weight of the basket assembly.
- 5.10 The freshly mixed samples may be placed directly in the sample basket assembly. If allowed to cool, the samples must be reheated in a 143 ± 6°C. oven for 25 minutes.
- 5.11 Evenly distribute the calibration sample over the entire area of the sample basket(s). Use a spatula or trowel to pull material approximately 25 mm away from the outside edge of basket(s) and level the material. Replace the cover on the top basket. Lift basket assembly and sample from the balance. Zero out the balance and weigh and record the weight of the basket assembly and sample.
- 5.12 Calculate and record the initial weight of the sample, (total weight minus the tare weight of the sample basket assembly).
- 5.13 Select the ignition furnace controller print made which will give a printout of all test data (long printout rather than short printout). Input the initial weight of the sample into the ignition furnace controller. Verify that the correct weight has been entered and tare the furnace balance.
- 5.14 Open the chamber door and place the sample and basket assembly so that it is centered in the furnace. After assuring that the sample basket assembly is not in contact with the furnace wall, close the chamber door. Initiate the test by pressing the start button. This will lock the sample chamber and start the combustion blower.
- 5.15 Allow the test to continue until the stable light and audible stable indicator (beeper) indicates the test is complete. Press the stop button. This will unlock the sample chamber and cause the printer to print out the test results.

- 5.16 Open the chamber door, remove the sample baskets and allow cooling approximately 30 minutes. Weigh and record the weight of the basket assembly and sample. Calculate the weight of the sample after burning, and record this weight on the tabulation card.
- 5.17 Perform a gradation sieve analysis on the residual aggregate as indicated in Section 9.
- 5.18 Once the two mix calibration samples have been burned, determine the difference between the actual and measured bituminous material content for each sample. The bituminous material correction factor is the average of the differences.
- 5.19 If the difference between the two mix calibration samples exceed 0.07 percent, repeat two new tests, and average the four results. If the average measured mass loss exceeds 1.0 percent, lower the test temperature to $482 \pm 5^{\circ}\text{C}$. and repeat the test. If the mass loss continues to exceed 1.0 percent, lower the test temperature to $427 \pm 5^{\circ}\text{C}$. Use the correction factor determined by Subsection 5.18 above or this Subsection to determine the measured bituminous material content in Section 7.
- 5.20 Once the two mix calibration samples have been graded, determine the difference between the actual as determined in Subsection 5.2 and measured percent passing the 75 μm sieve for each sample. Determine the average of the differences. If the resultant average value is greater than 0.50 percent, a correction factor for the passing 75 μm material is applied to the production field sample test results.

6. ALTERNATE CALIBRATION PROCEDURE (AGGREGATE CALIBRATION)- METHOD B

This method may be affected by the type of aggregate in the mixture. Accordingly, to optimize accuracy, a correction factor will be established with the testing of a set of calibration samples for each mix type.

- 6.1 Three blank aggregate, and admixture if used, calibration samples conforming to the mass requirements of Subsection 3.2 shall be prepared to meet the job-mix formula. Aggregate used for the calibration specimens shall be sampled from stockpile or cold feed material produced in the current construction season. Any method may be used to combine the aggregate as long as the result matches the mix design criteria. Dry the samples to constant weight at $143 \pm 6^{\circ}\text{C}$. A sieve analysis shall be performed on one of the samples in accordance with Section 9 to determine the actual gradation values. The gradation shall fall within the mix design tolerances.
- 6.2 If allowed to cool, the samples must be reheated in a $143 \pm 6^{\circ}\text{C}$. oven for 25 minutes prior to burning.
- 6.3 Preheat the ignition furnace to 578°C . Record the furnace temperature set point prior to the initiation of the test.

- 6.4 Enter a correction factor of 0.00 in the ignition furnace.
- 6.5 Place the basket assembly on the balance, weigh and record the weight of the basket assembly.
- 6.6 Evenly distribute the sample over the entire area of the sample basket(s). Use a spatula or trowel to pull material approximately 25 mm away from the outside edge of basket(s) and level the material. Replace the cover on the top basket. Lift basket assembly and sample from the balance. Zero out the balance and weigh and record the weight of the basket assembly and sample.
- 6.7 Calculate and record the initial weight of the sample specimen, (total weight minus the tare weight of the sample basket assembly).
- 6.8 Select the ignition furnace controller print mode which will give a printout of all test data (long printout rather than short printout). Input the initial weight of the sample into the ignition furnace controller. Verify that the correct weight has been entered and tare the furnace balance.
- 6.9 The time required for burning various sizes of samples is as follows:

Sample Size Range (grams)	Required Burn / Time (Minutes)
500 – 1500	40 ± 1
1501 – 2500	60 ± 1.5
3000 or more	75 minimum

- 6.10 Press the stop button when the furnace timer indicates the appropriate times for the above difference sample weights. This will unlock the sample chamber and cause the printer to print out the test results.
- 6.11 Open the chamber door, remove the sample baskets and allow cooling approximately 30 minutes. Record the weight of the sample and basket assembly.
- 6.12 Perform a gradation sieve analysis on the residual aggregate as indicated in Section 9.
- 6.13 Once the two aggregate calibration samples have been burned, determine the measured percent mass loss for each sample. The bituminous material correction factor is the average of the percent mass loss differences of the aggregate calibration samples.
- 6.14 If the difference between the two aggregate calibration samples exceeds 0.15 percent, repeat two new tests, and average the four results. If the average measured mass loss exceeds 1.0 percent, lower the test temperature to $522 \pm 5^{\circ}\text{C}$ and repeat

test. If the mass continues to exceed 1.0 percent lower the test temperature to $467 \pm 5^\circ\text{C}$. Use the correction factor determined by paragraph (n) above or this paragraph to determine the measured bituminous material content in Section 7.

- 6.15 Once the two aggregate calibration samples have been grades, determine the difference between the actual as determined in Subsection 6.1 and measured percent passing the $75 \mu\text{m}$ sieve for each sample. Determine the average of the differences. If the resultant average value is greater than 0.50 percent, a correction factor for the passing $75 \mu\text{m}$ material is applied to the production field sample test results.

7.0 PROCEDURE (FIELD TEST SAMPLE)

- 7.1 Preheat the ignition furnace to 538°C , or as determined in Subsection 5.18 or 6.14. Record the furnace temperature set point prior to the initiation of the test.
- 7.2 Obtain a representative sample for testing according to AASHTO T 248 method "B". The moisture content sample shall be obtained at the same time as the asphalt content test sample, thus if preheating is performed, the moisture sample shall be taken after the pre-heating. As an alternate to performing the moisture determination, the test sample may be dried to a constant mass in an oven at $143^\circ\text{C} \pm 6^\circ\text{C}$.
- 7.3 The moisture determination shall be performed in accordance with Arizona Test Method 406. (Attached)
- 7.4 Enter the bituminous material correction factor for the specific mix to be tested as determined in Subsection 5.17 or 5.18, or Subsection 6.13 or 6.14.
- 7.5 Place the basket assembly on the balance, weigh and record the weight of the basket assembly.
- 7.6 Evenly distribute the field test sample over the entire area of the sample basket(s). Use a spatula or trowel to pull material approximately 25 mm away from the outside edge of basket(s) and level the material. Replace the cover on the top basket. Lift basket assembly and sample from the balance. Zero out the balance and weigh and record the weight of the sample and basket assembly.
- 7.7 Calculate the initial weight of the sample (total weight minus the tare weight of the sample basket assembly).
- 7.8 Select the ignition furnace controller print mode which will give a printout of all test data (long printout rather than short printout). Input the initial weight of the sample into the ignition furnace controller. Verify that the correct weight has been entered and tare the furnace balance.
- 7.9 Open the chamber door and place the sample and basket assembly so that it is centered in the furnace. After assuring that the sample basket assembly is not in

contact with the furnace wall, close the chamber door. Initiate the test by pressing the start button. This will lock the sample chamber and start the combustion blower.

- 7.10 Allow the test to continue until the stable light and audible stable indicator (beeper) indicates the test is complete. Press the stop button. This will unlock the sample chamber and cause the printer to print out the test results.
- 7.11 Open the chamber door, remove the sample and basket assembly. Allow the sample to cool (approximately 30 minutes) in the sample baskets.
- 7.12 Weigh and record the total weight of the basket assembly and sample. Calculate and record the weight of sample, (total weight minus the tare weight of the sample basket assembly).
- 7.13 Attach the original printed ticket to the back of the laboratory report form.
- 7.14 Empty the contents of the baskets into a flat pan. Use a small wire sieve brush to ensure that any residual fines are removed from the baskets.
- 7.15 If needed, perform a gradation sieve analysis on the residual aggregate according to Section 9.

8. CALCULATION OF PERCENT BITUMINOUS MATERIAL

- 8.1 Using the information from the printout of the furnace, record the weight loss as “k”, percent loss as “m”, temperature compensation as “n”, bituminous material correction factor as “o”, corrected bituminous material content as “p”, and the elapsed time of test as “q”.
- 8.2 If the test sample was dried to constant weight prior to burning, the bituminous material content is as recorded in subsection 8.1 above.
- 8.3 If the test sample was not dried to constant weight prior to burning, determine the bituminous material content as follows:
 1. Record moisture content from Arizona Test Method 406 (attached) to the nearest 0.01% as “f”. Multiply percent moisture content “f” times initial weight of AC sample “c” and divide result by 100; record to the nearest 0.1 gram as weigh of water “g”.
 2. Subtract weight of water “g” from initial weight of AC sample “c” and record as weight of AC less water to the nearest 0.1 gram as “h”.

3. Subtract weight of water “g” from the weight loss “k” and record as “l”.
4. Divide “l” by weight of AC less water “h” and multiply by 100; record to the nearest 0.01% as percent loss “m”.
5. Subtract the temperature compensation “n” (if used) and bituminous material factor “o” from percent loss “m”; record to the nearest 0.01% as corrected bituminous material content, “p”.

9. SIEVE ANALYSIS OF AGGREGATE

If required, the aggregate shall be subjected to sieve analysis as described below. The coarse sieving shall be performed in accordance with Subsection 9.1, and the fine sieving in accordance with Subsection 9.2. The quantity of material on a given sieve at the completion of sieving shall not exceed the amount shown in the table below. Do not discard any of the sieved material until the sum of the individual weights is compared to the weight of the sample prior to sieving. If the difference between the two weights is greater than 1.0% of the sample weight, the sample shall be recombined, re-sieved, and carefully re-weighed. If the difference is less than or equal to 1.0%, an adjustment in weight shall be made. Any adjustment that is necessary shall be made on the sieve which has the largest weight retained, except no adjustments shall be made on the 2.36 mm or 75 µm sieves.

Sieve Size	Maximum Weight Allowed	Maximum Weight Allowed (grams) (304.8 mm Dia. Sieve)
	grams/cm ²	
37.5 mm	3.88	2829
25.0 mm	2.79	2036
19.0 mm	2.17	1583
12.5 mm	1.55	1131
9.5 mm	1.24	905
6.3 mm	0.93	679
4.75 mm	0.78	567
2.36	0.62	452
2.00 mm and smaller	0.62	---

9.1 The coarse sieving of the aggregate shall be performed as follows:

1. Place sample on the top sieve of a nest of 304.8 mm sieves. The net of sieves shall consist of sieves starting with the smallest size sieve that 100% of the material will pass, down to and including the 2.36 mm sieve and pan. Place lid on nested sieves and screen the material by either mechanical or hand shaking, until not more than 0.5 percent by weight of sample passes any sieve during one minute.
2. The material retained on the individual sieves down to the 2.36 mm shall be weighed and recorded separately to the nearest whole gram.
3. The material passing the 2.36 mm sieve is recorded to the nearest whole gram as “r”.
4. The material passing the 2.36 mm sieve is split, if necessary, to obtain an approximate 500 gram sample for fine sieving. The weight of the sample for fine sieving is recorded to the nearest whole gram as weight of pass 2.36 mm split “s”.
5. Determine a factor for calculating the coarse sieve analysis by dividing 100 by the coarse aggregate sieve total “j” (which has been rounded and recorded to the nearest whole gram). Record the factor to at least six decimal places.
5. Determine and record elutriation to nearest whole gram by subtracting dry weight “u” from weight of pass 2.36 mm split “s”.
6. The percent passing for each sieve in the coarse sieve analysis is determined by multiplying the weight retained on that sieve times the coarse sieve factor, and subtracting the result from the un-rounded % passing for the next larger sieve. Values for “weight retained times the coarse sieve factor” and “percent passing each sieve” shall be determined and used in the calculations to at least six decimal places. The percent passing value for each sieve is recorded in the sieve analysis to the nearest whole percent.
7. As a check on the coarse sieve analysis, multiply the weight of minus 2.36 mm material times the coarse sieve factor. The result of this calculation, rounded to the nearest whole percent, should be the same as the value for percent passing the 2.36 mm sieve determined in the paragraph above.

9.2 The elutriation (wash test) and fine sieving of the pass 2.36 mm material shall be performed as follows:

1. Subject sample to elutriation through a 75 μ m screen either by hand or mechanical washing.
2. Dry sample to constant weight, allow to cool, and record weight to the nearest whole gram as dry weight “u”.
3. Place sample on the top sieve of a nest of fine sieves. The next of sieves shall consist of sieves starting with the 2.00 mm (down through and including the 75 μ m and pan. Place lid on nested sieves and screen the material by either mechanical or hand shaking, until not more than 0.5 percent by weight of sample passes any sieve during one minute.
4. The material retained on the individual sieves and pan shall be weighed and recorded separately to the nearest whole gram.
5. Determine and record elutriation to nearest whole gram by subtracting dry weight “u” from weight of pass 2.36 mm split “s”.
6. Determine a factor for calculating for calculating the fine sieve analysis by dividing the percent passing 2.36 mm sieve (recorded to the nearest whole percent) by the weight of pass 2.36 mm split. Record the factor to at least six decimal places. If all the pass 2.36 mm material from coarse sieving was subject to elutriation and fine sieving, a fine sieve factor is not determined. Rather, the coarse sieve factor is utilized and the calculation of the percent passing each sieve is continuous through the entire sieve analysis.
7. The percent passing for each sieve in the fine sieve analysis is determined by multiplying the weight retained on that sieve times the fine sieve factor, and subtracting the result from the unrounded % passing the next larger sieve, with the exception of the percent passing the 2.36 mm which has previously been recorded to the nearest whole percent. Values for “weight retained times the fine sieve factor” and “percent passing each sieve” shall be determined and used in the calculations to at least six decimal places. The percent passing value for each sieve is recorded in the sieve analysis to the nearest whole percent, except the percent passing the 75 μ m sieve is recorded to the nearest 0.1 percent.

8. As a check on the fine sieve analysis, the weight of material passing the 75 μm sieve is added to the elutriation weight, and this total is multiplied times the fine sieve factor. The result of this calculation, rounded to the nearest 0.1 percent, should be the same as the value for the percent passing the 75 μm sieve determined in the paragraph above.
 9. If necessary, the percent passing the 75 μm sieve shall be adjusted for the correction factor determined in Subsection 5.19 or 6.15.
- 9.3 If desired, obtain the percent retained on each sieve by subtracting the rounded % passing value for that sieve from the rounded % passing value for the next higher sieve.
 - 9.4 Other methods may be used that differ from that specified in paragraphs (a) and (b) above to determine % passing each sieve, so long as the method utilized has been proven to give equivalent results. However, any procedure which includes recording percent retained values prior to completing the calculation of all percent passing values is not allowed.

10. REPORT

Report all information on an Asphaltic Concrete Tabulation Laboratory Form.

- (a) Tare weight of basket assembly.
- (b) Weight of bituminous mix example and basket assembly.
- (c) Initial sample weight.
- (d) Percent moisture from moisture test, if one was performed.
- (e) Weight and sample baskets and sample after burning.
- (f) Dry weight of burned aggregate.
- (g) Weight loss from printout.
- (h) Weight loss minus weight of water (from moisture test).
- (i) Percent loss.
- (j) Temperature compensation factor (if used).
- (k) Bituminous material correction factor.

- (l) Corrected bituminous material content.
- (m) Elapsed time of test.
- (n) Name of the operator.
- (o) Field sample test date.
- (p) Bituminous material content target value.
- (q) Furnace set temperature.
- (r) If determined, the sieve analysis of the residual aggregate.

MOISTURE CONTENT OF BITUMINOUS MIXTURES

1. SCOPE

- 1.1 This method is used to determine the percent moisture in bituminous mixtures. The option of using a conventional oven or a microwave oven is provided. In case of dispute, the conventional oven shall be utilized.
- 1.2 This test method may involve hazardous material, operations, and equipment. This test method does not purport to address all safety problems associated with its use. It is the responsibility of whomever uses this test method to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. APPARATUS

The apparatus shall consist of the following:

- 2.1 Suitable sample containers for use in testing with the conventional oven.
- 2.2 Oven – A thermostatically controlled oven capable of maintaining a temperature of 143 +/- 6°C; or, a microwave oven capable of variable heat intensity setting.
- 2.3 A balance or scale capable of measuring the maximum weight to be determined, accurate to at least 0.1 gram.

3. PROCEDURE (CONVENTIONAL OVEN)

- 3.1 Obtain a representative 1000 +/- 50 grams sample in accordance with AASHTO T 248 method “B”.
- 3.2 Record the tare weight of the container to the nearest 0.1 gram.
- 3.3 Place sample in the container and weigh. Determine and record the wet weight of sample to the nearest 0.1 gram as “f”.
- 3.4 Place container and sample in a 143 +/- 6°C oven and initially dry for a minimum of one hour. Weigh the container and sample. Record the weight to the nearest 0.1 gram.
- 3.5 Continue drying and weighing until a constant weight is obtained; being the weight at which further drying does not alter the weight more than 0.1 gram at intervals of a minimum of 30 minutes.
- 3.6 After constant weight is obtained, cover sample and allow cooling 30 +/- 10 minutes at room temperature. Weigh and determine and record the dry of sample to the nearest 0.1 gram as “g”.

3.7 Proceed to section 5 for moisture calculation.

4. PROCEDURE (MICROWAVE)

4.1 Obtain a representative 1000 +/- 50 gram sample in accordance with AASHTO T 248 method “B”.

4.2 Record the tare weight of the container to the nearest 0.1 gram.

4.3 Place sample in the container and weigh. Determine and record the wet weight of sample to the nearest 0.1 gram as “f”.

4.4 Dry sample until a constant weight is obtained. The sample is considered to be at constant weight when further drying causes, or would cause, a difference in weight of not more than 0.1 gram. The sample shall be heated in such a manner that controls the intensity of heat generated to prevent splattering, aggregate breakage, and asphalt being “burned off”. The method used with a microwave oven shall give results similar to those achieved with a conventional oven.

4.5 After constant weight is obtained, cover sample and allow cooling 30 +/- 10 minutes at room temperature. Weigh, determine, and record the dry weight of sample to the nearest 0.1 gram as “g”.

5. CALCULATIONS

Calculate the percent moisture, “h”, and record to the nearest 0.01% as shown below.

$$h = \frac{f - g}{f} \times 100$$

Where: h = Percent Moisture

f = Wet weight of sample

g = Dry weight of sample

702.03 Emulsified Asphalt.

Delete the second sentence of the first paragraph beginning with “The sieve test . . .”

702.06 Recycling Agent.

Delete this subsection in its entirety.

702.08 Antistrip Additive.

Delete (c) and replace with the following:

- (c) **Type 3.** Furnish lime conforming to Subsection 725.03 (a).

Section 703 – AGGREGATE

703.02(b) Coarse Aggregate for Concrete.

Delete (b) **Adherent Coating** and insert the following:

The adherent coating on the aggregate shall not exceed 1%. The adherent coating is the difference between the amount of material passing the No. 200 sieve between dry sieving and washing on the minus No. 4.

Provide aggregates that meets the Size No. 57 of AASHTO M 43 for structural concrete (Section 552) and Size No. 57 or Size No. 467 for minor concrete (Section 601).

703.05 Subbase, Base, and Surface Course Aggregate.

(a) General.

- (1) Los Angeles abrasion, AASHTO T 96 **Delete** “50% max” and insert “40% max”.

(2) Delete.

- (5) Fractured Faces, **Delete** “50% min.” and insert the following:

Not Less than 65% by weight of the particles retained on the No. 4 (4.75 mm) sieve shall have at least one **manufactured** face. Minimum sample size shall be 25 pounds (kg).

Add the following:

The use of Recycled Asphalt Pavement (RAP) in the aggregate base course may be acceptable but a request to use the material must be submitted for review at the pre-construction meeting.

(b) Subbase or base aggregate.

(1) Gradation, **Delete** “Table 703-2” and insert “In the Special Contract Requirements”.

Add:

(3) Plasticity Index, AASHTO T 90, 6 max.

(c) Surface course aggregate.

(1) Gradation and plasticity index, AASHTO T 90, **Delete** “Table 703-3” and insert the following: The Gradation will be designated in the Special Contract Requirements and the Plasticity Index shall be non-plastic.

Add (3) fractured faces shall be not less than 85% by weight of the particles retained on the No. 4 (4.75 mm) sieve and shall have at least one **manufactured** face.

703.07 Hot Asphalt Concrete Pavement Aggregate.

(a) Coarse aggregate (retained on No. 4 sieve).

(3) Fractured Faces, **Delete** “75% min.” and insert the following: “Not less than 90% by weight of the particles retained on the No. 4 sieve shall have at least one **manufactured** face”.

Add:

(5) Liquid Limit, AASHTO T 89, 25 max.

(b) Fine aggregate (passing a no. 4 sieve).

(2) Sand Equivalent value, AASHTO T 176, **Delete** “45 min” and insert “55 min”.

Add:

(3) Liquid Limit, AASHTO T 89, 25 max.

c) Composite aggregate blend.

(1) Gradation. **Delete** “Table 703-4” and insert “Gradation will be designated in the Special Contract Requirements.

703.10 Asphalt Surface Treatment Aggregate.

(a) Gradation **Delete** “Table 703-7” and insert “Gradation will be designated in the Special Contract Requirements”.

Delete (d) and replace with the following:

(d) Fractured faces – not less than 85% by weight of the particles retained on the No. 4 sieve shall have at least one manufactured face.

Section 704 – SOIL

704.03 Backfill Material. Add:

(a)(1) Maximum particle size, **delete** “3 inches” and insert “2 inches”

Add (a)(3) Plasticity Index, AASHTO T 90, shall not exceed 15.

704.04 Structural Backfill.

(a) Maximum particle size, **delete** “3 inches” and insert “2 inches”

704.08 Select Topping.

(b) Liquid limit, AASHTO T 89, **delete** “30 max” and insert “25 max”.